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

Rev. April 8, 2022
September 24, 2021

Ainley
CONSULTING
ENGINEERS
PLANNERS

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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.

We also provide a Fire Hydrant Coverage Plan, Hydrant Spacing/Capacity Table, an FUS Exposure Distances Plan and correspondence from the Architect for your reference in Appendix B.

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 persons X 350 L/person/day = 21,000 L/day = 0.24 L/s

0.24 L/s X 4.0 (peaking factor) + (0.07 ha X 0.33 L/s/gross ha) = 0.99 L/s

A peaking factor of 4.0 was used for this area and 0.33 L/s/gross ha was used for the 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 x A x I x 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

2 year Pre-Development Flow: Q = 0.50 x 0.072 x 52.0 x 2.78
Q = 5.20 L/s

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 neibouring 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**

A submersible pump with a constant release rate (no greater than 5.0 L/s) is anticipated. Also, the storm water tank shall have an emergency spill outlet towards the Right of Way should the cistern or outlet fail. Foundation and/or under slab drains are to be connected downstream of any cistern controls.

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.

A 300mm diameter storm service is proposed to service the 6 storey apartment building off of the 1350mm diameter storm sewer located within the Holland Avenue ROW.

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 Erosion and Sediment Control Plan "Dwg. 005-21007–SC1" 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:

Ainley Graham and Associates Ltd.

Professional Engineers
Ontario
April 08, 2022
Limited Licensee
Name: J.W.XU
Number: 100171806
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

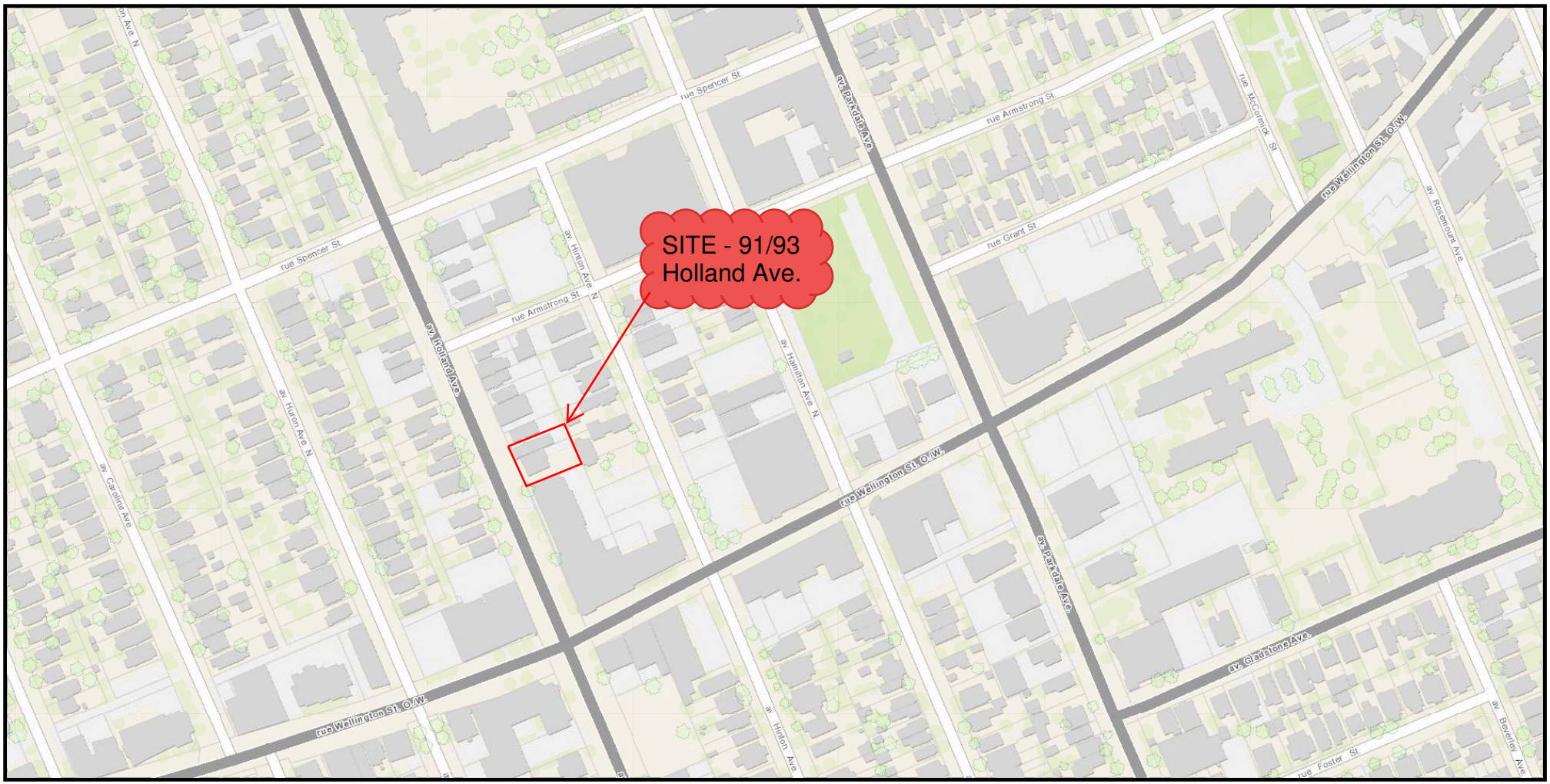
Reviewed by:

Ainley Graham and Associates Ltd.

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

APPENDIX A

APPENDIX A


SITE - 91/93
Holland Ave.
rue Spencer St
av. Holland Ave.
av. Hilton Ave. N
rue Armstrong St
av. Hamilton Ave. N
av. Parkdale Ave.
rue Armstrong St
rue McCormick St
rue Grant St
rue Wellington St. O.W.
av. Rosemount Ave
av. Huron Ave. N
av. Caroling Ave
av. Gladstone Ave.
av. Beverley Ave
rue Foster St

APPENDIX B

Disclaimer:

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

Stormwater Management Criteria and Information:

- **Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the 100-year storm event, to a **2-year pre-development level.** The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. [**If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5**]. The time of concentration (T_c) used to determine the pre-development condition shall be 20min or can be calculated. [*T_c of 20 minutes should be used for all pre-development calculations without engineering justification, Tc should not be less than 10 min. since IDF curves* become unrealistic at less than 10 min; Tc of 10 minutes shall be used for all post-development calculations].
- Any storm events greater than the established 2-year allowable release rate, up to and including the 100-year storm event, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.
- Water Quality Control: Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.
- Please note that as per Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14) there shall be no surface ponding on private parking areas during the 2-year storm rainfall event.
- **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.
- When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.** In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.
- Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.
- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A topographical plan of survey shall be provided as part of the submission and a note provided on the plans.

- Please provide a Pre-Development Drainage Area Plan to define the pre-development drainage areas/patterns. Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.
- If rooftop control and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a Roof Drain Plan as part of the submission.
- Investigate the implementation of LID features (i.e. permeable IPS) to reduce runoff however no credit shall be given in terms of stormwater management.

Storm Sewer:

- A 1350mm dia. Conc storm sewer (1979) is available within Holland Ave.
- As-built drawings of the existing services within the vicinity of the site shall be obtained and reviewed in order to determine proper servicing and SWM plan for the subject site(s).
- The storm service connection is to have backwater valve.
- Considering the size and the age of the storm main , a contingency plan would be required for the connection as well as crossing this pipe. The contingency plan will be circulated to AMB in order to have their comment as well as the project manager comment. Please note that this could require additional time to complete the review.

Sanitary Sewer:

- A 450mm dia. conc sanitary sewer is available within Holland Ave.
- **An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided**. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- Please apply the wastewater design flow parameters *in Technical Bulletin PIEDTB-2018-01.*

- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.
- A backwater valve is required on the sanitary service for protection.

Water:

- A 403mm dia. PVC watermain is available within Holland Ave
- Existing services to be blanked at the main.
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the

City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.

- Type of Development and Units
- Site Address
- A plan showing the proposed water service connection location.
- Average Daily Demand (L/s)
- Maximum Daily Demand (L/s)
- Peak Hour Demand (L/s)
- Fire Flow (L/min)

[Fire flow demand requirements shall be based on Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 1999]

Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

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

- The subject site is located within the 1W Pressure Zone.

Snow Storage:

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

Permits and Approvals:

- The consultant shall determine if this project will be subject to an Environmental Compliance Approval (ECA) for Private Sewage Works. It shall be determined if the exemptions set out under Ontario Regulation 525/98: *Approval Exemptions* are satisfied. **All regulatory approvals shall be documented and discussed in the report**.

Required Engineering Plans and Studies in Support of SPC Application:

PLANS:

- Existing Conditions and Removals Plan
- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan
- Pre-Development Drainage Area Plan
- Post-Development Drainage Area Plan
- Roof Drainage Plan
- Foundation Drainage System Detail
- Topographical Plan of Survey
- Legal Survey Plan
- Site Lighting Plan and Photometric Plan

REPORTS:

- Site Servicing and Stormwater Management Report

- Geotechnical Study/Investigation

- Noise Control Study (assessment of stationery and transportation noise) (due to proximity (within 100m) of an existing arterial road (Wellington Street)).
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)
- For proposed 9 stories and higher buildings , a wind analysis must be prepared, signed and stamped by an engineer who specializes in pedestrian level wind evaluation.

Please refer to the **City of Ottawa Guide to Preparing Studies and Plans [Engineering]:**

https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#gravity-pipe-design-guidelines

Please ensure you are using current guidelines, by-laws and standards.

Phase One Environmental Site Assessment:

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

- Official Plan Section 4.8.4:

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

Geotechnical Investigation:

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

  https://documents.ottawa.ca/sites/default/files/documents/cap137602.pdf

Noise Study:

- A Phase 2 Noise Control Detailed Study is required as the subject site is within 100m of Wellington Street (arterial road) that is considered a surface transportation noise source. Any existing and/or new stationary noise sources shall be identified and analyzed.
- Please note that an environmental noise assessment of any stationary noise sources (Stationary Noise Assessment) of the proposed development will be required to determine the affects of any proposed roof top units, etc. for this building as this noise may subject the tenants/owners of the upper level of the residential building, and the surrounding neighbors, to static noise levels that are beyond the acceptable limits.
- Noise Study shall be consistent with the City's **Environmental Noise Control Guidelines**.

  https://documents.ottawa.ca/sites/default/files/documents/enviro_noise_guide_en.pdf

Exterior Site Lighting:

- Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a **Site Lighting Plan, Photometric Plan and Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

Transportation

How many parking spaces will be proposed for this development?

Holland Avenue is designated as a Collector road within the City's Official Plan with a ROW protection of 26.0 metres. The ROW limits are to be shown on all the drawings and the offset distance (13.0 metres) to be dimensioned from the existing centerline of pavement.

ROW interpretation – Land for a road widening will be taken equally from both sides of a road, measured from the centreline in existence at the time of the widening if required by the City. The centreline is a line running down the middle of a road surface, equidistant from both edges of the pavement. In determining the centreline, paved shoulders, bus lay-bys, auxiliary lanes, turning lanes and other special circumstances are not included in the road surface.

Permanent structures such as curbing, stairs, retaining walls, and underground parking foundation also bicycle parking racks are not to extend into the City's right-of-way.

The concrete sidewalks should be 2.0 metres in width and be continuous and depressed through the proposed access (please refer to the City's sidewalk and curb standard drawing SC2)

The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.

Please keep in mind that on street parking is not a viable option for tenants. Ensure that potential tenants are aware that there is no provision for parking.

Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.

The TIA (Transportation Impact Assessment) Guidelines (2017) were approved by Transportation Committee and City Council on June 14, 2017. The new version of the TIA Guidelines (2017) that are posted on the web are now to be used for the TIA Submission for development applications.

The following list highlights the significant changes to the 2006 TIA Guidelines

1. A Screening Test (Step 1) quickly determines if a transportation study is required. Consultants should fill in the form in Appendix B.
2. Should the development generate 60 peak hour person trips, the TIA guidelines Step 2 – Scoping report would be required.
3. Study Scope (Step 2) is site specifically tailored; there are no longer three defined types of TIA reports. Scoping report is required and needs to be signed off by TPM before the

consultant moves on to Forecasting volumes.

4. Sign off from City Transportation Project Manager is required at key points in the review process prior to TIA Submission (Step 5). See Figure 1 on page 9 for a good flow chart of the process.
5. Multi Modal Level of Service (MMLOS) and Complete Street analysis is required to assess the impact of all modes of travel rather than just vehicle traffic.
6. There is no longer a requirement for consultant pre-approval. Consultants must now sign and submit the Credentials Form included in the Appendix A with each TIA report.
7. The TIA Submission (report, drawings and/or monitoring plan) is required with the development application.

Click on the website: https://ottawa.ca/en/transportation-impact-assessment-guidelines

A construction Traffic Management Plan is to be provided for approval by the Senior Engineer, Traffic Management, Transportation Services Dept.

Forester

- a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City; an approved TCR is a requirement of Site Plan approval.

- any removal of privately-owned trees 10cm or larger in diameter requires a tree permit issued under the Urban Tree Conservation Bylaw; the permit is based on the approved TCR

- any removal of City-owned trees will require the permission of Forestry Services who will also review the submitted TCR

- the TCR must list all trees on site by species, diameter and health condition

- the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site

- If trees are to be removed, the TCR must accurately show where they are, and document the reason they cannot be retained

- All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines listed on Ottawa.ca
  - a. the location of tree protection fencing must be shown on a plan
  - b. include distance indicators from the trunk of the retained tree to the nearest part of the tree protection fencing
  - c. show the critical root zone of the retained trees
  - d. if excavation will occur within the critical root zone, please show the limits of excavation and calculate the percentage of the area that will be disturbed

- the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.

- Please ensure newly planted trees have an adequate soil volume for their size at maturity. Here are the recommended soil volumes:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

- For more information on the process or help with tree retention options, contact Mark Richardson, mark.richardson@ottawa.ca

-

Community Association

- The HCA would oppose an increase in height to 9 stories for this site. The Wellington Street West Community Design Plan carefully considered the heights to be permitted in the Mixed Use Centre and the 6 storey height limit in this block (from the existing 99 Holland Avenue to Armstrong Street) was chosen because of the context of the surrounding zoning, both to the east and to the west, on the other side of Holland Avenue.
- The purpose of the MC zone is to ”impose development standards that ensure medium to high profile development while minimizing its impact on surrounding residential areas.”
- The Secondary Plan states:

  “New buildings over 4 storeys shall incorporate architectural articulation and details to form a 2-3 sotery base to ensure compatibility with the existing low-rise, human scale buildings in order to be consistent with the built form vision for these areas.”
- The provision to allow 9 storey buildings by offering community benefits applies only to the “gateway’ properties identified in the CDP. This site is not a gateway.

Other

- You are encouraged to contact the Ward Councillor, Jeff Leiper.

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

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

John Bernier, MCIP, RPP

Planner II | *Urbaniste II*

Development Review, Central | *Examen des projets d'aménagement, Central*

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

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ottawa.ca/planning / ottawa.ca/urbanisme

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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

N/A 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.

N/A Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.

- ☑ Summary of Pre-consultation Meetings with City and other approval agencies.

N/A Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.

- ☑ Statement of objectives and servicing criteria.
- ☑ Identification of existing and proposed infrastructure available in the immediate area.

N/A Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).

- ☑ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.

N/A Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.

N/A Proposed phasing of the development, if applicable.

☑ 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

N/A 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.

N/A 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

N/A 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

N/A 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.

N/A Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.

☑ 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).

N/A 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.

N/A 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)

N/A 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.

N/A Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).

N/A Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.

N/A Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.

N/A Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

N/A Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

N/A Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

N/A Analysis of available capacity in existing public infrastructure.

N/A A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

☑ 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.

N/A Set-back from private sewage disposal systems.

N/A 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.

N/A 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).

N/A 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.

N/A Any proposed diversion of drainage catchment areas from one outlet to another.

N/A Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.

N/A If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100 year return period storm event.

N/A Identification of potential impacts to receiving watercourses

N/A Identification of municipal drains and related approval requirements.

☑ Descriptions of how the conveyance and storage capacity will be achieved for the development.

N/A 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

N/A 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.

N/A Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.

N/A Identification of fill constraints related to floodplain and geotechnical investigation.

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.

N/A Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

N/A Changes to Municipal Drains.

N/A Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

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

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, <u>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.</u> 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 m^2
A = (2 X 450) + (0.5 X 4 X 450)
A = 1,800 m^2

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

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

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

<u>FUS Reductions / Increases:</u>

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.

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

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.

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

Modifier for Exposure

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

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

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

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.

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

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

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

$F \sim 133\ L/s$

<u>Conclusion:</u>

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.
92
93
89

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 - Centeral 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 - Centeral 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 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

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

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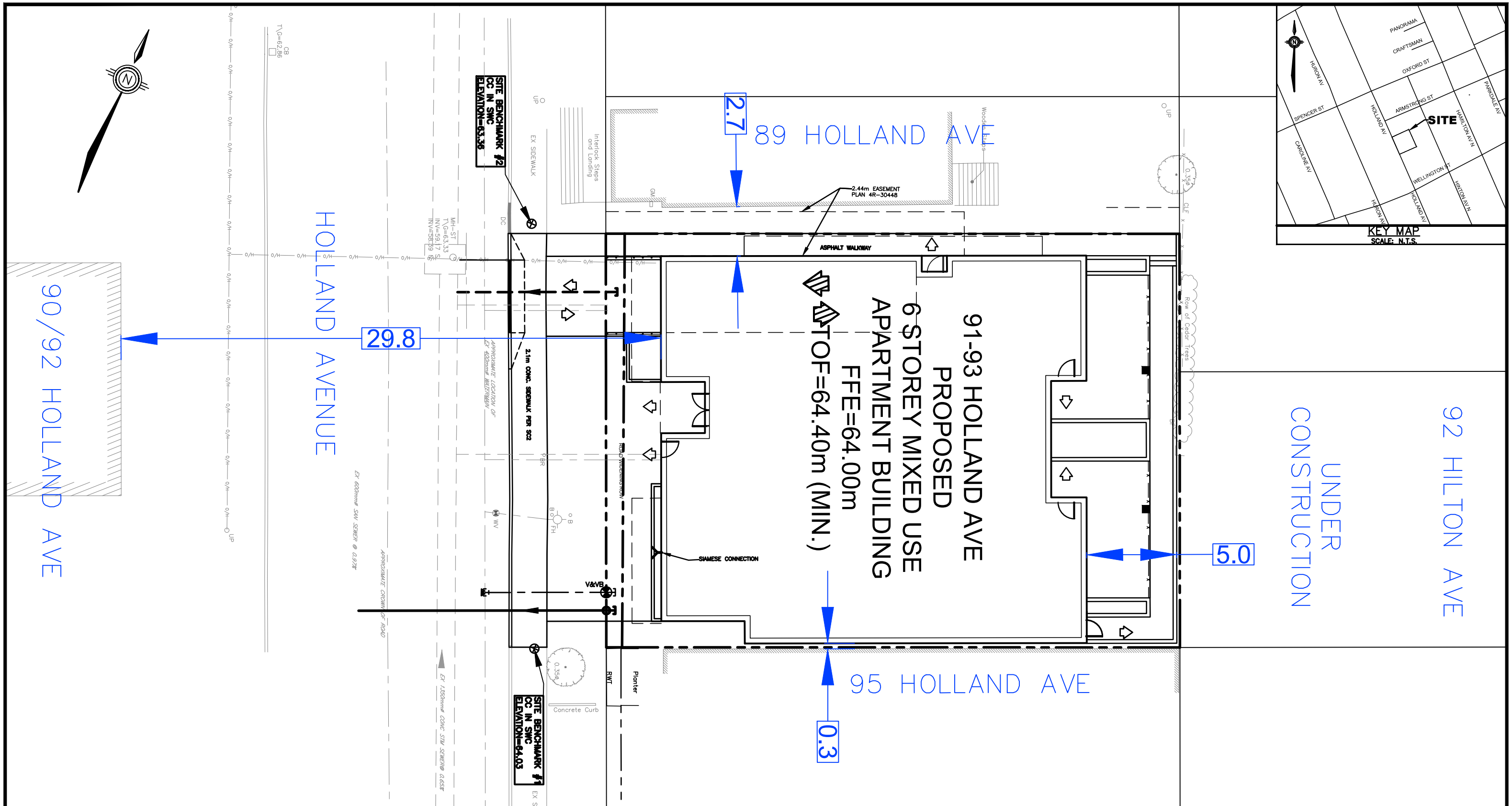
Boundary Condition for 91-93 Holland



NO.	REVISIONS	DATE	INITIAL
1	RE-ISSUED FOR SITE PLAN APPROVAL	APRIL 8/22	JX

SCALE: 1 : 200
DESIGN: JX
DRAWN: MH
CHECKED: GSC
DATE: MARCH 2022

SIX-STOREY MIXED USE
APARTMENT BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

FUS EXPOSURE DISTANCE PLAN

Ainley GROUP
2724 Fenton Road
Ottawa, Ontario
K1T 3T7
Telephone: (613) 822-1052
Fax: (613) 822-1573

CONTRACT No. 21007

21007 – FUSEDP

D07-12-21-0180

#18605

Apr 04, 2022 I:\DRAWINGS\21007-1 91-93 Holland Ave\Design\101 – 21007 – FIRE EXPOSURE DISTANCE PLAN.dwg

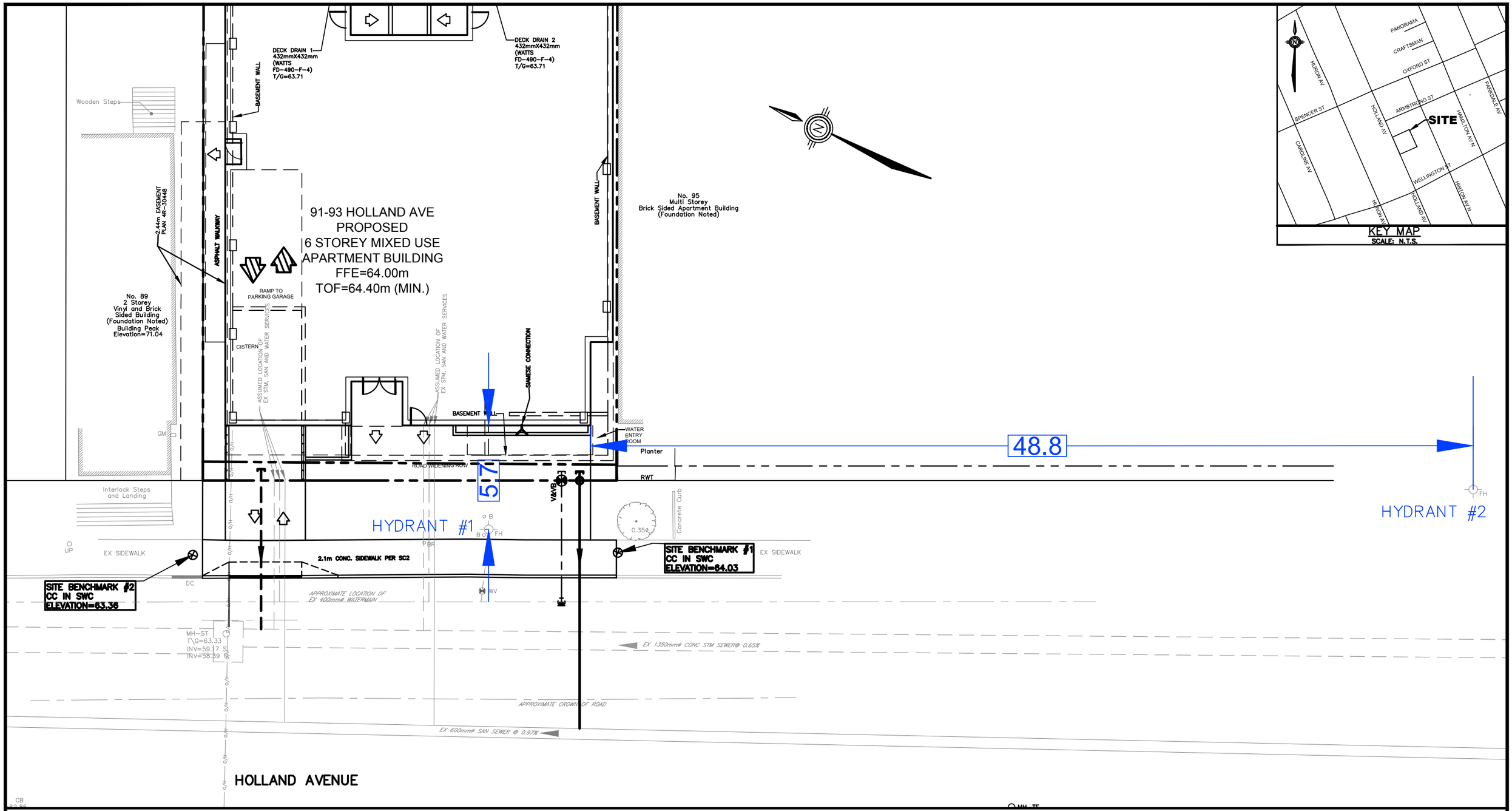
AINLEY Project: 21007-Nine Storey Residential Building
Location: 91/93 Holland Ave
Client: Nicholson Gluckstein

Hydrant Spacing and Capacity Table

Building No.	Description	Hydrants		Total Available Fire Flow (l/min)	Total Required Fire Flow (l/min)
		HYD-01	HYD-02		
1	Distance from building (m)	5.7	48.8	-	-
1	Maximum fire flow capacity (L/min)	5678	5678	11356	8000

Ottawa Design Guidelines- Water Distribution
Appdendix I: Guideline on coordination of hydrant placement with required fire flow

Table 18.5.4.3 Maximum fire flow hydrant capacity	
Distance to buildings (m)	Maximum Capacity (L/min)
≤76	5678
>76 and ≤152	3785
>152 and ≤305	2839



NO.	REVISIONS	DATE	INITIAL
1	RE-ISSUED FOR SITE PLAN APPROVAL	APRIL 08/22	JX

SCALE: 1 : 200
DESIGN: JX
DRAWN: MH
CHECKED: GSC
DATE: MARCH 2022

SIX-STOREY MIXED USE
APARTMENT BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

FIRE HYDRANT COVERAGE PLAN

Ainley GROUP
2724 Fenton Road
Ottawa, Ontario
K1T 3T7
Telephone: (613) 822-1052
Fax: (613) 822-1573

CONTRACT No. 21007

21007 – FHCP

D07-12-21-0180

#18605

Apr 04, 2022 I:\DRAWINGS\21007-1 91-93 Holland Ave\Design\100 – 21007 – FIRE HYDRANT COVERAGE PLAN.dwg

Guy Ste-Croix

From: Guy Ste-Croix
Sent: April 8, 2022 3:34 PM
To: Guy Ste-Croix
Subject: 20-1898 - 91-93 Holland

From: Craig Gillier <CraigG@chmielarchitects.com>
Sent: April 8, 2022 3:11 PM
To: Guy Ste-Croix <guy.ste-croix@ainleygroup.com>; Joe Tallis <tallisje@gmail.com>
Cc: Jiawu Xu <jiawu.xu@ainleygroup.com>; Richard A Chmiel <RichardC@chmielarchitects.com>
Subject: RE: 20-1898 - 91-93 Holland - Revised backgrounds for Consultants

Hi Guy,

Please see my response below regarding question #36, concerning the FUS RFF calculations.

I've reviewed your FUS calculations on page 26 of the Site Servicing and SWM Report and have no major concerns with your assumptions. Below is a summary of the building information at this stage in the project.

- Building Classification - Group C residential occupancy for floors 1 – 6 & Group A2 or E @ ground floor commercial space TBD by client
- Building construction – Non combustible
- The building will be sprinklered
- Assume 2hr FRR for exterior walls on interior property lines – as OBC Table 3.2.3.7

Regards

Craig Gillier B.A.S. | M. Arch. | OAA
Associate Architect

craigg@chmielarchitects.com
T 613-234-3585 ext. 234

109 Bank Street, Suite 200
Ottawa, ON K1P 5N5

chmielarchitects

chmielarchitects.com

APPENDIX C

AINLEY Project: 21007 - 1
Location:91-93 Holland Avenue
Client: Nicholson Glukstein

Table 1. Stormwater Management Summary Sheet

Sub Area I.D.	Sub Area (ha)	C = 0.2	C = 0.6	C = 0.9	5 Year Composite 'C'	100 Year Composite 'C'	Outlet Location	Controlled Release (L/s)	Top of Grate (m)	Ponding Depth (m)	Invert or Pan Elev. (m)	Pipe dia (if plug type) (mm)	Head on Orifice (if plug) (m)	Diameter of Orifice (mm)	Hydrovex Model	Head on Hydrovex
A1	0.060	0.000	0.000	0.060	0.90	1.00	BUILDING	5.0								
A2	0.004	0.000	0.000	0.004	0.90	1.00	BACK YARD	Free flow								
A3	0.008	0.003	0.000	0.004	0.60	0.75	STREET	Free flow								
	0.071	0.003	0.000	0.068	0.869			5.0								

Table 2. Storm Sewer Design Sheet

Q = 2.78 AIR

Q = peak flow in litres per second (L/s)

A = area in hectares (ha)

I = rainfall intensity in millimetres per hour (mm/hr)

R = runoff coefficient

rainfall intensity =		"a" / (T + "c")^"b"	
return period	10 year	**5 year**	
parameter "a"	1174.184	**998.071**	
parameter "b"	0.816	**0.814**	N-value 0.013
parameter "c"	6.014	**6.053**	

					AREAS (ha)						TIME OF CONC.	RAINFALL INTENSITY			PEAK FLOW	SEWER DATA						
									INDIVID	ACCUM						DIAMETER	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF FLOW	% Full
STREET	FROM	TO	AREA NO.	0.2	0.35	AREA 0.5	0.6	0.9	AR	AR	Tc	I	DESIGN FLOW	CONTROLLED FLOW	Q (L/s)	(mm)	(%)	(m)	(l/s)	(m/s)	(min)	
	Stub	MAIN	A1	0.00			0.00	0.06	0.05	0.05	10.00	104.19	15.75		15.75	300.00	1.00	9.00	96.69	1.37	0.11	0.16
				0.00	0.00	0.00	0.00	0.06														

Table 3 - Storage Requirements for A1 (BUILDING)

Area **0.06** hectares
Runoff Coefficient = **0.9** post developmen 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 4 - Storage Requirements for A2 (FREE FLOW)

Area **0.00** hectares
Runoff Coefficient = **0.90** post developmen 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 5 - Storage Requirements for A3 (FREE FLOW)

Area **0.01** hectares
Runoff Coefficient = **0.60** post developmen 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

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Guy 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,

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Guy St-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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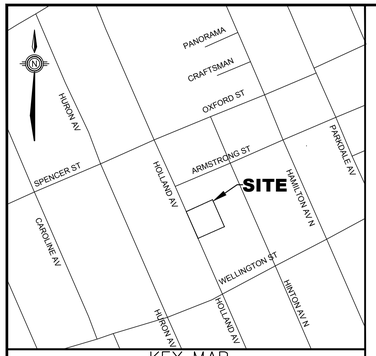
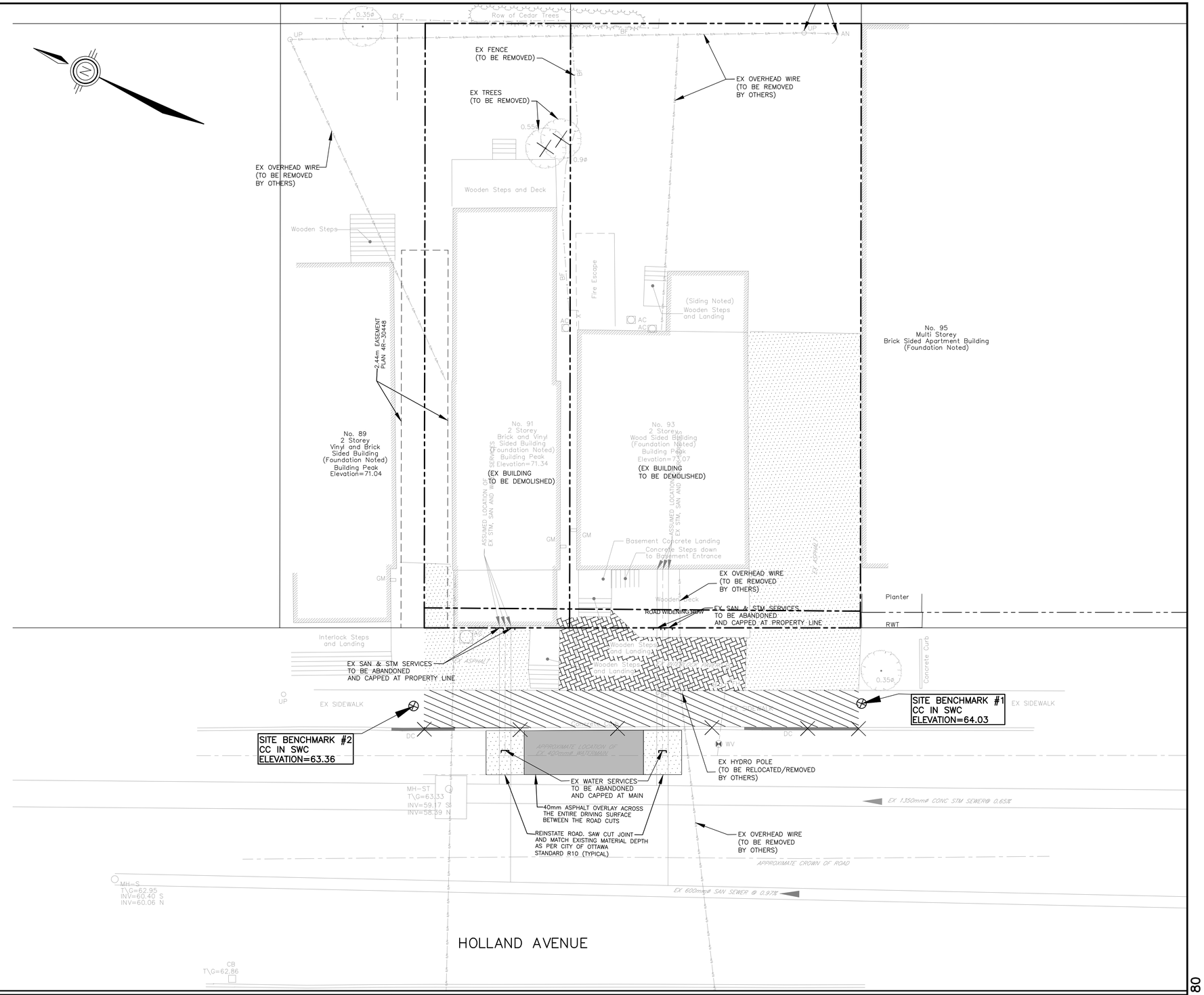
APPENDIX D



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
- 40mm ASPHALT OVERLAY ACROSS THE ENTIRE DRIVING SURFACE BETWEEN THE ROAD CUTS
- ROAD REINSTATEMENT PER R10



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NO.	REVISIONS	DATE	INITIAL	NO.	REVISIONS	DATE	INITIAL
				5	ISSUED FOR REVIEW/COORDINATION	MAR 18/22	JX
				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
6	RE-ISSUED FOR SITE PLAN APPROVAL	APR 08/22	JX	1	ISSUED FOR REVIEW/COORDINATION	APR 08/21	JX

Not Valid Unless Signed And Dated

Professional Engineers Ontario
APRIL 08, 2022
Limited Licensee
Name: J.W.XU
Number: 100171806
Category: CIVIL: see limitation
Limitations:
This licence 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

SIX-STOREY MIXED USE APARTMENT BUILDING 91-93 HOLLAND AVENUE CITY OF OTTAWA

EXISTING CONDITIONS/REMOVALS PLAN

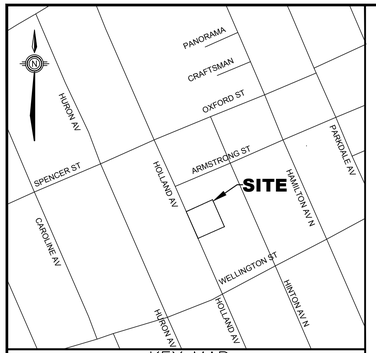
Ainley GROUP
2724 Fenton Road
Ottawa, Ontario
K1T 3T7
Telephone: (613) 822-1052
Fax: (613) 822-1573

CONTRACT No. 21007 | 001-21007-REM1

D07-12-21-0180

#18605

Apr 04, 2022 I:\DRAWINGS\21007-1 91-93 Holland Ave\Design\001-21007-REM1.dwg



KEY MAP
SCALE: N.T.S.

LEGEND

- PROPERTY LINE
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EXISTING FENCE
- EXISTING UTILITY POLE
- EXISTING CATCHBASIN
- EXISTING OVERHEAD HYDRO
- EXISTING BELL LINE
- EXISTING GASMAIN
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- PROPOSED V&VB/V&VC
- PROPOSED WATER METER
- PROPOSED REMOTE WATER METER
- DECK DRAIN 1 432mmX432mm (WATTS FD-490-F-4) T/G=63.70

NOTES: GENERAL

1. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION
2. ALL ELEVATIONS / DIMENSIONS ARE IN METRIC UNITS.
3. JOB BENCH MARK – CONFIRM WITH LEGAL SURVEYOR PRIOR TO UTILIZATION.
4. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR CATCHBASIN OUTLETS ARE PROVIDED.
5. ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE ENGINEER AND/OR CITY OF OTTAWA.
6. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT.
7. BARRIER CURBS TO BE AS PER CITY OF OTTAWA STANDARD SC1.1 MONOLITHIC CONC CURB AND SIDEWALK PER SC2.
8. CONTRACTOR IS TO COMPLY WITH THE CITY OF OTTAWA REQUIREMENTS FOR TRAFFIC CONTROL WHEN WORKING ON PUBLIC ROAD.
9. RESTORE PAVEMENT STRUCTURE AND SURFACES ON PUBLIC ROAD TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE CITY OF OTTAWA.
10. ALL MATERIAL SUPPLIED AND PLACED FOR PARKING LOT AND ACCESS ROAD CONSTRUCTION SHALL BE TO OPSS STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. (CONSTRUCTION OPSS 206, 310 & 314 MATERIALS OPSS 1001, 1003 & 1010).
11. REFER TO ARCHITECT'S SITE PLAN FOR BUILDING DIMENSIONS AND SITE LAYOUT. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
12. CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS.
13. REFER TO LANDSCAPE ARCHITECT'S PLAN FOR SIDEWALK, PATHWAYS, CONCRETE MEDIAN, WALLS, FENCES, GATES, PLANTING AND OTHER LANDSCAPE FEATURE MATERIALS AND LOCATIONS.
14. ALL CURB TO BE 150mm ABOVE FINISHED ASPHALT GRADE UNLESS OTHERWISE NOTED.
15. DESIGN ELEVATIONS AS GIVEN ON THIS PLAN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER.
16. 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/GRANULARS ENTERING STRUCTURES AND SEWERS SHALL BE IMMEDIATELY REMOVED.
17. U/G CONTRACTOR TO CONFIRM LOCATION(S) AND ELEVATION(S) OF EXISTING SERVICES AND STRUCTURES TO BE CONNECTED TO AND EXISTING SERVICES THAT MAY CAUSE CONFLICTS PRIOR TO CONSTRUCTION OF ANY NEW SEWER, WATER AND/OR STORM WATER WORKS. THE ENGINEER SHALL BE INFORMED IMMEDIATELY OF ANY ERRORS, DISCREPANCIES, CONFLICTS, OMISSIONS etc THAT ARE FOUND.
18. THE CONTRACTOR SHALL VERIFY ALL SURFACE AND SUBSURFACE CONDITIONS PRIOR TO COMMENCING CONSTRUCTION BY REVIEWING THE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY PATERSON GROUP INC., DATED APRIL 6, 2021
19. 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.
20. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL CONSTRUCTION RELATED PERMITS, FEES, INSPECTIONS AND APPROVALS REQUIRED BY THE CITY OF OTTAWA.
21. IN PREPARATION FOR THE CONSTRUCTION OF THE NEW ASPHALTIC CONCRETE SURFACED ROADWAYS AND PARKING AREAS, ALL TOPSOIL, ORGANIC MATERIAL AND ANY LOOSE/SOFT OR WET SOIL SHOULD BE REMOVED FROM THE PROPOSED SUBGRADE SURFACE AND REPLACED WITH SUITABLE COMPACTED EARTH BORROW OR GRANULAR FILL.
22. PRIOR TO PLACING GRANULAR FILL FOR THE ROADWAYS AND PARKING AREAS, THE EXPOSED SUBGRADE SHOULD BE HEAVILY PROOF ROLLED WITH A 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.
23. 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 RECIEVING 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.
24. THE CONTRACTOR IS TO PROVIDE 'AS-CONSTRUCTED' INFORMATION (i.e. ASPHALT GRADES, TOP OF CURB GRADES, WATERMAIN OBVERTS, SEWER INVERTS, ETC.) TO THE ENGINEER AND/OR CLIENT.
25. 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.
26. 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.
27. 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 ø 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.

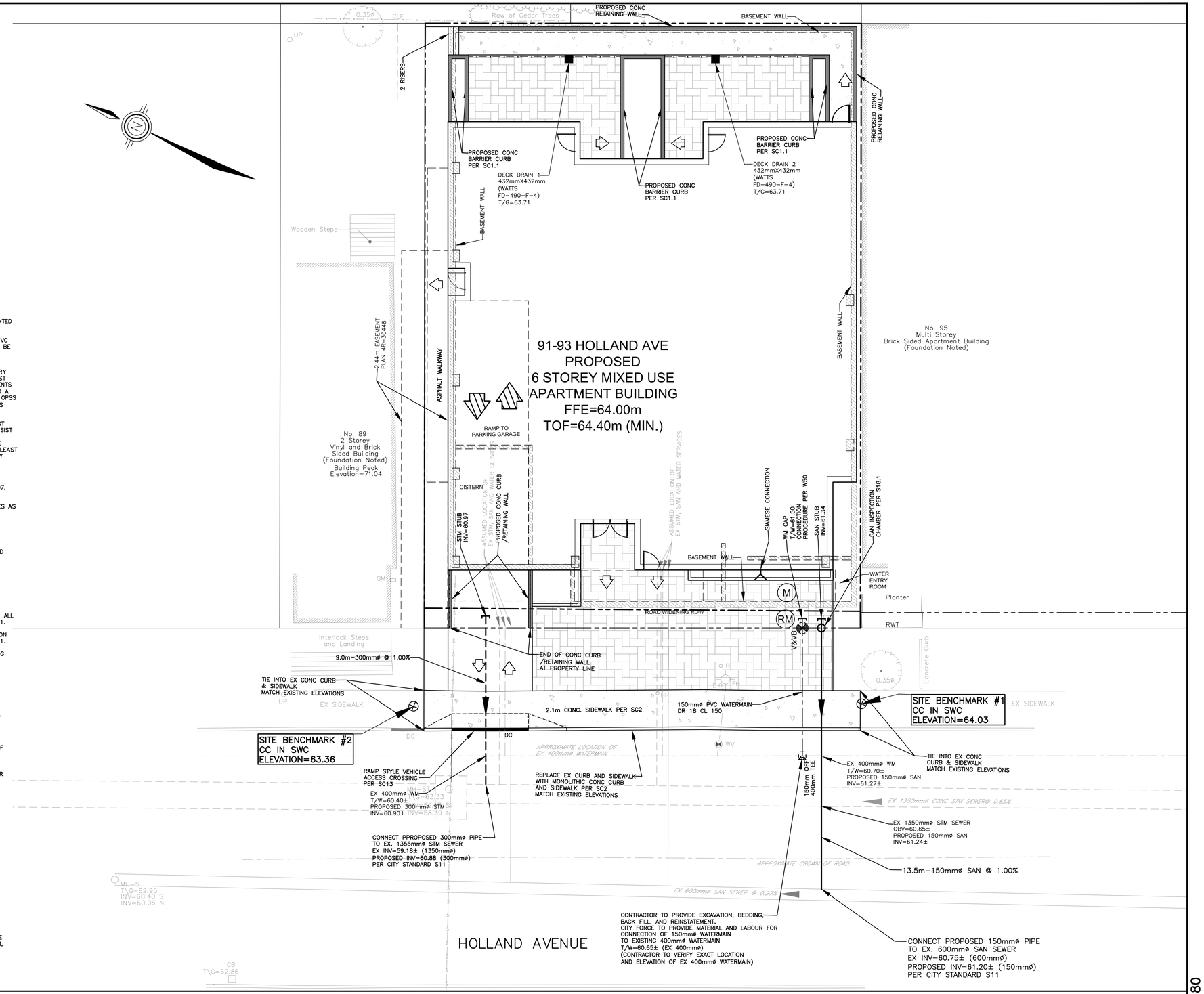
NOTES: SEWER

1. 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 65D. UNLESS OTHERWISE NOTED.
2. 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.
3. 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.
4. 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.
5. SUPPLY AND INSTALL ALL PIPING AND APPURTENANCES AS SHOWN TO WITHIN 1.0m OF BUILDING WALLS. PROVIDE TEMPORARY CAPS.
6. DECK DRAINS TO BE 432mmX432mm (WATTS FD-490-F-4).
7. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS AND COORDINATION FOR ALL INSPECTION AND TESTING.
8. THE FOUNDATION DRAIN IS TO BE CONNECTED TO THE STORM SEWER (IF APPLICABLE).
9. FOUNDATION DRAIN BACKWATER VALVES OR BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER CITY STANDARD S14.
10. SANITARY BACKWATER VALVES SHALL BE INSTALLED ON ALL SANITARY SERVICE LATERALS PER CITY STANDARD S14.1.
11. SANITARY INSPECTION CHAMBER SHALL BE INSTALLED ON SANITARY SERVICE LATERALS PER CITY STANDARD S18.1.
12. ALL FLOOR DRAINS WITHIN THE UNDERGROUND PARKING ARE TO BE DIRECTED TO THE SANITARY LATERAL.

NOTES: WATERMAIN

1. 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.
2. INSTALLATION OF WATER METER AND REMOTE RECEPTACLE SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS W30 (REFER TO MECHANICAL DRAWINGS).
3. ALL WATERMAIN TO BE INSTALLED AT MINIMUM COVER OF 2.4m. IF COVER IS LESS THAN 2.4m, REFER TO CITY STANDARD W21 & W22.
4. WATERMAIN BEDDING IS TO BE AS PER CITY STANDARD DETAIL W17.
5. THRUST BLOCKS AND RESTRAINT AS PER CITY OF OTTAWA DWGS: W25.3 AND W25.4, W25.5 AND W25.6.
6. WATERMAIN VALVE BOX AS PER CITY OF OTTAWA STANDARD W24. .
7. CATHODIC PROTECTION REQUIRED FOR ALL IRON FITTINGS PER CITY OF OTTAWA DWGS: W39 , W40, W41
8. UNLESS OTHERWISE NOTED WATER SERVICE LATERAL TO BUILDING & HYDRANT SHALL BE PVC DR 18 AT SIZES INDICATED.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS AND COORDINATION FOR ALL INSPECTION AND TESTING.
10. 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.



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NO.	REVISIONS	DATE	INITIAL	NO.	REVISIONS	DATE	INITIAL
				5	ISSUED FOR REVIEW/COORDINATION	MAR 18/22	JX
				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
6	RE-ISSUED FOR SITE PLAN APPROVAL	APR 08/22	JX	1	ISSUED FOR REVIEW/COORDINATION	APR 08/21	JX

Not Valid Unless Signed And Dated

Professional Engineers Ontario
APRIL 08, 2022
Limited Licensee
Name: J.W.XU
Number: 100171806
Category: CIVIL: see limitation
Limitations:
This licence 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

SIX-STOREY MIXED USE APARTMENT BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

SITE SERVICING PLAN

Ainley GROUP
2724 Fenton Road
Ottawa, Ontario
K1T 3T7
Telephone: (613) 822-1052
Fax: (613) 822-1573

CONTRACT No. 21007 | 002-21007-S1

D07-12-21-0180

#18605

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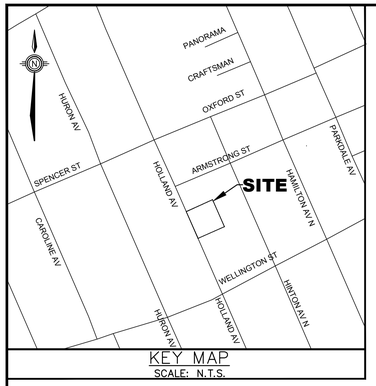
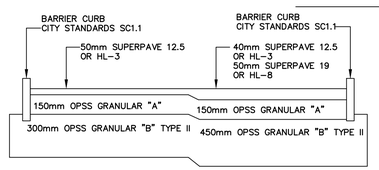


KEY MAP
SCALE: N.T.S.

LEGEND

- PROPERTY LINE
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EXISTING FENCE
- EXISTING UTILITY POLE
- EXISTING CATCHBASIN
- EXISTING OVERHEAD HYDRO
- EXISTING BELL LINE
- EXISTING GASMAIN
- EXISTING ELEVATION
- PROPOSED GRADE
- DIRECTION AND SLOPE
- EP/TC/SW GRADE
- PROPOSED V&VB
- EMERGENCY OVERLAND FLOW
- DECK DRAIN 1 432mmX432mm (WATTS FD-490-F-4) T/G=63.70
- H.P. RIDGE LINE
- B.L. BREAK LINE
- 40mm ASPHALT OVERLAY ACROSS THE ENTIRE DRIVING SURFACE BETWEEN THE ROAD CUTS
- ROAD REINSTATEMENT PER R10



PARKING AREAS (LIGHT DUTY) N.T.S.

ACCESS LANES (HEAVY DUTY) N.T.S.

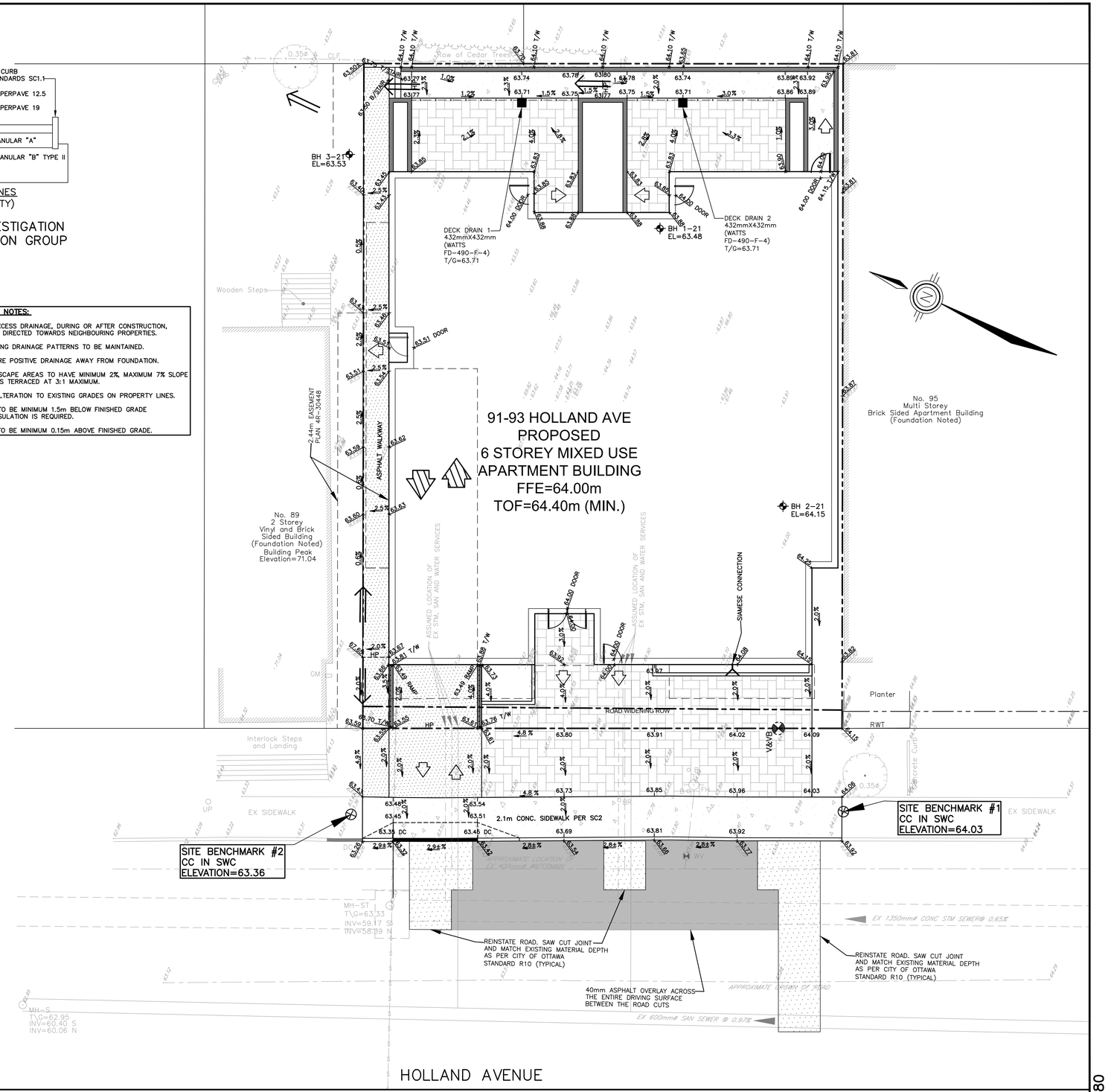
(REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY PATERSON GROUP DATED APRIL 26, 2021)

GRADING NOTES:

1. NO EXCESS DRAINAGE, DURING OR AFTER CONSTRUCTION, TO BE DIRECTED TOWARDS NEIGHBOURING PROPERTIES.
2. EXISTING DRAINAGE PATTERNS TO BE MAINTAINED.
3. ENSURE POSITIVE DRAINAGE AWAY FROM FOUNDATION.
4. LANDSCAPE AREAS TO HAVE MINIMUM 2%, MAXIMUM 7% SLOPE UNLESS TERRACED AT 3:1 MAXIMUM.
5. NO ALTERATION TO EXISTING GRADES ON PROPERTY LINES.
6. USF TO BE MINIMUM 1.5m BELOW FINISHED GRADE OR INSULATION IS REQUIRED.
7. TOF TO BE MINIMUM 0.15m ABOVE FINISHED GRADE.

NOTES: GENERAL

1. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION
2. ALL ELEVATIONS / DIMENSIONS ARE IN METRIC UNITS.
3. JOB BENCH MARK – CONFIRM WITH LEGAL SURVEYOR PRIOR TO UTILIZATION.
4. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR CATCHBASIN OUTLETS ARE PROVIDED.
5. ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE ENGINEER AND/OR CITY OF OTTAWA.
6. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT.
7. BARRIER CURBS TO BE AS PER CITY OF OTTAWA STANDARD SC1.1 MONOLITHIC CONC CURB AND SIDEWALK PER SC2.
8. CONTRACTOR IS TO COMPLY WITH THE CITY OF OTTAWA REQUIREMENTS FOR TRAFFIC CONTROL WHEN WORKING ON PUBLIC ROADS .
9. RESTORE PAVEMENT STRUCTURE AND SURFACES ON PUBLIC ROADS TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE CITY OF OTTAWA.
10. ALL MATERIAL SUPPLIED AND PLACED FOR PARKING LOT AND ACCESS ROAD CONSTRUCTION SHALL BE TO OPSS STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. (CONSTRUCTION OPSS 206, 310 & 314 MATERIALS OPSS 1001, 1003 & 1010).
11. REFER TO ARCHITECT'S SITE PLAN FOR BUILDING DIMENSIONS AND SITE LAYOUT. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
12. CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS.
13. REFER TO LANDSCAPE ARCHITECT'S PLAN FOR SIDEWALK, PATHWAYS, CONCRETE MEDIAN, WALLS, FENCES, GATES, PLANTING AND OTHER LANDSCAPE FEATURE MATERIALS AND LOCATIONS.
14. ALL CURB TO BE 150mm ABOVE FINISHED ASPHALT GRADE UNLESS OTHERWISE NOTED.
15. DESIGN ELEVATIONS AS GIVEN ON THIS PLAN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER.
16. 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/GRANULARS ENTERING STRUCTURES AND SEWERS SHALL BE IMMEDIATELY REMOVED.
17. U/G CONTRACTOR TO CONFIRM LOCATION(S) AND ELEVATION(S) OF EXISTING SERVICES AND STRUCTURES TO BE CONNECTED TO AND EXISTING SERVICES THAT MAY CAUSE CONFLICTS PRIOR TO CONSTRUCTION OF ANY NEW SEWER, WATER AND/OR STORM WATER WORKS. THE ENGINEER SHALL BE INFORMED IMMEDIATELY OF ANY ERRORS, DISCREPANCIES, CONFLICTS, OMISSIONS etc THAT ARE FOUND.
18. THE CONTRACTOR SHALL VERIFY ALL SURFACE AND SUBSURFACE CONDITIONS PRIOR TO COMMENCING CONSTRUCTION BY REVIEWING THE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY PATERSON GROUP INC., DATED APRIL 26, 2021.
19. 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.
20. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL CONSTRUCTION RELATED PERMITS, FEES, INSPECTIONS AND APPROVALS REQUIRED BY THE CITY OF OTTAWA.
21. IN PREPARATION FOR THE CONSTRUCTION OF THE NEW ASPHALTIC CONCRETE SURFACED ROADWAYS AND PARKING AREAS, ALL TOPSOIL, ORGANIC MATERIAL AND ANY LOOSE/SOFT OR WET SOIL SHOULD BE REMOVED FROM THE PROPOSED SUBGRADE SURFACE AND REPLACED WITH SUITABLE COMPACTED EARTH BORROW OR GRANULAR FILL.
22. PRIOR TO PLACING GRANULAR FILL FOR THE ROADWAYS AND PARKING AREAS, THE EXPOSED SUBGRADE SHOULD BE HEAVILY PROOF 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.
23. 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 RECIEVING 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.
24. THE CONTRACTOR IS TO PROVIDE 'AS-BUILT' INFORMATION (i.e. ASPHALT GRADES, TOP OF CURB GRADES, WATERMAIN OBVERTS, SEWER INVERTS, ETC.) TO THE ENGINEER AND/OR CLIENT.
25. 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.
26. 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.



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NO.	REVISIONS	DATE	INITIAL	NO.	REVISIONS	DATE	INITIAL
				5	ISSUED FOR REVIEW/COORDINATION	MAR 18/22	JX
				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
6	RE-ISSUED FOR SITE PLAN APPROVAL	APR 08/22	JX	1	ISSUED FOR REVIEW/COORDINATION	APR 08/21	JX

Not Valid Unless Signed And Dated

Professional Engineers Ontario
APRIL 08, 2022
Limited Licensee
Name: J.W.XU
Number: 100171806
Category: CIVIL: see limitation
Limitations:
This licence 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

SIX-STOREY MIXED USE
APARTMENT BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

GRADING AND DRAINAGE PLAN

Ainley GROUP
2724 Fenton Road
Ottawa, Ontario
K1T 3T7
Telephone: (613) 822-1052
Fax: (613) 822-1573

CONTRACT No. 21007 | 003-21007-GR1

D07-12-21-0180

#18605

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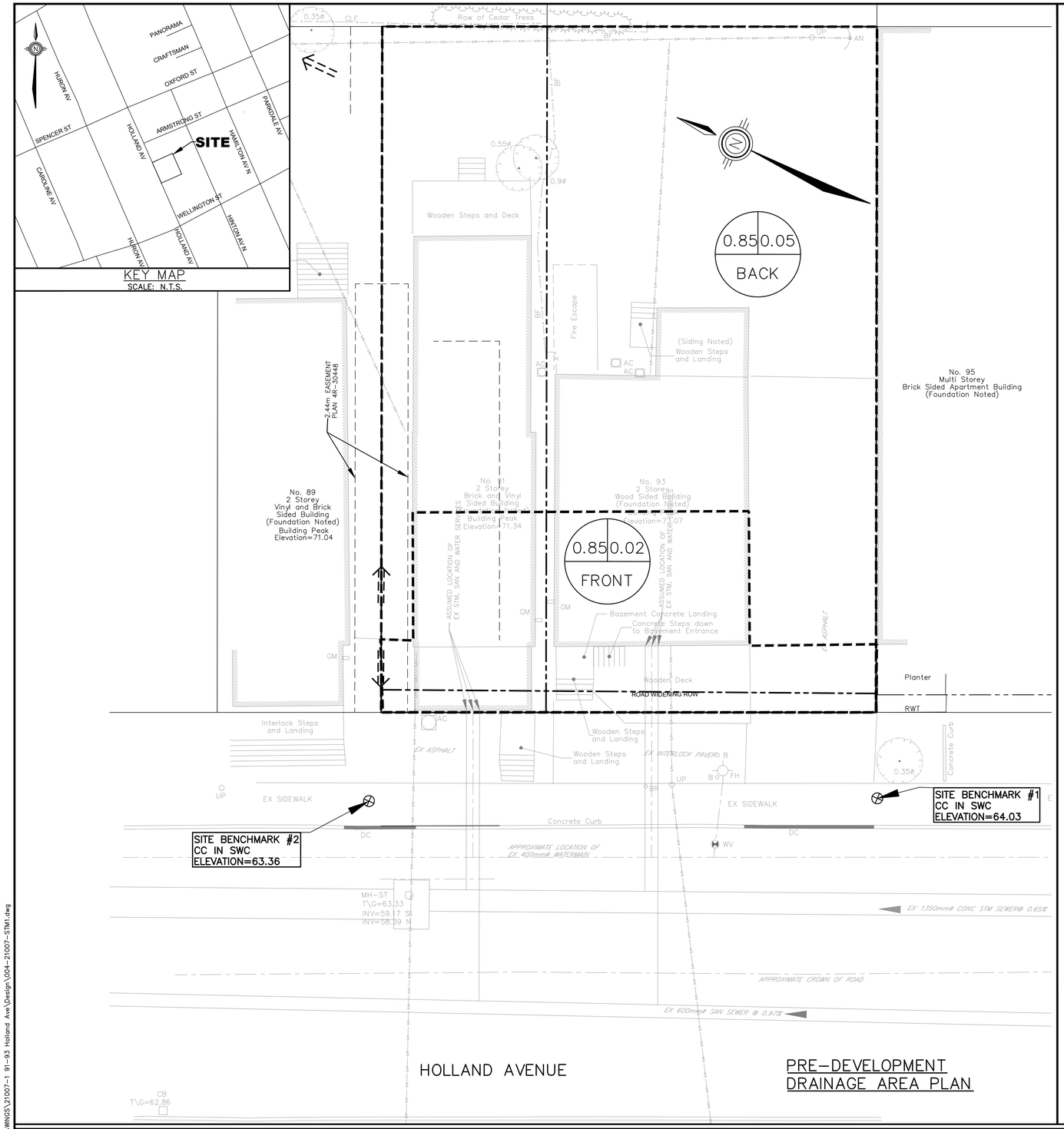
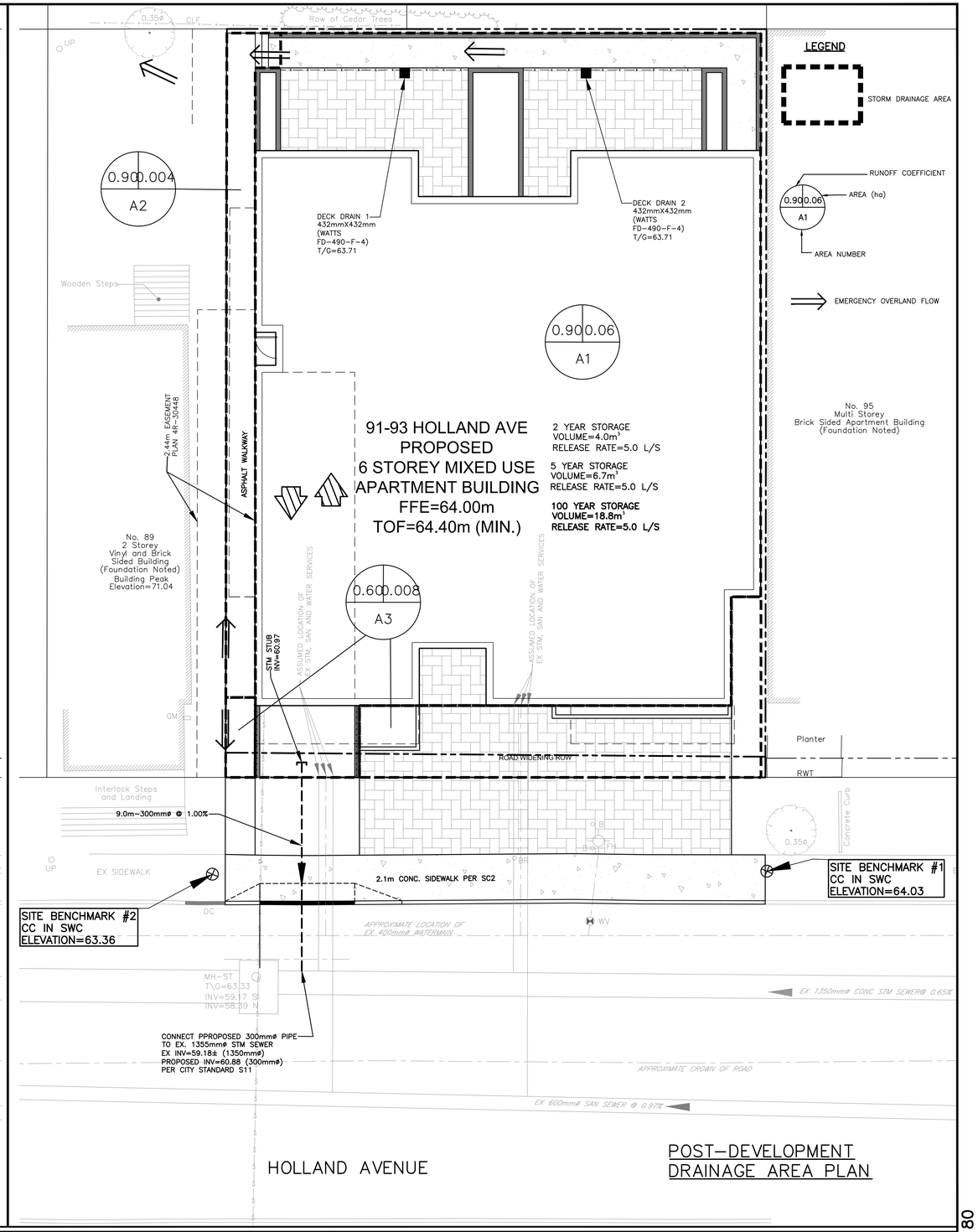


PRE-DEVELOPMENT DRAINAGE AREA PLAN



POST-DEVELOPMENT DRAINAGE AREA PLAN

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DRAWN:	MH
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SIX-STOREY MIXED USE
APARTMENT BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

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

Ainley GROUP
2724 Fenton Road
Ottawa, Ontario
K1T 3T7
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D07-12-21-0180

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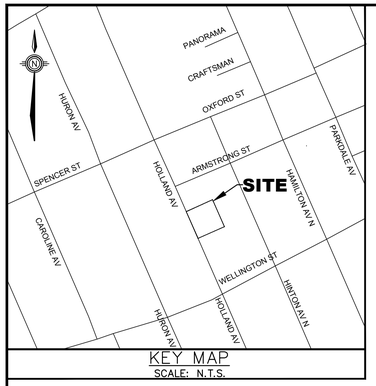


KEY MAP
SCALE: N.T.S.

LEGEND

SILT FENCE (PER OPSD-219.110)

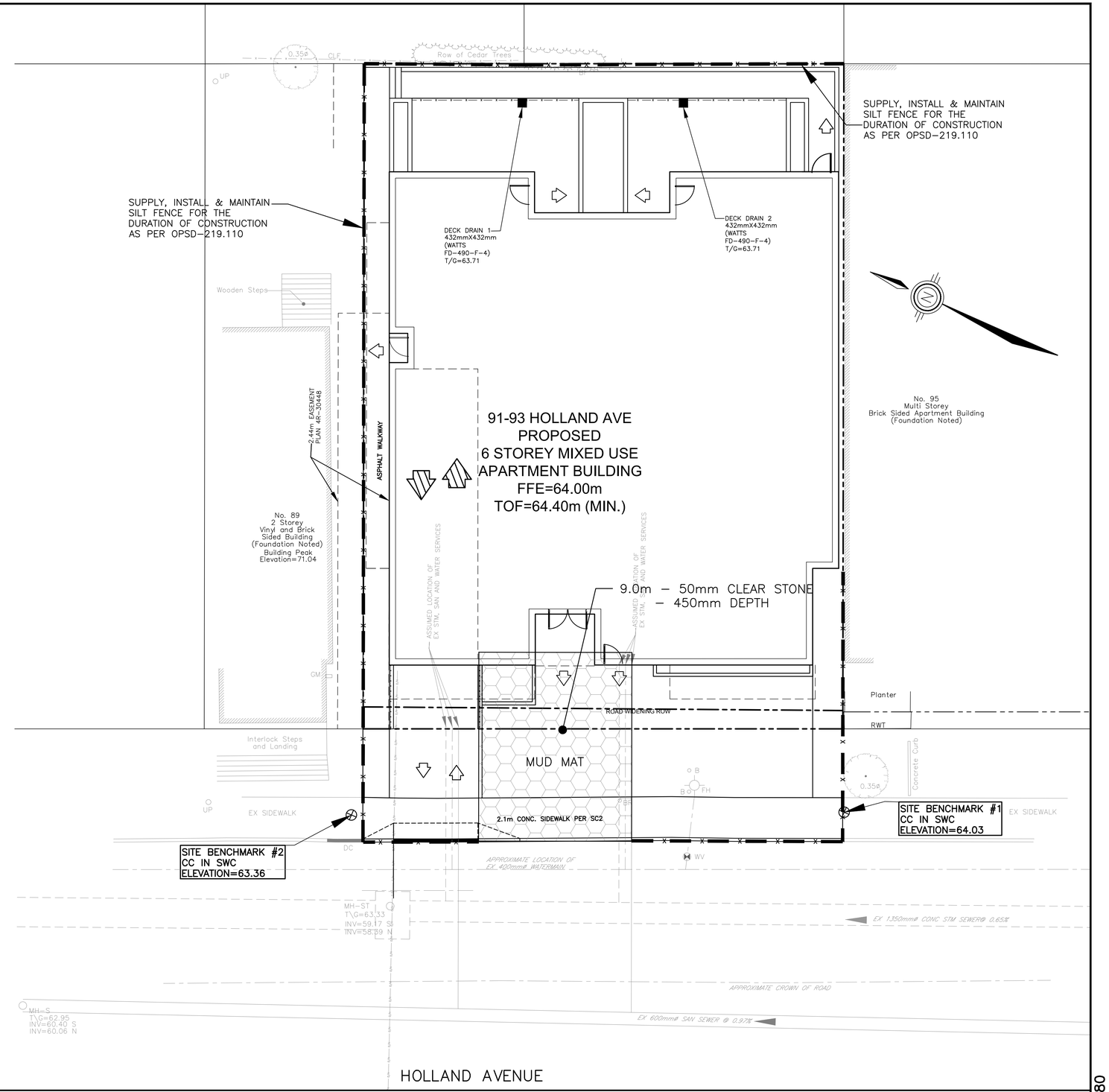
DECK DRAIN 1
432mmX432mm
(WATTS
FD-490-F-4)
T/G=63.70

EROSION AND SEDIMENT CONTROL NOTES:

1. THE SEDIMENT AND EROSION CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF THE CITY OF OTTAWA SITE INSPECTOR OR CONSERVATION AUTHORITY.
2. 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 ø 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.
3. 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 RECIEVING 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.

MUD MAT NOTES

1. THE GRANULAR MATERIAL WILL REQUIRE PERIODIC REPLACEMENT AS IT BECOMES CONTAMINATED BY VEHICLE TRAFFIC.
2. SEDIMENT SHALL BE CLEANED FROM PUBLIC ROADS AT THE END OF EACH DAY.
3. SEDIMENT SHALL BE REMOVED FROM PUBLIC ROADS BY SHOVELING OR SWEEPING AND DISPOSED OF PROPERLY IN A CONTROLLED SEDIMENT DISPOSAL AREA.



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