Appendix A –

Pre-Consultation Comments (April 26, 2023)

City of Cambridge Pre-consultation Application Comments Checklist

Please note that the comments are based on the proposal as submitted. Due to changing policies and regulations, these comments are valid for a period of two (2) years from the date of issuance by City staff.
The following professional documents/reports may be required as part of the development application/review process. Please note that various fees are associated with each application and there are also professional costs for the preparation of required documents/reports. **All requirements identified are minimum and determined as of the date of the pre-consultation meeting with the information available at that time.**

Application File No.	D01/23
Name of Applicant:	Homes Inc Caiden-Keller
Municipal Address of Subject Property:	36 Elliott Street
Description of Proposal:	The City of Cambridge has received a Pre-Consultation application for the lands at 36 Elliott Street. The pre-consultation application proposes to rezone the property from the R4 zone to the RM1 zone to facilitate the development of an apartment house containing 8 units or more. Based on an early review of the application, the proposed development will require an Official Plan Amendment to permit an increased density of 81 units per hectare (maximum of 40 units per hectare is currently permitted) in addition to the Zoning By-law Amendment. The proposed zoning amendment considers the establishment of four site-

	specific provisions including: - to recognize the existing lot frontage; - to permit a reduced side yard setback; - to permit a reduced landscape area; - to permit a reduced visitor parking rate
Official Plan Designation:	Low / Medium Density Residential
Zoning Classification:	R4
Pre-consultation Comment date:	April 26, 2023
City Planning Contact:	Michael Campos

A. Applications required for submission of a complete planning application:

copies of the application forms are available on the City's website at https://www.cambridge.ca/en/build-invest-grow/Planning-Process.aspx

Application Type	Check if applies
Official Plan Amendment	✓
Zoning By-law Amendment	✓
Subdivision	
Site Plan (if planning application is approved). Applicant has option of submitting a site plan application concurrently with other planning applications.	
Condominium	
Part Lot Control	
Consent/severance	
Minor Variance	
Removal of Holding Provision	
Temporary Use By-law	

Other	

B. Documents/Studies required for submission of a complete planning application: All reports must be prepared by qualified professionals at applicant's cost. City may require peer review of any studies at applicant's cost. PDF copies of all required information must be submitted with the applicable planning application to the City Planning contact. The City reserves the right to post supporting studies for a complete future Planning application on the City website.

Please note that for submission of a future planning application(s), application forms that are incomplete and/or missing the required supporting information and/or fees cannot be accepted by the City of Cambridge and will be returned to the applicant.

Document/Study Type	Check if applies
All Land Uses	
Accessibility review – review by the City's Accessibility Advisory Committee may be required	✓
Agreement between property owner and City required to be registered on title if application is eventually approved	
Application fees – posted on the City's website.	✓
Application form – fully completed	✓
Cash in lieu of parkland or parkland dedication required – subdivision, condo or condition of severance	
City Development Charges are applicable. Core Area sites, brownfields and designated heritage properties are currently exempt from City development charges. Eligible affordable housing projects may have development charges payment deferred. City development charges can be found at:	

https://www.cambridge.ca/en/build-invest-grow/Development-Charges.aspx	
Environmental Impact Study – terms of reference must be approved by the City of Cambridge and where applicable, Grand River Conservation Authority and the Region of Waterloo before any work on the study starts	
Financial Impact Analysis – section 10.14 of the City's Official Plan	
Financial Incentives may be available for this proposal as follows: - Affordable Housing - Building Revitalization Program for façade improvements in core areas - Brownfields redevelopment - Designated heritage building - Design Guide Program in core areas - Tax Increment Grant for brownfields or affordable housing sites in the area covered by the affordable housing CIP.	✓
Floor plans	✓
Functional Servicing Report - Development Engineering staff should be consulted for City standards	
Growth and Intensification Study (applies to core areas, regenerations areas) – If proposal is alignment with the Official Plan objectives for this area, proposal can be submitted while the study is still underway. The City is undertaking a study which will lead to the preparation of a secondary plan affecting this area. The applicant is encouraged to participate in further meetings regarding the secondary plan for this area.	
Heritage Impact Assessment - terms of reference must be approved by the City of Cambridge before any work on the Assessment starts. Review by the City's Municipal Heritage Advisory Committee may be required for properties currently on the City's Heritage Register or properties adjacent to a property currently on the City's	

Heritage Register. HIA review fee required as per Municipal Fees and charges	
Hydrogeological Study	
Landscaping Plan	✓
LED lighting or signage proposed – for current or future proposals using LED lighting, a lighting analysis is required.	
Lighting/photometrics plan- All light spill must be limited to 0 at adjacent property lines and 0.5 adjacent to municipal road.	✓
Light Rail Transit Route – an Environmental Assessment by the Region of Waterloo is underway for Stage 2 of the LRT route in South Kitchener and Cambridge. Any requirements from the Region about this site relative to the Environmental Assessment must be addressed.	
Elevations	✓
Noise study to the satisfaction of the City and Region of Waterloo *stationary source noise study required *non-stationary – rail or transportation noise study required	
Parking Study for a proposed parking reduction	✓
Planning Justification Report - Report must include a detailed public consultation strategy in addition to the statutory public meeting under the Planning Act. - Complete analysis of how the application is consistent with the 2020 Provincial Policy Statement and conforms with the 2020 Provincial Growth Plan, and current Regional and City Official Plans and addresses climate change	✓
Record of Site Condition – written acknowledgement by the Ministry of Environment, Conservation and Parks that the RSC has been filed is required. This need for a RSC is required either as a mandatory filing by Provincial	

legislation or required by City procedures.	
Sanitary Servicing capacity assessment to be included with pre-consultation application - under 5 residential units no assessment is required. Separate application fee required with submission of pre-consultation application.	
Site concept plan including list of site statistics relative to existing and proposed zoning regulations (e.g. all setbacks, building heights, parking, etc.)	✓
Shadow and Wind Study - for proposals 6 storeys and higher	
Source Water Protection - site is located within a Source Water Protection Area and requires a Notice of Source Protection Plan Compliance (Section 59 notice) from the Region of Waterloo (taps/regionofwaterloo.ca) as part of a complete application.	✓
Stormwater Management Report – Development Engineering staff should be consulted for City standards	✓
Traffic Impact study – terms of reference must be approved by City's Transportation Staff before any work on the study starts	
Trail connections to be identified (particularly for core area proposals)	
Tree Management Plan/Vegetation Plan – please note that the City has a tree cutting by-law in effect. No tree removals are permitted on private property unless the City's Park Operations Division are consulted first.	
Urban Design Brief in accordance with Section 5 of the City's Official Plan	
Urban Design Guidelines for either Galt, Main Street in Galt, Hespeler or Preston – proposal to be designed in accordance with these guidelines	
Vibration analysis	
Viewshed analysis – directions to be addressed include:	

(directions to be noted by City staff)	
Other studies/reports requested by agency comments __Preliminary Grading and Servicing Plans__ __Truck Turning Plan_____ __Fire Safety Plan_____ _____ _____	✓
Residential	
Applicable items from all land uses list above	✓
Affordable units – identify whether any affordable housing is being proposed, either through proposed built form and/or CMHC's annual affordable rental or ownership rates	✓
Bonusing in accordance with Section 10.16 in the City's Official Plan. NB: The bonusing process may be altered or replaced as a result of amendments from Bill 108.	
Condominium - if Common Elements - Parcel of Tied Land (POTL): note whether specific Zoning relief is required; whether the proposed exclusive use area conflicts with any services (i.e. light standard, fire hydrant etc.); or any other relief/conflict that is proposed. A future minor variance application may be required if required relief is not identified at the planning application stage.	
Condominium - if phased- note whether the parking and amenity area complies with Zoning for each proposed phase	
Density/Floor Space index calculation: (pre-consultation proposal to identify proposed density/or where applicable floor space index and this calculation to be confirmed by City staff) Density of: _____	✓

Floor Space Index of: _____	
Minimum Distance Separation calculation – for proposed sensitive uses proximate to livestock barns	
Phasing Plan – for subdivision	
Provincial D Series Guidelines consideration for sensitive uses proximate to industry (can be included in the required planning justification study)	
Industrial	
Applicable items from all land uses list above	
Condominium if Common Elements - Parcel of Tied Land (POTL): note whether specific Zoning relief is required; whether the proposed exclusive use area conflicts with any services (i.e. light standard, fire hydrant etc.); or any other relief/conflict that is proposed. A future minor variance application may be required if required relief is not identified at the planning application stage.	
Condominium if Phased - note whether the parking and amenity area complies with Zoning for each proposed phase	
Dust, noise and vibration study	
Phasing Plan – for subdivision	
Provincial D Series Guidelines consideration for sensitive uses proximate to industry (can be included in required planning justification study)	
Urban Design Guidelines for business parks (Cambridge Business Park, LG Lovell Industrial Park, Eastern Industrial Park) **-** from City's Economic Development Division - development to be designed in accordance with these guidelines	
Commercial	
Applicable items from all land uses list above	
Condominium if Common Elements - Parcel of Tied	

Land (POTL): note whether specific Zoning relief is required; whether the proposed exclusive use area conflicts with any services (i.e. light standard, fire hydrant etc.); or any other relief/conflict that is proposed. A future minor variance application may be required if required relief is not identified at the planning application stage.	
Condominium if Phased - note whether the parking and amenity area complies with Zoning for each proposed phase	
Market impact assessment – completed in accordance with the City's terms of reference which is located on the City's website	
Institutional	
Applicable items from all land uses list above	
Provincial D Series Guidelines consideration for sensitive uses proximate to industry (can be included in required planning justification study)	
Other	
Applicable items from all land uses list above	
Residential/commercial mixed use development – separate parking calculations for residential and commercial uses	
Provide concept sketch showing any existing or proposed easements or identify need for blanket easements.	✓

C. City Planning Staff Comments (Development & Policy)

City of Cambridge, Development Planning Section

Contact: Michael Campos
Phone: 519-623-1340 ext. 4264
Email: Camposm@cambridge.ca

Development Planning - Comments:

- Planning Staff commend the applicant for submitting an infill development proposal for the property at 36 Elliott Street that will facilitate the development of multiple residential rental housing in a low-rise form of development that complements the existing neighbourhood.
- The subject lands are designated “Low/Medium Density Residential” by the City’s Official Plan. This designation permits a maximum density of 40 units per hectare. The site is presently zoned Residential – R4.
- City Staff have reviewed both design options submitted for the lands. Concept one provides for a driveway canopy that results in a narrower driveway access. According to Section 2.2.4.1 of the Zoning By-law, the applicant would continue to be compliant with the minimum width of the access driveway as per this section of the By-law. As such, Staff’s preference is to provide larger unit sizes. Additionally, the covered area would permit a covered outdoor area for residents to enjoy. Concept 1 is therefore preferred. Please review Transportation’s comments further below regarding Commercial Access widths that appear to be applicable to this proposal and may require variance.
- An Official Plan Amendment application would be required to establish a site-specific policy for the lands to permit the requested increase in density to 81 units per hectare. The site is located adjacent to the regeneration area, which would permit a maximum density of 75 units per hectare. As such, Staff recommend that the applicant consider the possible reduction of the development by two units. This would bring the proposed density down to 61 units per hectare and would provide the ability to successfully accommodate the required number of parking spaces and visitor spaces on site. Planning Staff want to make the applicant aware that concerns regarding lack of sufficient visitor parking may be a contentious item among members of the public. It is recommended that the applicant

work to accommodate the required number of spaces on the property for the development.

- A Zoning By-law Amendment application is required to rezone the lands from the R4 zone to an appropriate zone that would accommodate the proposed built form. Staff have reviewed the proposed RM1 zoning for the lands and are supportive of the rezoning of the lands to this multiple-residential zone.
- Based on our review of the application, Staff can confirm that site-specific provisions would be required including to recognize the existing lot frontage of the property, which would not meet the minimum 30 metre requirement; for the reduction of the side yard setback; the reduction of the required landscaped area of the lot; and a reduced visitor parking rate. Please also note that Section 2.2.2.3(f) of the Zoning By-law also requires that no access driveway in an RM-class zone be located within 6 metres of a window of a habitable room of a dwelling unit as measured perpendicular to the wall containing such window, where the surface of the floor in such habitable room is less than 1.0 metre above the finished grade.
    - Staff would like to note that if the applicant chose to reduce the total number of units by two, the reduction would result in the property being able to accommodate the required parking and possibly an increase in the total landscaped area, which would provide additional space for residents to enjoy on site.
- The following Planning Application fees would be required with the submission of an Official Plan Amendment and Zoning By-law Amendment application for the lands:
    - Combined OPA/ZBA Application (Minor): **$23,000.00**
    - Regional Review Fee: **$10,000.00**

Policy Planning
Contact: Bryan Cooper
Phone: 519-623-1340 ext. 4598
Email: Cooperb@cambridge.ca

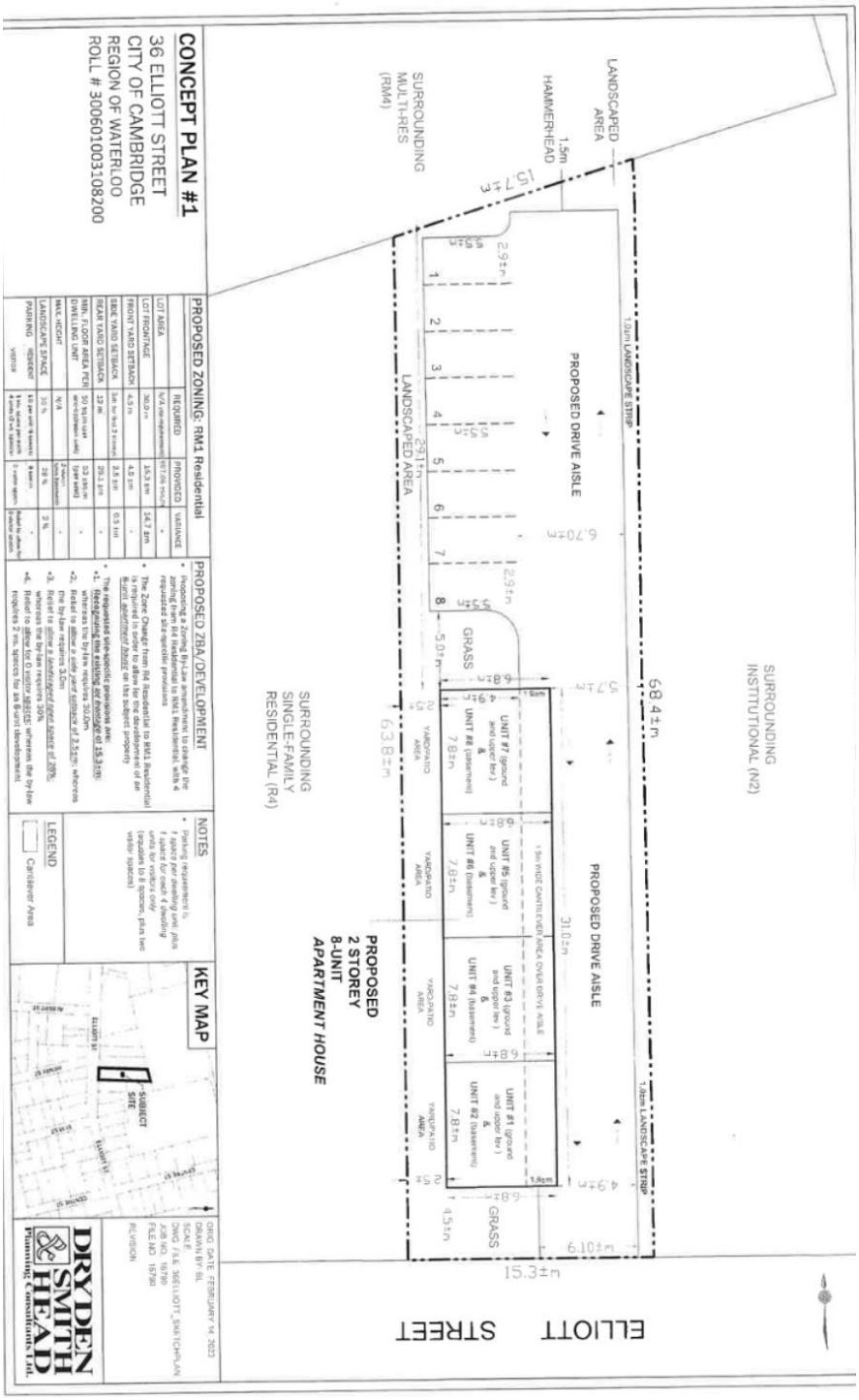
The subject property is designated Low/Medium Density residential in the Official Plan. This land use designation permits residential development up to a maximum density of 40 units per hectare (UPH). The subject property is approximately 0.1 ha in area.

Two proposals for an 8-unit apartment building have been submitted. 8 units on the subject property results in an approximate density of 80 units per hectare and therefore an Official Plan and Zoning By-law amendment application is required.

A Planning Justification Report is required to address section 5 - Urban Design, section 8.4.1 regarding Affordable Housing, 8.4.2.1 (Residential Compatibility) and 8.4.2.2 (regarding intensification in existing neighborhoods).

Aerial Image of the Property

Concept 1 (Preferred)



D. Additional comments raised by other City Divisions or Agencies:

Region of Waterloo, Transportation Planner
Contact: Region of Waterloo
Phone: 519-575-4400
Email: PlanningApplications@regionofwaterloo.ca

• The Region of Waterloo has not yet provided their comments on this pre-consultation application. Comments may be provided under separate cover.

Region of Waterloo, Community Planning
Contact: Region of Waterloo
Phone: 519-575-4400
Email: PlanningApplications@regionofwaterloo.ca

• The Region of Waterloo has not yet provided their comments on this pre-consultation application. Comments may be provided under separate cover.

City of Cambridge, Building
Contact: Kathryn MacDonald
Phone: (519) 621-0740 ext. 4306
Email: macdonaldk@cambridge.ca

• The City's Building Department has not provided their comments on this pre-consultation. Comments may be provided under separate cover.

City of Cambridge, Economic Development
Contact: Trevor McWilliams
Phone: (519) 740-4683 Ext. 4800
Email: mcwilliamst@cambridge.ca

• The City's Economic Development Department has no comments on this pre-consultation application.

City of Cambridge, Senior Planner - Environment
Contact: Kathy Padgett
Phone: (519) 623-1340 Ext. 4826
Email: padgettk@cambridge.ca

The site is located within a Source Water Protection Area and requires a Notice of Source Protection Plan Compliance (Section 59 Notice) from the Region as

part of a complete application (go to taps.regionofwaterloo.ca and select "I need a document to attach to a building permit or planning approval application – Notice of Source Protection Plan Compliance").

City of Cambridge Development Engineering
Contact: Adam Ripper
Phone: (519) 623-1340 Ext. 4778
Email: rippera@cambridge.ca

Submission Requirements

- Provide a Preliminary Site Grading Plan
- Provide a Preliminary Site Servicing Plan
- Provide a Stormwater Management Report

Development Engineering Comments

Stormwater Management

- The City's 5 year IDF parameters are a = 1219.8, b = 10.5 and c = 0.823. The City's 100 year IDF parameters are a = 3015.1, b = 21 and c = 0.870.
- The City's SWM design criterion is to control the post development peak flows to the existing conditions peak flows for the range of design storms.
- The City's water quality control requirement is to provide Level 1 (enhanced) treatment levels as per the MOECC SWM Practices Planning and Design Manual (2003).

Servicing

- The City's records indicate that the following municipal services are located in the Elliot Street right-of-way immediately adjacent to the subject site:
  - 200mm dia. watermain
  - 200mm dia. sanitary sewer
  - 675mm dia. storm sewer
- Show all existing municipal services (water, storm and sanitary) within the municipal ROW across the entire frontage.

- By-Law #146-03 permits only one (1) water service and meter per property. The City does not make provision(s) for sub-metering on a property.
- Any redundant water service is to be capped at the watermain at 100% Owner's expense (works completed by City's Public Works Division).
- By-Law #146-03 specifies that if the length of the water service piping between the property line and the building exceeds 30 metres, the Owner shall build, at their own expense, a chamber, protected against frost and theft, easily accessible off of the roadway, and as close as practical to the property line, for the purpose of housing the water meter.

Grading

- No sheet flow from any impervious areas is allowed to be discharged directly onto the ROW.
- Provide centerline of road elevations for full frontage.
- Provide existing geodetic elevations of adjacent properties along property lines for a minimum of 10 metres off the applicant's property line.
- Use drainage arrows to indicate existing surface drainage of abutting properties along property lines.
- Drainage swales/ditches must have capacity for up to the 100-year flows from respective tributary areas. Indicate minimum side slopes and depth of all drainage swales/ditches in a cross-sectional detail and provide hydraulic calculations.

Erosion & Sediment Control

- A $5,000 erosion control security deposit will be required as part of any subsequent Site Plan Approval to ensure compliance with the approved erosion (and siltation) control measures.
- Provide silt/erosion control fencing for control of siltation/erosion to abutting properties and ROW.

General

- All servicing work within the road allowance for the proposed development including, but not limited to, installation of services to the property line, and relocation of services, will be completed by the City's

Public Works Division at 100% Owner's expense.

- Cost estimates for work by the City within the road allowance are prepared by City Staff upon receipt of the estimate fee of $250.00 plus HST.
- The Contractor will be responsible to obtain an Access Permit to complete all surface works within the boulevard, including, but not limited to; curb cuts, installation of curb and gutter, entrance aprons, sidewalk, and reinstatement / restoration of finished surfaces (vegetation, asphalt, etc.).
- No alteration of grading is permitted on site until the applicant enters into a site plan or subdivision servicing agreement with the City. Grading of site is subject to Grading Control By-Law No. 160-09.
- Under NO circumstance is a connection to the municipal water system to be made without the consent and presence of City of Cambridge Public Works staff. Please note that, per Regulatory requirements, only certified water operators may isolate watermains or reconnect isolated watermains.

City of Cambridge Transportation Engineering
Contact: Jason Leach
Phone: (519) 621-0740 Ext. 4268
Email: LeachJ@cambridge.ca

Transportation Engineering Action Items

- ❑ Driveway accesses must comply with the City's commercial access requirements. Residential developments with more than 6 units are classified as commercial accesses. Contact Transportation Engineering to obtain a copy of the latest commercial access standards.
- ❑ On-site parking including visitor parking will need to meet the requirements of the Zoning Bylaw. The City cannot guarantee the availability of existing or future municipal parking to accommodate the parking needs of this site.
- ❑ Show the fire route as required through the Ontario Building Code.
- ❑ Provide pedestrian connections to the municipal sidewalk.

- ❑ Sidewalk minimum widths are as follows:
    - Standard sidewalk 1.5m
    - Curb face sidewalk 1.8m
    - Sidewalk adjacent to perpendicular parking 2.1m
- ❑ Show where waste will be collected.
- ❑ Provide a truck turning drawing showing how the internal road network will accommodate truck movements throughout the site including but not limited to: shipping and receiving (per appropriate design vehicle), waste collection and fire route access. The truck turning drawing shall be at a scale of 1:250 or 1:500.
- ❑ Drive aisle for two-way traffic must be a minimum of 6.0m wide.
- ❑ Further details regarding the proposed overhang over the driveway are required. Minimum drive aisle width and minimum vertical clearances will be required.

Transportation Engineering Comments

- ❑ An access permit through Transportation Engineering will be required prior to the removal of, alteration to or construction of any new accesses. The application for an access permit can be found on the City's website at www.cambridge.ca.
- ❑ Additional detailed comments will be provided through the formal Site Plan application should one be received.

City of Cambridge Sustainable Transportation
Contact: Lisa Chominiec
Phone: (519) 740-4680 Ext. 4619
Email: chominiecl@cambridge.ca

Sustainable Transportation Action Items

- ❑ Provide pedestrian connections to the municipal sidewalk.
- ❑ Sidewalk minimum widths are as follows:
    - Standard sidewalk 1.5m

- Curb face sidewalk 1.8m
- Sidewalk adjacent to perpendicular parking 2.1m

- ❑ Provide long term bicycle parking at a rate of 0.3 spaces per unit
- ❑ Long-term bicycle parking spaces shall be provided within a) the building or structure; or b) a covered enclosure with secure entrance; or c) bicycle lockers.
- ❑ Required spaces may not be located within: offices, commercial or industrial work areas, dwelling units or balconies.
- ❑ Provide short-term bicycle parking, 4 spaces

Sustainable Transportation Comments

- ❑ Additional detailed comments will be provided through the formal Site Plan application should one be received.

City of Cambridge Accessibility
Contact: Robyn Hyland
Phone: (519) 740-4680 ext 4292
Email: HylandR@cambridge.ca

Action Items:

- ☐ For visitor or public parking, please follow the AODA IASR Design of Public Spaces Standard.
- ☐ Ensure accessible parking shows width and access aisles on site plan

Comments:

- ☐ Consider creating visitable housing features. More information can be found at http://visitablehousingcanada.com
- ☐ Consider making some residential units accessible, with adaptable kitchens, roll-in showers, and accessible door widths and thresholds.
- ☐ Ensure accessible access to community mailbox, including curb cuts and accessible path around mailbox.
- ☐ Please refer to the Global Alliance on Accessible Technologies and Environments (Gaates), Illustrated Technical Guide to the Accessibility

Standard for Design of Public Spaces,
https://gaates.org/DOPS/default.php

City of Cambridge, Fire Department
Contact: Brooklyn Reid
Phone: 519621-6001
Email: reidb@cambridge.ca

D01/23 – Pre-Consultation (36 Elliot Street, Cambridge, Ontario, N1R 2J2)
Reviewed by: Brooklyn Reid

Cambridge Fire Comments

- Show all fire hydrants.
- Ensure fire hydrants are present and operational and are within 45m of fire department connection. (If sprinklered)
- Indicate all fire department connections. (If sprinklered)
- Ensure secondary access for any dead-end access portion over 90m.
- Show/ indicate fire route.
- Ensure fire route complies with 3.2.5.6 of the OBC.
- A fire safety plan shall be approved and implemented prior to occupancy.

Grandbridge Energy
Contact: Helen Robinson
Phone: (519) 621-3530
Email: hrobinson@grandbridgeenergy.com

D01//23 Pre consultation
Date: April 17, 2023
Location: 36 Elliott St., Cambridge
Action Items:

GBE has no objection to proposal by the Applicant/Owner to re-zone the land to permit the development of an apartment building that will consist of at least 8 units or more and that will require an OPA. The Applicant/Owner will be required to enter into a Service Agreement with GBE, to establish the terms and conditions to service the development at 100% cost. Please allow a minimum of

six (6) months for determination of servicing needs. The Owner/Applicant will be responsible for 100% cost of upgrade and/or relocation of existing hydro plant that will be required as a result of this Application. The Applicant/Owner will be responsible to grant easements to the satisfaction of GBE if required as a result of this application. Early consultation with GBE's Service Co ordinator is recommended.

Comments:

Our comments for the proposed draft plan will include:

1) The Owner/Applicant will be required to enter into an agreement with GBE to establish the conditions and costs to provide electrical service to this development at 100% Owner/Applicant cost.
2) The Owner/Applicant will be responsible for all costs associated with the relocation and/or upgrade of the existing electrical plant, if required as a result of this proposal.
3) The Owner/Applicant will be required to grant easements to the satisfaction of GBE, if required as a result of this proposal at 100% cost.

Refer to GBE Residential Spec book at (GBE)www.grandbridgeenergy.com
Hydro poles/guy wires and anchors/padmount transformers/switching units/service pits/street light poles to be 1.5m from driveway entrances/curbs. Relocation at 100% owners' expense.
All planting near GBE owned overhead power lines and padmount equipment must be installed in accordance with http://www.esasafe.com/assets/image/Tree-Planting.pdf
Must maintain required clearances (ESA & GBE) from existing overhead electrical plant.
Owner/Applicant may be required to provide ESA clearance calculations to existing overhead electrical distribution equipment. Calculations must be signed off by a P.Eng.
As per GBE, Current Conditions to Service, latest edition, only one service per property is permitted.

Grand River Conservation Authority
Contact: John Brum
Phone: (519) 621-2763 Ext. 2233
Email: jbrum@Grandriver.ca

• The Grand River Conservation Authority has no comments with respect to this

application.

Waterloo Region District School Board

Contact: WRDSB Planners
Phone: (519) 570-0003 Ext. 4308
Email: planning@wrdsb.on.ca

2023-04-18
Re: Pre-Consultation Request
File No.: D01/23
Municipality: Cambridge
Location: 36 Elliott Street
Owner/Applicant: Caiden-Keller Homes

Dear Michael,
The Waterloo Region District School Board (WRDSB) has reviewed the above-noted application that proposes the development of a two story, 8 unit apartment building. The WRDSB offers the following comments.

Student Accommodation

At this time, the subject lands are within the boundaries of the following WRDSB schools:

- Central Public School (Junior Kindergarten to Grade 6) ;
- Stewart Avenue Public School (Grade 7 to Grade 8); and

Glenview Park Secondary School (Grade 9 to Grade 12).

The WRDSB's 2020-2030 Long-Term Accommodation Plan provides detailed enrolment projections for these facilities. Should accommodation pressures arise, interim student accommodation measures, including portable classrooms may be required until an alternative accommodation solution is in place. Additionally, the WRDSB may conduct a boundary study or designate this property as a "Development Area" and assign it to Holding Schools before occupancy or sales.

Student Transportation

The WRDSB supports active transportation, and we ask that pedestrians be considered in the review of all development applications to ensure the enhancement of safety and connectivity.
Student Transportation Services of Waterloo Region (STSWR)'s school buses will not travel privately owned or maintained right-of-ways to pick-up/drop-off students. Transported students will be required to meet the bus at a congregated bus pick-up point. STSWR may have additional comments about student pick-up point(s) placement on municipal right-of-ways.

WRDSB Draft Conditions

Concerning any future declaration or agreement, the WRDSB requests the following inclusions in the conditions of Draft Approval:

1. That the Owner/Developer must agree in the Subdivision Agreement and/or Site Plan Agreement to notify all purchasers of residential units and/or renters of same, by inserting the following clauses in all offers of Purchase and Sale/Lease:
    a. *"Despite the best efforts of the Waterloo Region District School Board (WRDSB), accommodation in nearby facilities may not be available for all anticipated students. You are hereby notified that students may be accommodated in temporary facilities and/or bussed to a school outside the area, and further, that students may, in future, be transferred to another school."*
    b. *"For information on which schools are currently serving this area, contact the WRDSB Planning Department at 519-570-0003 ext. 4419, or email planning@wrdsb.ca. Information provided by any other source cannot be guaranteed to reflect current school assignment information."*
    c. *"In order to limit risks, public school buses contracted by Student Transportation Services of Waterloo Region (STSWR), or its assigns or successors, will not travel on privately owned or maintained right-of-ways to pick up and drop off students, and so bussed students will be required to meet the bus at a congregated bus pick-up point."*
2. That the Owner/Developer supply, erect and maintain a sign (at the

Owner/Developer's expense and according to the WRDSB's specifications), near or affixed to the development sign, advising prospective residents about schools in the area and that prior to final approval, the Owner/Developer shall submit a photo of the sign for review and approval of the WRDSB.

3. Prior to final approval, the WRDSB advises in writing to the Approval Authority how the above condition(s) has/have been satisfied.

Please be advised that any development on the subject lands is subject to the provisions of the WRDSB's Education Development Charges By-law, 2021 or any successor thereof and may require the payment of Education Development Charges for these developments prior to issuance of a building permit.

The WRDSB requests to be circulated on any subsequent submissions on the subject lands and reserves the right to comment further on this application.

If you have any questions about the comments provided, don't hesitate to contact the undersigned.

Sincerely,
Sarah Galliher
Senior Planner
519-570-0003 x4439

Waterloo Catholic District School Board
Contact: WCDSB Planners
Phone: (519) 578-3677
Email: planning@wcdsb.ca

WCDSB Action Items

- That Education Development Charges shall be collected prior to the issuance of a building permit(s).

Region of Waterloo

City of Cambridge Pre-Submission Consultation
May 2, 2023

Proposed Zoning By-law Amendment
36 Elliott Street, Cambridge
D01/23
Michael Campos, Senior Planner

The Region of Waterloo has received the above noted pre-consultation for a Zoning By-law Amendment at 36 Elliot Street in Cambridge for review and comment.

The applicant is proposing to demolish the existing dwelling and associated detached garage to construct a two-storey dwelling with eight (8) units within the building. Eight (8) vehicular parking spaces have been proposed at the rear of the site. A singular access from Elliott Street has been proposed.

The site is designated Built Up Area of the Regional Official Plan and designated Low/Medium Density Residential in the City of Cambridge Official Plan. The subject lands are zoned R4 in the zoning by-law. The applicant has proposed a Zoning By-law Amendment to rezone the site from the R4 zone to the RM1 zone to facilitate the proposal.

Community Planning

Regional Official Plan Amendment No. 6 was approved with modifications by the Ministry of Municipal Affairs and Housing on April 11, 2023 and the amendment in in full force and effect. Schedule 9d of the Regional Official Plan shows that the subject lands are located in the Downtown Cambridge Major Transit Station Area.

Section 2.D.2 of ROPA 6 establishes policies for development within MTSA's. A focus within this section is providing increased mixed-use densities that are transit supportive. Please be advised that the minimum density target established for the Downtown Cambridge MTSA is 160 People and Jobs/hectare. In addition, Chapter 3 of ROPA 6 establishes policies for housing in the Region. Section 3.A.1, 3.A.2 and 3.A.6 focus on affordable housing policies in the Region.

The Planning Justification Report should address the in effect Regional Official Plan (ROPA 6 – Chapters 1-3 and ROP, 2015 – Chapters 4-10). For additional information, please visit the following website: https://www.engagewr.ca/regional-official-plan and here: https://www.regionofwaterloo.ca/en/regional-government/land-use-planning.aspx#Regional-Official-Plan

Please include a discussion of the following within the PJR report:

1. Provincial Policy Review (PPS, 2020, Growth Plan, 2020)
2. Regional Official Plan Review including but not limited to the following:
    a. ROPA 6 (Chapters 1-3) and ROP, 2015 (Chapters 4-10)

b. Confirmation if there is more than one level (3 metres or 10 feet) of below grade surface and or below grade infrastructure. If so, a Hydrogeology Study is required.

3. City of Cambridge Official Plan Review

Regional Cultural Heritage:

The subject lands have the potential for the recovery of archaeological resources due to the proximity of the site to a historic civic centre, known archaeological resources and its proximity to historic buildings. To address this concern, an Archaeological Assessment(s) and Ministry Acknowledgement Letter(s) is required as part of the complete application for the Zoning By-law Amendment. Please be advised that should the Stage 1 Archaeological Assessment recommend a Stage 2 Archaeological Assessment and so on, the Region shall require all Archaeological Assessments and corresponding Ministry Acknowledgement Letters. Therefore, it is recommended that the applicant initiate this work as soon as possible.

As per Regional Official Plan policy 3.G.9, the applicant is required to have a licensed Archaeologist complete an Archeological Assessment of the subject property. The applicant must submit the Archaeological Assessment report(s) to the Ministry of Heritage, Sport, Tourism and Culture Industries and once reviewed and accepted, provide a copy of the Ministry's Acknowledgement letter(s) and the Assessment report(s) to the satisfaction of the Region of Waterloo's Planning, Development and Legislative Services Department.

Corridor Planning

Zoning By-law Amendment Stage

Environmental Noise:

It is the responsibility to ensure the proposed development is not impacted by anticipated transportation noise from Concession Street; therefore, the following noise warning clause shall be implemented within the Purchase and Sale/Lease/Rental Agreements and the Condominium Declaration through a registered development agreement between the Owner/Developer and the Regional Municipality of Waterloo through a future consent or condominium application:

"Purchasers/tenants are advised that sound levels due to increasing road traffic on Concession Street may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

Risk Management/Part 4 Area of the Clean Water Act:

The subject lands are located in a Source Protection Area where Risk Management Plan or prohibition polices implemented by the Region of Waterloo may apply. A Notice of Source Protection Plan Compliance (Valid Section 59 Notice) is required as part of the Complete Application for the Zoning By-law Amendment.

Under the 2022 Grand River Source Protection Plan, a Risk Management Plan for salt application may be required for proposed and/or altered surface parking and vehicle

driveway areas greater than eight (8) parking spaces or 200 square metres. Design considerations with respect to salt management that will form the Risk Management Plan include; minimizing the transport of meltwater across the parking lots or driveways; directing downspouts away from paved areas; and, locating snow storage areas on impermeable (i.e. paved) surfaces that drain directly to catch basins.

A Risk Management Plan for storm water management may be required if any engineered and/or enhanced infiltration features are proposed. Please be advised that the Region of Waterloo does not support any engineered and/or enhanced infiltration of runoff originating from paved surfaces within chloride Issue Contributing Areas. The above noted property is within a chloride Issue Contributing Area. Engineered and/or enhanced infiltration features may include ponds, infiltration galleries, permeable pavers, ditches, swales, oil-grit separators, etc.).

Please visit the Region's TAPS website here: https://taps.regionofwaterloo.ca to determine all applicable source protection plan requirements, and contact the Risk Management Official (rmo@regionofwaterloo.ca) if required. Please allow for sufficient time to negotiate the Risk Management Plan, as a Notice will not be issued until a signed Risk Management Plan is complete. In addition, please note that failure to submit a valid (e.g. fully signed) Section 59 Notice will lead to the applications being deemed incomplete.

Hydrogeology and Water Programs:

The subject lands are located in a Wellhead Protection Sensitive Area 2 (WPSA 2) with a 2-year time of travel.

Please be advised that a hydrogeological study shall be required if underground structures are proposed in excess of 1 level (i.e. 3 metres or 10 feet) below the ground surface and/or if any below-grade infrastructure or excavations will occur below the water table (e.g. basements, underground parking, elevator shafts, footings, pilings, sewers, watermains etc.). If the study concludes that construction dewatering is needed, a dewatering plan shall be required as part of the complete application for the Zoning By-law Amendment.

Furthermore, permanent passive or active dewatering infrastructure shall not be permitted; therefore, waterproof seals should be used in lieu of permanent dewatering infrastructure shall not be permitted; therefore, waterproof seals shall be used in lieu of permanent dewater infrastructure.

Finally, a prohibition on geothermal wells shall be required. The prohibition shall include both vertical open-loop and vertical closed-loop as well as horizontal closed-loop geothermal energy systems. The wording for the prohibition is:

Geothermal Wells are prohibited on site. A geothermal well is defined as a vertical well, borehole or pipe installation used for geothermal systems, ground-source heat pump systems, geo-exchange systems or earth energy systems for heating or cooling; including open-loop and closed-loop vertical borehole systems. A geothermal well does

not include a horizontal system where construction or excavation occurs to depths less than five meters unless the protective geologic layers overlaying a vulnerable aquifer have been removed through construction or excavation.

Housing Comments:

The following Regional policies and initiatives support the development and maintenance of affordable housing:

- Regional Strategic Plan
- 10-Year Housing and Homelessness Plan
- Building Better Futures Framework
- Region of Waterloo Official Plan

The Region supports the provision of a full range of housing options, including affordable housing. Rent levels and house prices that are considered affordable according to the Regional Official Plan are provided below in the section on affordability. Should this development application move forward, staff recommend that the applicant consider providing a number of affordable housing units on the site (affordable as defined in the Regional Official Plan).

In order for affordable housing to fulfill its purpose of being affordable to those who require rents or purchase prices lower than the regular market provides, a mechanism should be in place to ensure the units remain affordable and establish income levels of the households who can rent or own the homes.

Staff further recommend meeting with Housing Services to discuss the proposal in more detail and to explore opportunities for partnerships or programs and mechanisms to support a defined level of affordability.

For the purposes of evaluating the affordability of an ownership unit, based on the definition in the Regional Official Plan, the purchase price is compared to the least expensive of:

Housing for which the purchase price results in annual accommodation costs which do not exceed 30 percent of gross annual household income for low and moderate income households	$385,500
Housing for which the purchase price is at least 10 percent below the average purchase price of a resale unit in the regional market area	$576,347

*Based on the most recent information available from the PPS Housing Tables (2021).

In order for an owned unit to be deemed affordable, the maximum affordable house price is $385,500.

For the purposes of evaluating the affordability of a rental unit, based on the definition of affordable housing in the Regional Official Plan, the average rent is compared to *the least expensive of*:

A unit for which the rent does not exceed 30 per cent of the gross annual household income for low and moderate income renter households	$1,470
A unit for which the rent is at or below the average market rent (AMR) in the regional market area	Bachelor: $950 1-Bedroom: $1,134 2-Bedroom: $1,356 3-Bedroom: $1,538 4+ Bedroom: $3,997

*Based on the most recent information available from the PPS Housing Tables (2021)

In order for a rental unit to be deemed affordable, the average rent for the proposed units which have fewer than 3 bedrooms must be at or below the average market rent in the regional market area as shown above. For proposed units with three or more bedrooms, the average rent for the units must be below $1,470.

Application Fees

In accordance with Fees and Charges By-law 2023-09f, the Region shall require the following application fees as part of a complete application:

- Zoning By-law Amendment Fee: $3,000.00 (required at the application submission stage)

Regional staff acknowledge receipt of the Region's pre-submission consultation fee of $300.00 (March 16, 2023).

Regional Development Charges

Any future development on the subject lands will be subject to provisions of Regional Development Charges By-law 19-037 or any successor thereof.

Summary

In summary, the Region requires an electronic version (.pdf) of the following as part of a complete application for the Official Plan and Zoning By-law Amendment:

- Planning Justification Report
- All Archaeological Assessment(s) and Corresponding Ministry Acknowledgement Letter(s) as described above
- Implementation of noise warning clauses through purchase and sale/lease/rental agreements and condo declaration
- Provisional Risk Management Plan for salt application and/or Stormwater management as described above
- Valid Section 59 Notice

- hydrogeological study shall be required if underground structures are proposed in excess of 1 level (i.e. 3 metres or 10 feet) below the ground surface and/or if any below-grade infrastructure or excavations will occur below the water table (e.g. basements, underground parking, elevator shafts, footings, pilings, sewers, watermains etc.)
- dewatering plan (if construction dewatering is proposed)
- permanent passive or active dewatering infrastructure shall not be permitted; therefore, waterproof seals should be used in lieu of permanent dewatering infrastructure shall not be permitted. Waterproof seals should be used.
- Geothermal prohibition as described above

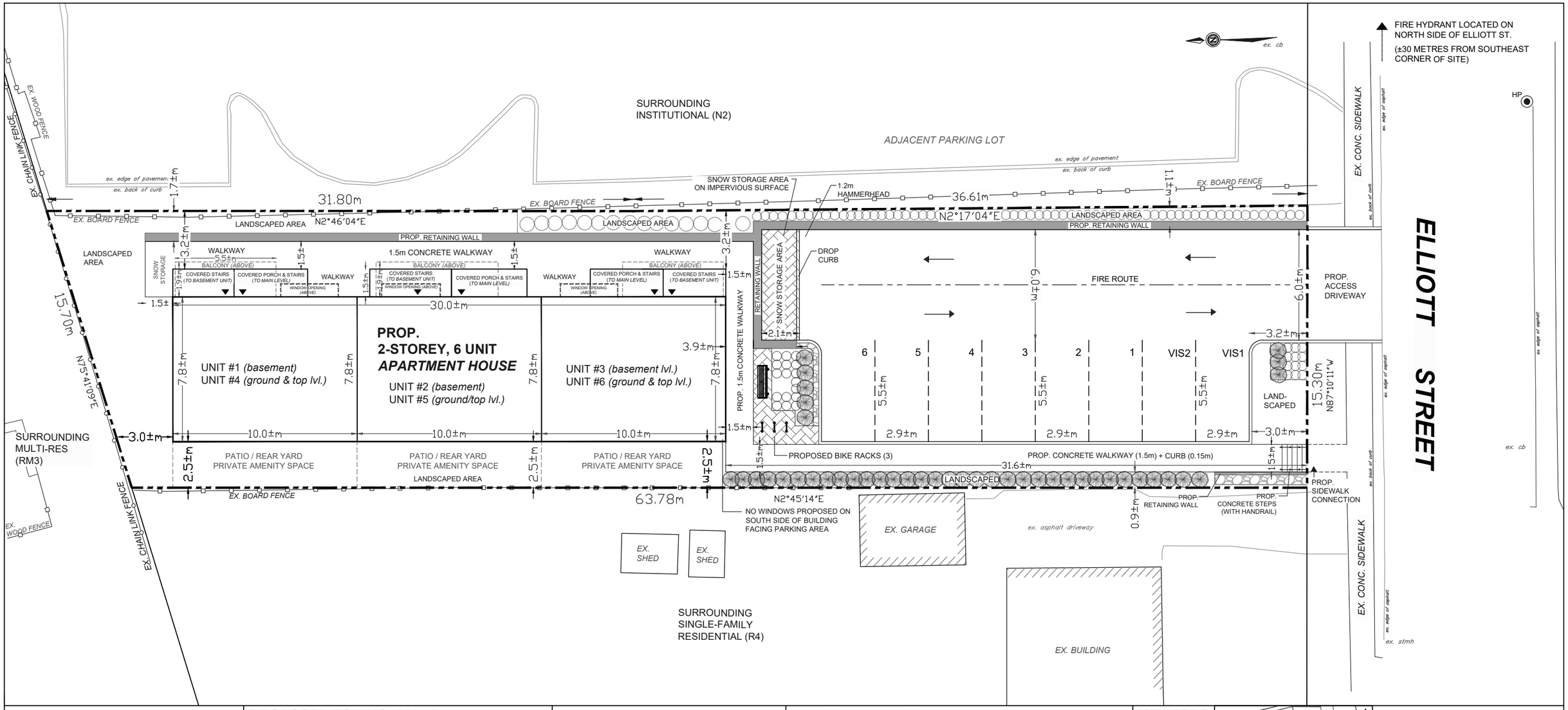
Contacts

Community Planning
Melissa Mohr, MCIP, RPP
Senior Planner
1-226-752-8622
mmohr@regionofwaterloo.ca

Please note: Comments and requirements are based on the information provided by the applicant during the pre-submission process. Should new details and/or information become available through the application process, the above-noted requirements are subject to change.

Appendix B –

Site Concept Plan



ZBA/OPA SITE CONCEPT PLAN

36 ELLIOTT STREET
PLAN 445, PT LOT 11
CITY OF CAMBRIDGE
REGION OF WATERLOO
ROLL # 300601003108200

PROPOSED ZONING: RM3 Residential

	REQUIRED	PROVIDED	COMPLIANCE
LOT AREA	*N/A*	997.03 m^2	*YES*
LOT FRONTAGE *(ZBA)*	30.0 m	15.30 m	NO (ZBA)
FRONT YARD SETBACK	6.0 m	31.6 ±m	*YES*
SIDE YARD SETBACK	3m for first 2 storeys	2.5 ±m	NO (ZBA)
REAR YARD SETBACK	3m for first 2 storeys	3.0 ±m	*YES*
GROSS FLOOR AREA (m^2 / *DWELLING UNIT*)	50 sq.m (per one-bedroom unit)	90 ±sq.m *(per unit)*	*YES*
MAX. HEIGHT	*N/A*	2 storeys *(plus basement)*	*YES*
LANDSCAPED OPEN SPACE WITHIN *"FRONT YARD"*:	*Min.* 45% of the req. *front yard* area	47.7% of *req. front yard* area	*YES*
ENTIRE SITE:	Minimum of 30%	41.5%	*YES*
MAX. DENSITY *(Official Plan)*	40 units/*hec.(UPH)*	61 *UPH*	NO (OPA)
MAX. DENSITY *(Zoning Bylaw)*	75 units/*hec.(UPH)*	61 *UPH*	*YES*
PARKING	1 space / unit (6); plus 1 space for each 4 units for visitors only (2)	6 Resident + 2 Visitor *(8 total)*	*YES*

PROPOSED ZBA/DEVELOPMENT

- Proposing a Zoning By-Law Amendment (ZBA)
  - to change the zoning from R4, to **RM3** Residential with site-specific provisions, to allow for the development of a 6-unit *apartment house* on the subject lands
  - The requested Site-Specific Zoning provisions are:
    1. Recognize the existing *lot frontage* of 15.30m; whereas the by-law requires 30m
    2. Relief to allow a *side yard setback* of 2.5±m; whereas the by-law requires 3.0m
- Proposing an Official Plan Amendment (OPA)
  - to establish a site-specific policy for the lands to permit an increased density of 61 units per hectare; (whereas the 'Low / Medium Density Residential' designation currently permits a maximum of 40 units per hectare)
- On-street garbage collection provided

ADDITIONAL NOTES

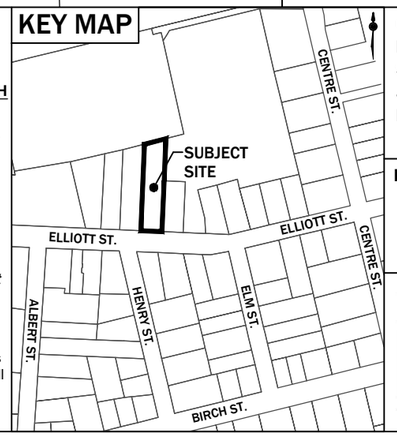
Floor Space Index (FSI) = Ground Floor Area (235.5m^2) x 2 floors = 471.0m2
471m^2 (total floor area) / 997.03m2 = **0.47 FSI**

Units Per Hectare (UPH) = # *of units* (6) / *lot area in hectares* (0.0997) = **61 UPH**

Relevant Zoning By-law Policies:

- Section 2.2.4.1(a) states that the driveway width may be reduced to a min of 4 metres if: *"no more than ten motor vehicles are required by this by-law to be provided in the parking lot to be served by the access driveway"*.
  - By-law requires 8 total parking spaces for this development.
- Section 2.2.2.3 permits for parking facilities to be located between the *street line* and *building line*, as long as the *parking facilities* (other than the *access driveway)* are located closer than 3.0m to the *street line*.
  - Parking Facilities are located at least 3.0m from the street line (3.2m)
- Section 2.2.2.3(f) states "*No access driveway, aisle, parking stall or parking lot in an RM-class zone shall be located within 6 m of a window of a habitable room of a dwelling unit as measured perpendicular to the wall containing such window, where the surface of the floor in such habitable room is less than 1.0 m above the finished grade.*".
  - The nearest wall of the building is located 3.9±m from the parking area. As a result, no windows facing into a habitable room will be located on this wall facing the parking area

KEY MAP



ORIG. DATE: March 21, 2024
DRAWN BY: B.L.
SCALE:
JOB NO.: 16790 - 36 Elliott Street
DWG NO.: 1 (Site Concept Plan)

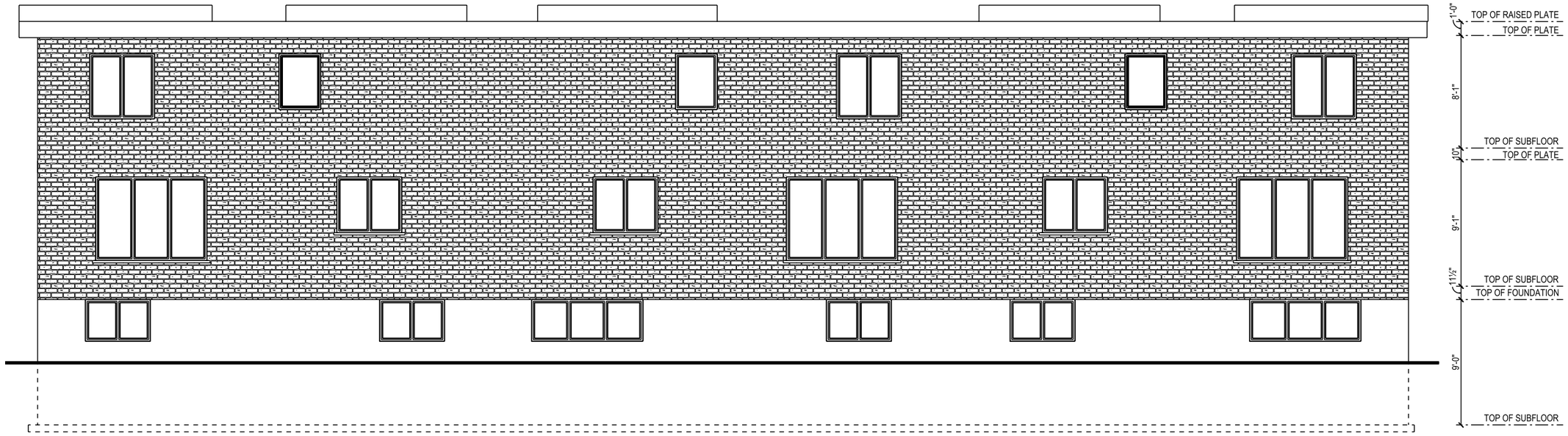
REVISION DATE: **April 30, 2024**

DRYDEN SMITH & HEAD
Planning Consultants Ltd.

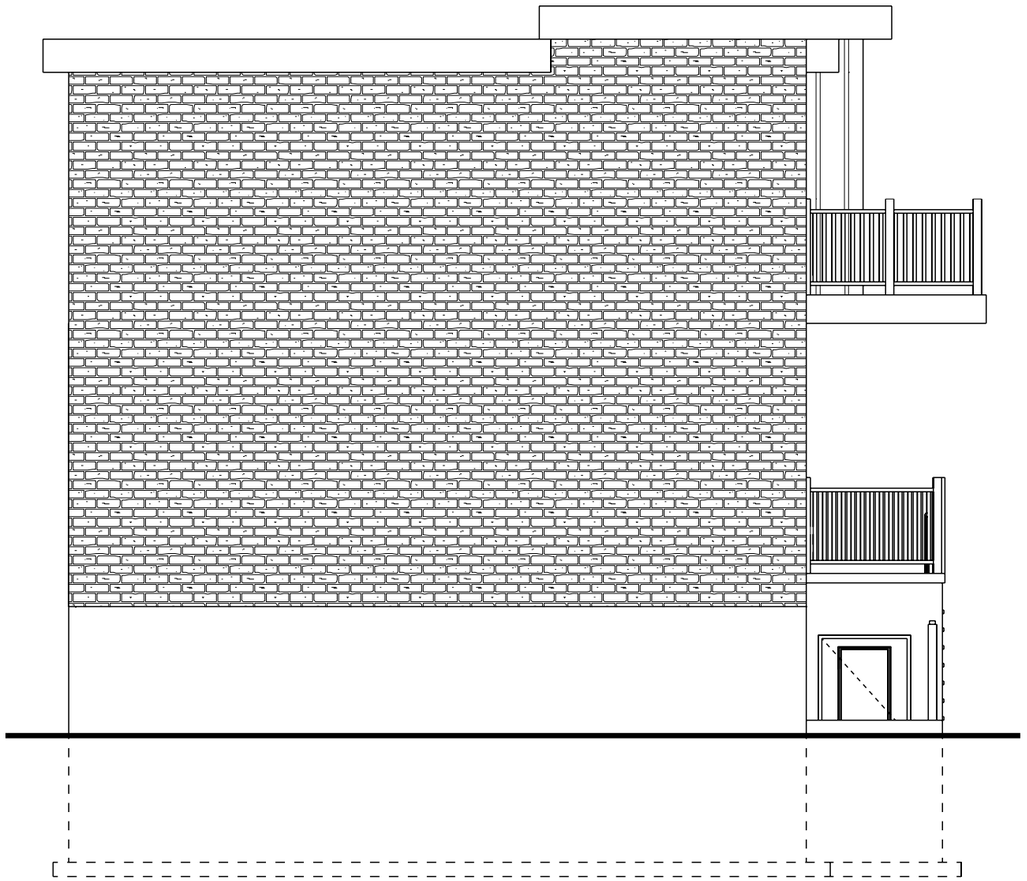
Appendix C –

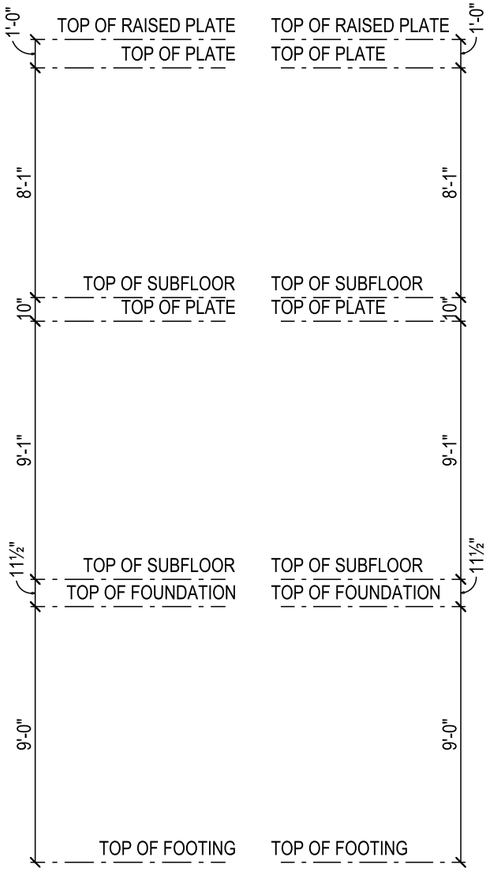
Preliminary Floor Plans and Elevations

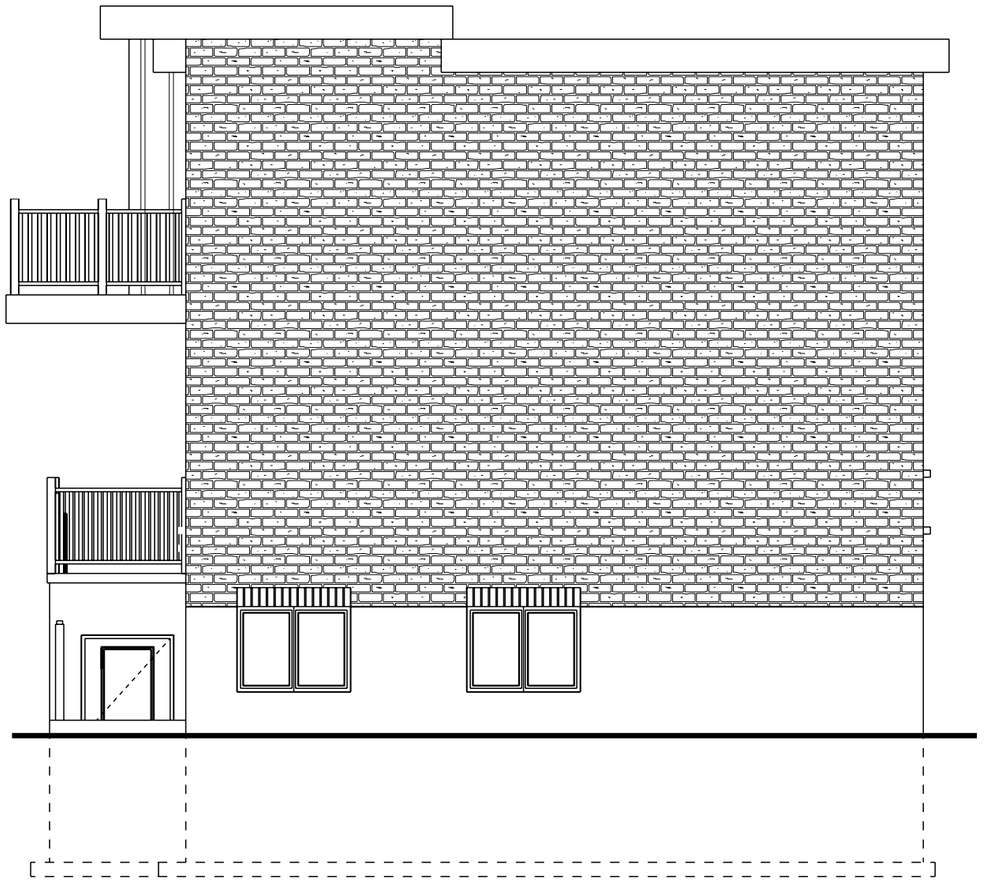
FRONT ELEVATION



REAR ELEVATION

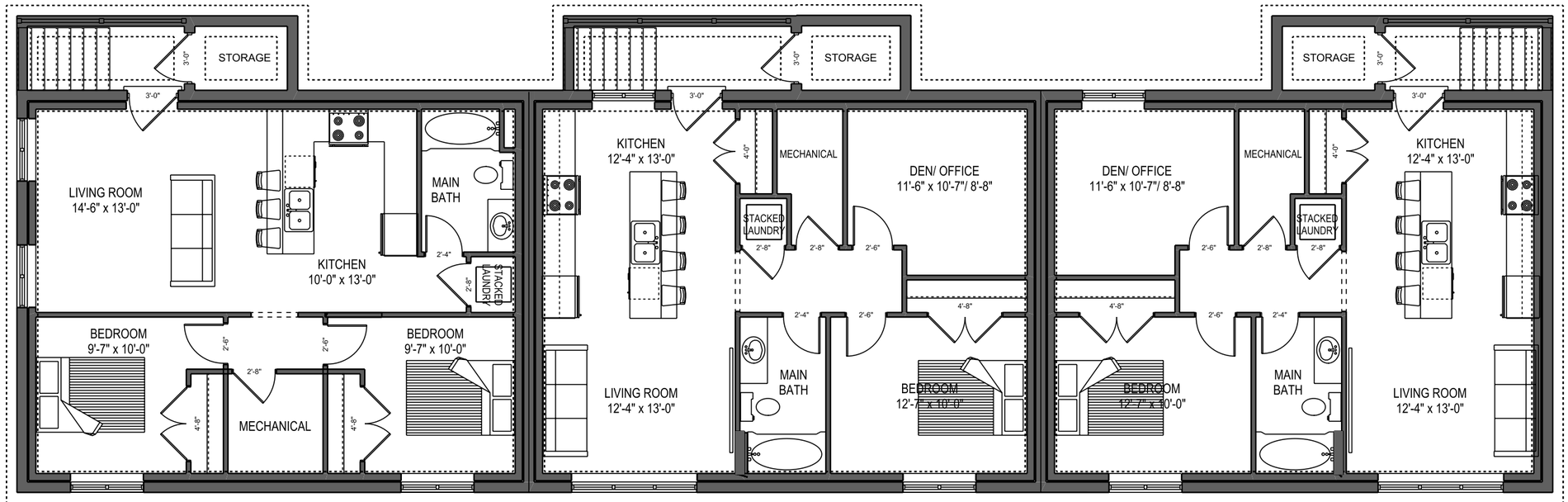






LEFT ELEVATION

RIGHT ELEVATION

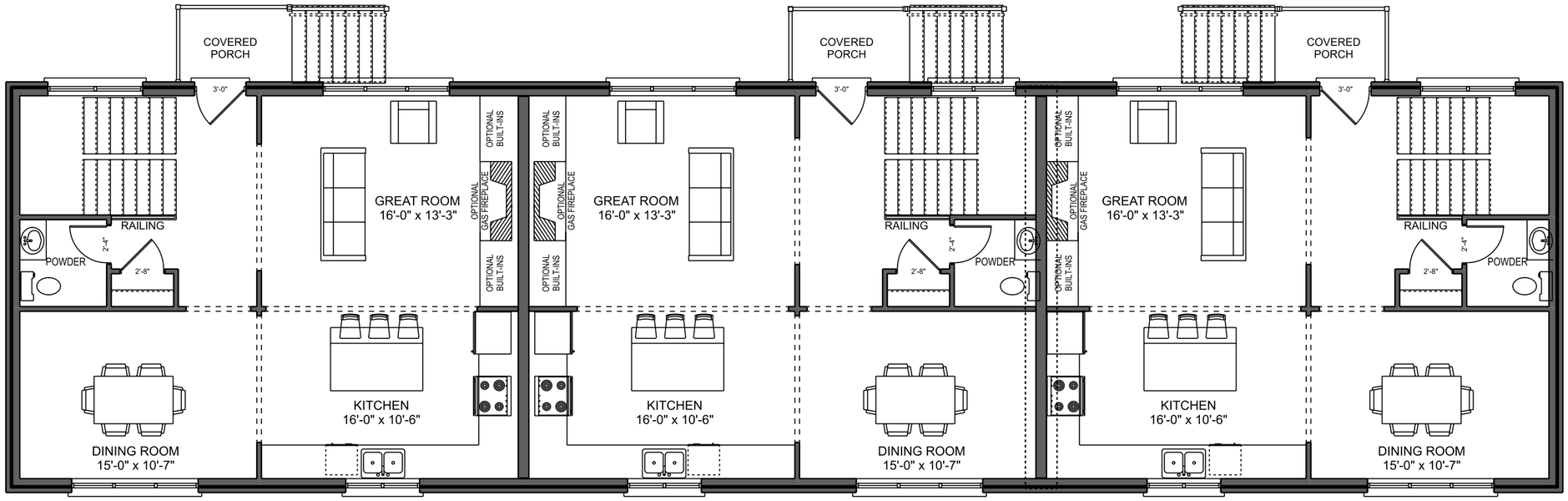


36 ELLIOT STREET - UNIT 1
BASEMENT FLOOR PLAN
BASEMENT UNIT AREA: 770 SQ. FT.

36 ELLIOT STREET - UNIT 2
BASEMENT FLOOR PLAN
BASEMENT UNIT AREA: 775 SQ. FT.

36 ELLIOT STREET - UNIT 3
BASEMENT FLOOR PLAN
BASEMENT UNIT AREA: 770 SQ. FT.

BASEMENT

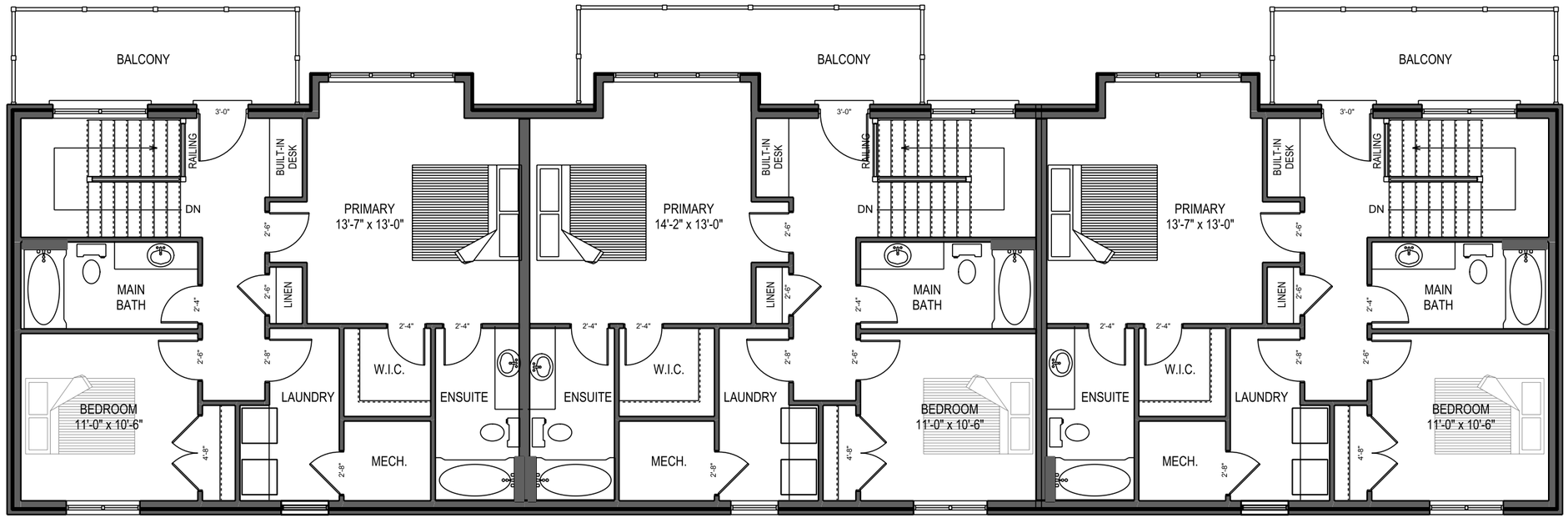


36 ELLIOT STREET - UNIT 4
MAIN FLOOR PLAN
MAIN FLOOR AREA: 851 SQ. FT.

36 ELLIOT STREET - UNIT 5
MAIN FLOOR PLAN
MAIN FLOOR AREA: 851 SQ. FT.

36 ELLIOT STREET - UNIT 6
MAIN FLOOR PLAN
MAIN FLOOR AREA: 851 SQ. FT.

MAIN PRES



36 ELLIOT STREET - UNIT 4
UPPER FLOOR PLAN
UPPER FLOOR AREA: 871 SQ. FT.

36 ELLIOT STREET - UNIT 5
UPPER FLOOR PLAN
UPPER FLOOR AREA: 878 SQ. FT.

36 ELLIOT STREET - UNIT 6
UPPER FLOOR PLAN
UPPER FLOOR AREA: 871 SQ. FT.

UPPER PRES

Appendix D –

Stormwater Management Report

36 Elliott Street 6-Unit Residential Development

Stormwater Management Report

Project Location:
36 Elliott Street
Cambridge, Ontario

Prepared For:
Sam Head, President
Dryden, Smith & Head
Planning Consultants Ltd.
54 Cedar Street North
Kitchener, Ontario

Prepared by:
GRIT Engineering Inc.
133 Regent Street
Stratford, Ontario

February 14, 2024

GRIT File No: GE23-0527-1-CIV-RPT-SWM-2024-02-14

PASSION, DETERMINATION, RESOLVE

Contents

Appendices

1.0 Introduction

GRIT Engineering Inc. (GRIT) was retained by Dryden, Smith & Head Planning Consultants Ltd. to provide the stormwater management design for the new residential development at 36 Elliott Street, to satisfy the site plan approval requirements set forth by the City of Cambridge.

The subject site is located at 36 Elliott Street, in Cambridge, Ontario and is approximately 0.10 hectares (ha) in size. The site is bounded by Elliott Street to the south, existing institutional (N2) to the east, low density residential (R4) to the west, and medium high density residential (RM3) to the north. Figure 1, located in Appendix A, provides an aerial image, illustrating the site location and surrounding characteristics.

This Stormwater Management (SWM) Report provides background and proposed design information to address the site plan approval (SPA) requirements for the property.

2.0 Design Requirements for Approval

The Site is located outside of the Grand River Conservation Authority (GRCA) Regulation Areas. The City of Cambridge has indicated that Stormwater Management quantity and quality controls are required for the site and are as follows:

- Control the post development peak flows to the existing conditions peak flows for the range of design storms.
- Post-development flows are to achieve, at a minimum, the MECP Enhanced quality control (80% suspended solids removal).

3.0 Stormwater Management Design

3.1 Design Approach

Calculation Method

Section 2.8.2 of the City of Cambridge Engineering Standards and Development Manual (ESDM) indicates that the Rational Method is permissible to use. Therefore, the Modified Rational Method has been used to determine the pre-development (allowable) and post-development peak flow rates. Due to the proposed use as a residential development, the time of concentration that has been used is 10 minutes, which represents a conservative approach to determining the peak runoff as a lower time of concentration will produce a larger peak flow. The runoff coefficients from section B.4.2.1.2 of the Region of Waterloo Design Guidelines and Supplemental Specifications have been used.

Site Review Methodology

The stormwater management design for the development achieves the requirements by:

- A review of the existing drainage and overland flow route patterns and existing site characteristics,
- Calculating the predevelopment (allowable) runoff coefficients and peak flow rates for the 2 through to the 100-year design storm events,
- Calculating the post-development runoff coefficients and peak flow rates for the 2 through to the 100-year design storm events,
- Determining the needed on-site quantity control structures based on the proposed site characteristics and calculating the size requirements,
- Calculating the required on-site stormwater storage volume and surface ponding elevations, and
- Reviewing, evaluating, and specifying stormwater quality control techniques and structures.

3.2 Pre-development Condition

Under existing conditions, the property is comprised of a residential building, asphalt, and grassed/landscaped areas. Percent imperviousness for the pre-development condition is 25.2% and a calculated C-value of 0.32. There is no stormwater management on the site. The existing flows are generally directed overland toward Elliott Street and to the western property line.

See Appendix B for the SWM calculations showing the existing impervious percentage for the site. Figure 2 illustrates the pre-development catchment area, site characteristics analysis, existing drainage, and overland flow patterns.

3.3 Post-Development Condition

In the proposed condition, the subject site will be comprised of a two-storey 6-unit residential building. The remainder of the site will be comprised of grassed/landscaped areas, and parking. The proposed ground cover for the site results in a total impervious percentage of 72.8% and a C-value of 0.69.

The roof leader connections will discharge to the ground and flow to the SWM system on site. The proposed surface drainage is to be directed to a catch basin in the central area of the Site, connected to an oil grit separator before connecting to the nearest catch basin located on Elliott Street. The remaining drainage consists of grass and roof water and is considered clean, not requiring additional quality control.

See Appendix B for the SWM calculations showing the proposed impervious percentage for the site. Figure 3 illustrates the post-development catchment areas, the site characteristics analysis, and the proposed stormwater management design.

3.4 Quantity Control Summary

The post-development 5 to 100-year design storm peak flows are controlled to the allowable existing peak flows, per the requirements in Sections 3.1 through 3.3, by an orifice in ST-CBMH 2. The 2-year design storm peak flows could not be controlled to the pre-development flows due to the small orifice size. A minimum 50mm orifice was used to achieve a reduction of 33% and the exceedance is considered negligible. Stormwater retention is provided for all design storm events within the storm structures, storm pipes, and proposed parking areas. See the calculations in Appendix B for the orifice sizing information. Table 4.1 below summarizes the pre and post-development flows and reductions in flows for all design storm events; Table 4.2 below summarizes ponding elevation, required and provided ponding volumes, and ponding depths for all design storm events.

Table 3.1: Flow Summary

Storm Event (Yr)	Total Pre Flow (L/s)	Post Uncontrolled Flow (L/s)	Allowable Controlled Flow (L/s)	Orifice Flow (L/s)	Weir Flow (L/s)	Total Flow (L/s)	Total Post Flow (L/s)	Reduction in Flow (L/s)	Reduction in Flow (%)
2	6.44	0.80	5.65	7.80	0.00	7.80	8.60	-2.15	-33%
5	8.97	1.11	7.86	7.86	0.00	7.86	8.97	0.00	0%
10	10.28	1.27	9.01	7.88	0.00	7.88	9.15	1.12	11%
25	11.36	1.40	9.96	7.92	0.00	7.92	9.32	2.04	18%
50	12.62	1.56	11.06	7.95	0.00	7.95	9.51	3.11	25%
100	13.42	1.66	11.76	7.97	0.00	7.97	9.63	3.79	28%

Table 3.2: Ponding & Storage Summary

Storm Event (Yr)	Ponding Elevation (m)	Storage Required (m3)	Ponding Volume (m3)	Ponding Depth (m)
2	**284.93**	4.49	4.60	0.03
5	**284.96**	6.67	7.07	0.06
10	**284.97**	7.95	8.06	0.07
25	**284.99**	9.22	9.55	0.09
50	**285.01**	10.62	11.03	0.11
100	**285.03**	11.63	12.02	0.13

3.5 Quality Control Summary

To meet the required stormwater management quality control criteria outlined in section 3.1, a 1,200mm diameter First Defense FD-4HC Oil Grit Separator, or approved substitution, has been sized for the site. The OGS will be installed inline and downstream of the proposed orifice and provides 94.0% removal of total suspended solids (TSS),

which exceeds the required 80% TSS removal. See Appendix C for the OGS sizing summary, typical details, and operations and maintenance information.

3.6 Erosion & Sedimentation Control

Erosion and Sediment Controls are proposed for the site design as illustrated on sheet C300, and further detailed on sheet C500, provided separately. The proposed measures include sediment control fencing and silt sack in all catch basins to be installed before the construction commences and is to be maintained per the Erosion and Sediment Control notes on sheet C500 until the development is complete with final surface and vegetation stabilized with mature growth.

4.0 Salt Management

The new development will implement the following best management practices for the removal of snow and application of salt on this site:

- A winter maintenance contractor will be hired to complete the snow removal/management works.
- Winter maintenance personnel will complete regular site inspections to assess the condition of walking and driving surfaces.
- The contractor will monitor weather forecasts to prepare for snow events.
- The contractor will be trained in winter maintenance practices and be "Smart about Salt" certified.
- Plowing of snow will be completed as required on driveways, parking areas, and sidewalks following snowfall events to ensure safe passage for motorists and pedestrians.
- Plowed snow will be stored in the snow storage areas identified on the approved Site Plan.
- Any snow that needs to be removed from the site will be disposed of at an approved snow dump location.
- Snow drifts will be controlled by frequent plowing as needed.
- Application of a sand/salt mixture (hand application) will occur immediately following plowing, if deemed required, as the application of a sand/salt mixture is not necessary each snow clearing operation.
- A sand/salt mixture will not be applied unless ice conditions develop which create a hazard for motorists and/or pedestrians.
- The contractor will monitor and document the application of a sand/salt mixture (i.e. frequency, concentration, etc.).
- Snow removal equipment will be stored off site.
- Liquid de-icing materials will be kept off site.
- Snow removal equipment washing will occur off site.

This salt management plan is to be used as a guide.

5.0 Conclusions

The stormwater management requirements for Quantity, Quality, and Erosion & Sediment Controls are based on the City of Cambridge Engineering Standards and Development Manual and are summarized in Section 2. The design and calculations in Section 3 and the Appendices demonstrate compliance with the above requirements. We trust this report satisfies the City's requirements. If there are any questions regarding the report, please do not hesitate to contact our office.

6.0 Statement of Conditions and Limitations

This document was prepared for *Dryden, Smith & Head Planning Consultants Ltd.* (the Client) and the *City of Cambridge* and has been prepared in a manner consistent with that level of care and skill ordinarily exercised by other members of the engineering profession currently practicing in the same or similar locality, under the same or similar conditions, subject to the time limits and financial, physical, or other constraints applicable to the Services.

The recommendations and conclusions provided in this document are applicable only to the specific site, development, design objectives, and purposes that are described in the text and are based on the information that was available and provided to GRIT Engineering Inc. at the time this document was prepared. This document is not intended to be exhaustive in scope and it shall be recognized that the passage of time may alter the opinions, recommendations, and conclusions that are contained in this document. The design is limited to the documents reference and any other drawings or documents prepared by GRIT Engineering Inc. provided separately. GRIT Engineering Inc. accepts no responsibility or liability for the accuracy of any information provided by others.

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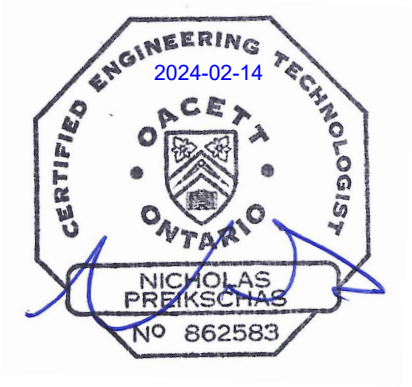
Yours respectfully,

GRIT Engineering Inc.



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Appendix A

Figures

Legend

GRIT ENGINEERING INC
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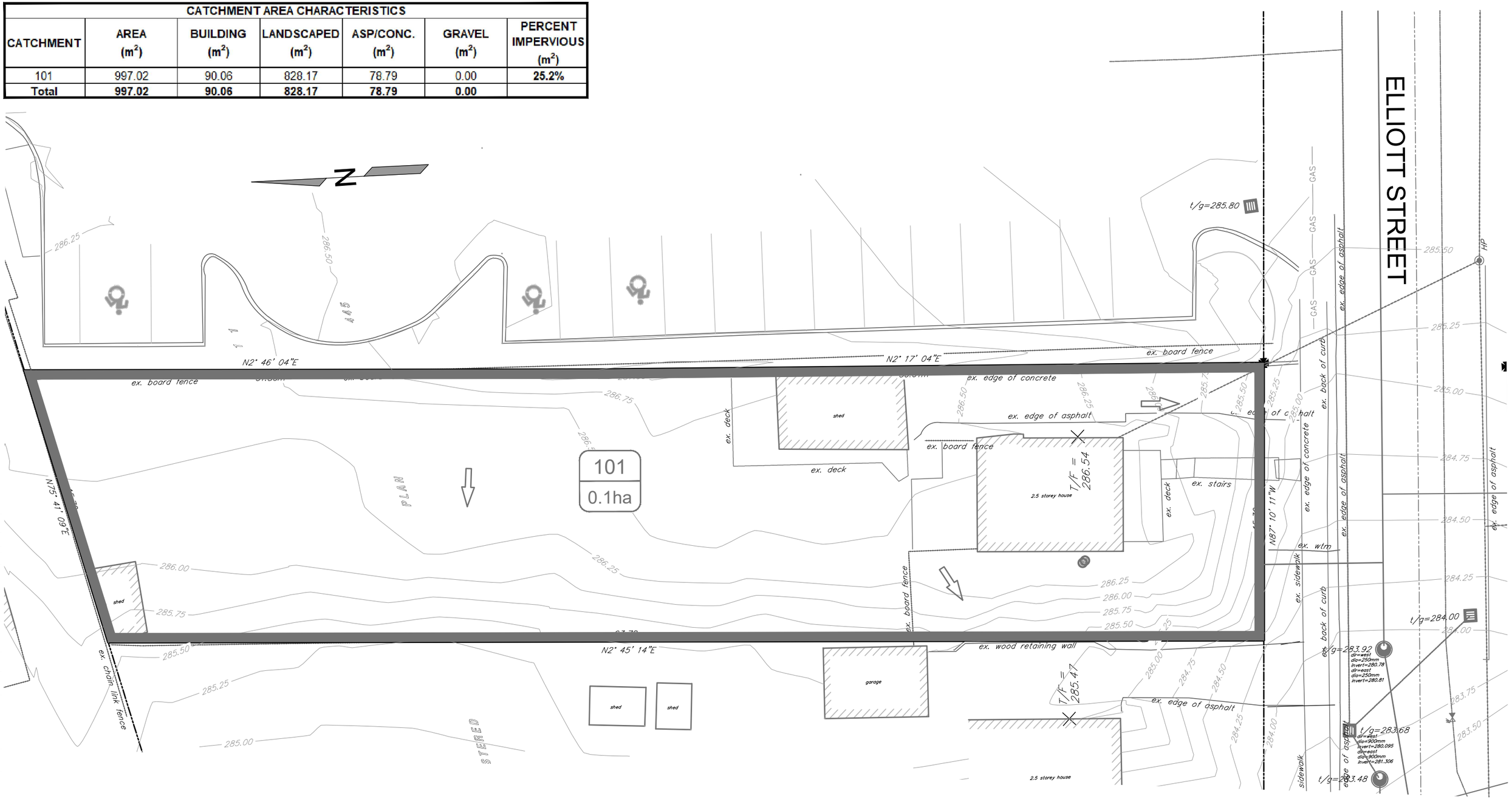
Project:
36 ELLIOT ST, CAMBRIDGE
RESIDENTIAL DEVELOPMENT

Figure Title:
SITE LOCATION MAP

Figure No:
1

CATCHMENT AREA CHARACTERISTICS						
CATCHMENT	AREA (m^2)	BUILDING (m^2)	LANDSCAPED (m^2)	ASP/CONC. (m^2)	GRAVEL (m^2)	PERCENT IMPERVIOUS (m^2)
101	997.02	90.06	828.17	78.79	0.00	**25.2%**
Total	**997.02**	**90.06**	**828.17**	**78.79**	**0.00**	



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Legend

CATCHMENT BOUNDARY

CATCHMENT PARAMETER

101
0.123

EX. OVERLAND FLOW ROUTE

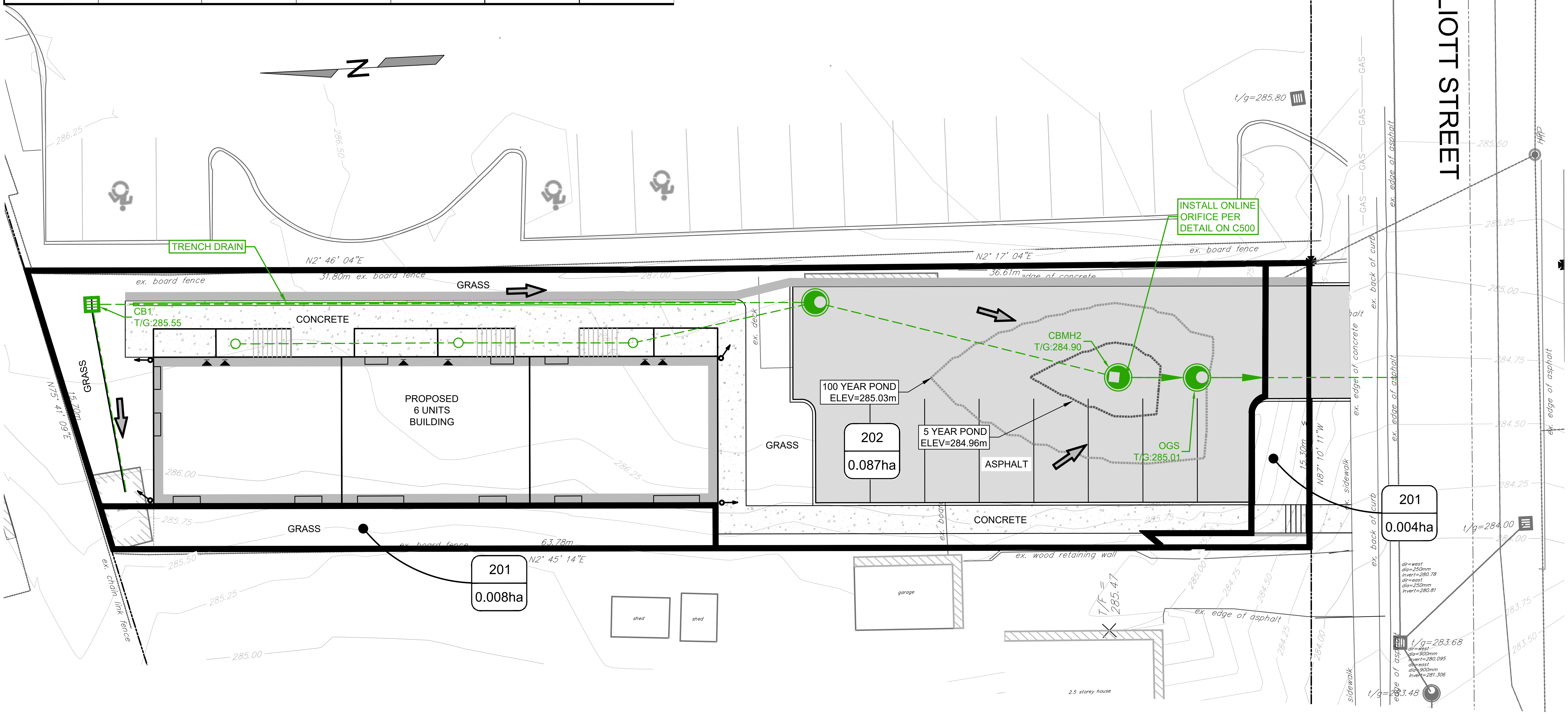
EX. STORM SEWER

Project:
36 ELLIOTT ST, CAMBRIDGE
RESIDENTIAL DEVELOPMENT

Figure Title:
PRE DEVELOPMENT
CATCHMENT AREA

Figure No:
2

CATCHMENT AREA CHARACTERISTICS						
CATCHMENT	AREA (m2)	BUILDING (m2)	LANDSCAPED (m2)	ASP/CONC. (m2)	GRAVEL (m2)	PERCENT IMPERVIOUS (m2)
201	127.41	0.00	107.72	19.69	0.00	**23.9%**
202	869.61	268.80	193.11	407.71	0.00	**80.0%**
Total	**997.02**	**268.80**	**300.83**	**427.40**	**0.00**	



Legend

PROPOSED STORM SEWER	(green dashed line with arrow)	PROPOSED 2 YEAR PONDING ELEVATION	(dark dashed line)
CATCHMENT BOUNDARY	(thick black line)	PROPOSED 100 YEAR PONDING ELEVATION	(grey dashed line)
CATCHMENT ID	201	PROPOSED OVERLAND FLOW ROUTE	(arrow)
CATCHMENT AREA (ha.)	0.245		

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Project:
36 ELLIOTT ST, CAMBRIDGE
RESIDENTIAL DEVELOPMENT

Figure Title:
POST DEVELOPMENT
CATCHMENT AREA

Figure No:
3

Appendix B

Stormwater Management Calculations

Storm Water Management

Project Information & Formulas

Project	New Residential Development.
Project Number	GE23-0527-1
Client	Dryden, Smith & Head Planning
Project Address	36 Elliott Street, Cambridge, Ontario
Date	February 13, 2024

Rainfall Intensity Formula:

$$I = \frac{A}{(B+t)^C}$$

A= *IDF Parameter*
B= *IDF Parameter*
C= *IDF Parameter*
t= Time (Min.)

Modified Rational Method Formula:

$$Q = kCIA$$

k= *2.78*
C= *Runoff coefficient*
I= *Rainfall intensity (mm/hr)*
A= *Contribution area (ha)*

Online Orifice:

$$Q = Ca\sqrt{2gh}$$

C= Discharge Coefficient (0.62)
a= Cross sectional area of orifice (m2)
g= Constant of Gravitational Pull (9.81 m/s2)
h= Total Head (m)

Weir: **Rectangular**

Q= c*L*H^3/2

c= Discharge Coefficient (1.705)
L= Length of Weir (m)
H= Maximum head (m)

Rainfall Parameters:

City of Cambridge IDF			
Rainfall Event	A	B	C
2-Year	573.1	5	0.761
5-Year	1219.800	10.500	0.823
10-Year	1728.600	14.000	0.849
25-Year	2226.900	17.000	0.865
50-Year	2640.000	19.000	0.866
100-Year	3015.100	21.000	0.870

GRIT ENGINEERING INC

Storm Water Management
Pre-Development Conditions

Project	New Residential Development.
Project Number	GE23-0527-1
Client	Dryden, Smith & Head Planning
Address	36 Elliott Street, Cambridge, Ontario
Date	February 13, 2024

Catchment Number: Catchment 101

Catchment Characteristics:

Surface Material	Area (m2) **(A)**	Percent Impervious	Coefficient **(C)**
Building	90.06	100%	0.90
Asphalt / Concrete	78.79	100%	0.90
Gravel	-	90%	0.90
Grass	828.18	10%	0.20
Total / Average	997.03	25.2%	0.32

Rainfall Event (Year)	A	B	C	t (min)	Intensity (mm/hr)	C' Multiplier	C	Q (L/s)
2	573.100	5.000	0.761	10	72.984	1.00	0.32	6.44
5	1219.800	10.500	0.823	10	101.56	1.00	0.32	8.97
10	1728.600	14.000	0.849	10	116.38	1.00	0.32	10.28
25	2226.900	17.000	0.865	10	128.70	1.00	0.32	11.36
50	2640.000	19.000	0.866	10	142.94	1.00	0.32	12.62
100	3015.100	21.000	0.870	10	151.99	1.00	0.32	13.42

Storm Water Management
Post-Development Conditions

Project	New Residential Development.
Project Number	GE23-0527-1
Client	Dryden, Smith & Head Planning
Address	36 Elliott Street, Cambridge, Ontario
Date	February 13, 2024

Uncontrolled Catchment: Catchment 201

Catchment Characteristics:

Surface Material	Area (m2) **(A)**	Percent Impervious	Coefficient **(C)**
Building	-	100%	0.90
Asphalt / Concrete	19.69	100%	0.90
Gravel	-	90%	0.90
Grass	107.72	10%	0.20
Total / Average	127.41	23.9%	0.31

Rainfall Event (Year)	A	B	C	t (min)	Intensity (mm/hr)	C' Multiplier	C	Q (L/s)
2	573.100	5.000	0.761	10	72.984	1.00	0.31	0.80
5	1219.800	10.500	0.823	10	101.56	1.00	0.31	1.11
10	1728.600	14.000	0.849	10	116.38	1.00	0.31	1.27
25	2226.900	17.000	0.865	10	128.70	1.00	0.31	1.40
50	2640.000	19.000	0.866	10	142.94	1.00	0.31	1.56
100	3015.100	21.000	0.870	10	151.99	1.00	0.31	1.66

Controlled Catchment: Catchment 202 - to Municipal Drain

Catchment Characteristics:

Surface Material	Area (m2) **(A)**	Percent Impervious	Coefficient **(C)**
Building	268.80	100%	0.90
Asphalt / Concrete	407.71	100%	0.90
Gravel	-	90%	0.90
Grass	193.11	10%	0.20
Total / Average	869.61	80.0%	0.74

Rainfall Event (Year)	A	B	C	t (min)	Intensity (mm/hr)	C' Multiplier	C	Q (L/s)
2	573.100	5.000	0.761	10	72.984	1.00	0.74	13.14
5	1219.800	10.500	0.823	10	101.56	1.00	0.74	18.28
10	1728.600	14.000	0.849	10	116.38	1.00	0.74	20.95
25	2226.900	17.000	0.865	10	128.70	1.00	0.74	23.17
50	2640.000	19.000	0.866	10	142.94	1.00	0.74	25.73
100	3015.100	21.000	0.870	10	151.99	1.00	0.74	27.36

GRIT ENGINEERING INC

Storm Water Management
Post-Development Design Information

Project	New Residential Development.
Project Number	GE23-0527-1
Client	Dryden, Smith & Head Planning
Address	36 Elliott Street, Cambridge, Ontario
Date	Tuesday, February 13, 2024

Design Summary

Storm Event (Yr)	Total Pre Flow (L/s)	Post Uncontrolled Flow (L/s)	Allowable Controlled Flow (L/s)	Controlled Flow			Total Post Flow (L/s)	Reduction in Flow (L/s)	Reduction in Flow (%)	Ponding Elevation (m)	Storage Required (m3)	Ponding Volume (m3)	Ponding Depth (m)
				Orifice Flow (L/s)	Weir Flow (L/s)	Total Flow (L/s)							
2	6.44	0.80	5.65	7.80	0.00	7.80	8.60	-2.15	-33%	**284.93**	4.49	4.60	0.03
5	8.97	1.11	7.86	7.86	0.00	7.86	8.97	0.00	0%	**284.96**	6.67	7.07	0.06
10	10.28	1.27	9.01	7.88	0.00	7.88	9.15	1.12	11%	**284.97**	7.95	8.06	0.07
25	11.36	1.40	9.96	7.92	0.00	7.92	9.32	2.04	18%	**284.99**	9.22	9.55	0.09
50	12.62	1.56	11.06	7.95	0.00	7.95	9.51	3.11	25%	**285.01**	10.62	11.03	0.11
100	13.42	1.66	11.76	7.97	0.00	7.97	9.63	3.79	28%	**285.03**	11.63	12.02	0.13

Underground Storage in Structures

Location	Size (m)	Area (m^2)	Depth (m)	Volume (m^3)
CB1	0.60	0.36	2.00	0.72
CBMH2	0.60	0.36	1.55	0.56
			Total Structure Volume	**1.28**

Underground Storage in Pipes

Location	Dia. (m)	Area (m^2)	Length (m)	Volume (m^3)
CB1-CBMH2	0.250	0.05	27.30	1.34
			Total Pipe Volume	**1.34**

Stage Storage Discharge

Stage	Elevation (m)	Surface Volume (m^3)	Total Volume (m^3)	Orifice Head (m)	Orifice Flow (L/s)	Weir Height of Flow (m)	Weir Flow (L/s)	Total Flow (L/s)
1	284.90	0.00	2.62	2.20	7.754	N/A	0.000	7.754
2	284.91	0.49	3.11	2.21	7.766	N/A	0.000	7.766
3	284.91	0.99	3.61	2.21	7.778	N/A	0.000	7.778
4	284.92	1.48	4.10	2.22	7.789	N/A	0.000	7.789
5	284.93	1.98	4.60	2.23	7.801	N/A	0.000	7.801
6	284.93	2.47	5.09	2.23	7.812	N/A	0.000	7.812
7	284.94	2.97	5.59	2.24	7.824	N/A	0.000	7.824
8	284.95	3.46	6.08	2.25	7.835	N/A	0.000	7.835
9	284.95	3.96	6.58	2.25	7.847	N/A	0.000	7.847
10	284.96	4.45	7.07	2.26	7.858	N/A	0.000	7.858
11	284.97	4.95	7.57	2.27	7.870	N/A	0.000	7.870
12	284.97	5.44	8.06	2.27	7.881	N/A	0.000	7.881
13	284.98	5.94	8.56	2.28	7.893	N/A	0.000	7.893
14	284.99	6.43	9.05	2.29	7.904	N/A	0.000	7.904
15	284.99	6.93	9.55	2.29	7.915	N/A	0.000	7.915
16	285.00	7.42	10.04	2.30	7.927	N/A	0.000	7.927
17	285.01	7.92	10.54	2.31	7.938	N/A	0.000	7.938
18	285.01	8.41	11.03	2.31	7.950	N/A	0.000	7.950
19	285.02	8.91	11.53	2.32	7.961	N/A	0.000	7.961
20	285.03	9.40	12.02	2.33	7.972	N/A	0.000	7.972
21	285.03	9.90	12.52	2.33	7.984	N/A	0.000	7.984
22	285.04	10.39	13.01	2.34	7.995	N/A	0.000	7.995
23	285.05	10.89	13.51	2.35	8.006	N/A	0.000	8.006
24	285.05	11.38	14.00	2.35	8.017	N/A	0.000	8.017
25	285.06	11.88	14.50	2.36	8.029	N/A	0.000	8.029
26	285.07	12.37	14.99	2.36	8.040	N/A	0.000	8.040
27	285.07	12.87	15.49	2.37	8.051	N/A	0.000	8.051
28	285.08	13.36	15.98	2.38	8.062	N/A	0.000	8.062
29	285.08	13.86	16.48	2.38	8.073	N/A	0.000	8.073
30	285.09	14.35	16.97	2.39	8.085	N/A	0.000	8.085
31	285.10	14.85	17.47	2.40	8.096	N/A	0.000	8.096

Pond Information

Top of Grate Elevation=	284.90	m
Max Ponding Elevation=	285.10	m
Elevation Increment=	0.0066	m
No of Stages=	31	
Volume in Structures=	1.28	m^3
Volume in Pipes=	1.34	m^3

Orifice Information

Online Orifice=	**Cav2gh**	
Restricted Storm Event=	5	Year
Orifice Area=	0.0019	m^2
Orifice Diameter=	**49**	**mm**
Orifice Invert=	282.7	m
Orifice Head @ Pond Elev.=	2.26	m
Coefficient=	0.62	
Restricted Storm Flow=	7.86	L/s

Weir Information

Weir Length=	6.00	m
Weir Invert=	285.10	m
Type=	**Rectangular**	
Q=	c*L*H^3/2	
c=	Discharge Coefficient (1.705)	
L=	Length of Weir (m)	
H=	Maximum head (m)	

2-Year Storage Calculation - Maximum Storage = 4.49 m^3

Time (t) (min)	Intensity (I) (mm/hr) *(A/(B+t) C)*	Controlled Flow (Q_t) (L/s) *(=2.78CIA)*	Volume In Q_t*t*60/1000 (m^3)	Restricted Outflow (Q_o) (L/s)	Volume Out (V_o) Q_o*t*60/1000	Storage Required (m^3)
10	72.98	13.14	7.88	5.65	3.39	4.49
15	58.63	10.55	9.50	5.65	5.08	4.42
20	49.48	8.91	10.69	5.65	6.78	3.91
25	43.07	7.75	11.63	5.65	8.47	3.16
30	38.30	6.89	12.41	5.65	10.17	2.24
35	34.60	6.23	13.08	5.65	11.86	1.22
40	31.63	5.69	13.67	5.65	13.55	0.11
45	29.20	5.26	14.19	5.65	15.25	-1.06
50	27.15	4.89	14.66	5.65	16.94	-2.28
55	25.41	4.57	15.10	5.65	18.64	-3.54
60	23.91	4.30	15.49	5.65	20.33	-4.84
65	22.60	4.07	15.87	5.65	22.02	-6.16
70	21.44	3.86	16.21	5.65	23.72	-7.51
75	20.42	3.67	16.54	5.65	25.41	-8.88
80	19.50	3.51	16.84	5.65	27.11	-10.26
85	18.67	3.36	17.14	5.65	28.80	-11.67
90	17.91	3.22	17.41	5.65	30.50	-13.08

5-Year Storage Calculation - Maximum Storage = 6.67 m^3

Time (t) (min)	Intensity (I) (mm/hr) *(A/(B+t) C)*	Controlled Flow (Q_t) (L/s) *(=2.78CIA)*	Volume In Q_t*t*60/1000 (m^3)	Restricted Outflow (Q_o) (L/s)	Volume Out (V_o) Q_o*t*60/1000	Storage Required (m^3)
10	101.56	18.28	10.97	7.86	4.71	6.25
15	84.86	15.27	13.75	7.86	7.07	6.67
20	73.23	13.18	15.82	7.86	9.43	6.39
25	64.63	11.63	17.45	7.86	11.79	5.66
30	57.99	10.44	18.79	7.86	14.14	4.64
35	52.69	9.48	19.92	7.86	16.50	3.41
40	48.36	8.70	20.89	7.86	18.86	2.03
45	44.74	8.05	21.75	7.86	21.22	0.53
50	41.68	7.50	22.51	7.86	23.57	-1.07
55	39.04	7.03	23.19	7.86	25.93	-2.74
60	36.75	6.61	23.81	7.86	28.29	-4.48
65	34.73	6.25	24.38	7.86	30.65	-6.27
70	32.95	5.93	24.91	7.86	33.00	-8.10
75	31.35	5.64	25.40	7.86	35.36	-9.97
80	29.92	5.39	25.85	7.86	37.72	-11.87
85	28.63	5.15	26.28	7.86	40.08	-13.80
90	27.45	4.94	26.68	7.86	42.43	-15.76

10-Year Storage Calculation - Maximum Storage = 7.95 m^3						
Time (t) (min)	Intensity (I) (mm/hr) *(A/(B+t) C)*	Controlled Flow (Q_t) (L/s) *(=2.78CIA)*	Volume In Q_t*t*60/1000 (m^3)	Restricted Outflow (Q_o) (L/s)	Volume Out (V_o) Q_o*t*60/1000	Storage Required (m^3)
10	116.38	20.95	12.57	9.01	5.40	7.17
15	99.11	17.84	16.06	9.01	8.10	7.95
20	86.59	15.59	18.70	9.01	10.81	7.90
25	77.07	13.87	20.81	9.01	13.51	7.30
30	69.57	12.52	22.54	9.01	16.21	6.33
35	63.49	11.43	24.00	9.01	18.91	5.09
40	58.46	10.52	25.26	9.01	21.61	3.64
45	54.23	9.76	26.36	9.01	24.31	2.04
50	50.61	9.11	27.33	9.01	27.02	0.31
55	47.48	8.55	28.20	9.01	29.72	-1.52
60	44.74	8.05	28.99	9.01	32.42	-3.43
65	42.33	7.62	29.71	9.01	35.12	-5.41
70	40.18	7.23	30.37	9.01	37.82	-7.45
75	38.25	6.89	30.98	9.01	40.52	-9.54
80	36.52	6.57	31.55	9.01	43.23	-11.68
85	34.95	6.29	32.08	9.01	45.93	-13.85
90	33.51	6.03	32.58	9.01	48.63	-16.05

25-Year Storage Calculation - Maximum Storage = 9.22 m^3						
Time (t) (min)	Intensity (I) (mm/hr) *(A/(B+t) C)*	Controlled Flow (Q_t) (L/s) *(=2.78CIA)*	Volume In Q_t*t*60/1000 (m^3)	Restricted Outflow (Q_o) (L/s)	Volume Out (V_o) Q_o*t*60/1000	Storage Required (m^3)
10	128.70	23.17	13.90	9.96	5.97	7.92
15	111.11	20.00	18.00	9.96	8.96	9.04
20	98.00	17.64	21.17	9.96	11.95	9.22
25	87.82	15.81	23.71	9.96	14.94	8.77
30	79.68	14.34	25.82	9.96	17.92	7.89
35	73.01	13.14	27.60	9.96	20.91	6.68
40	67.43	12.14	29.13	9.96	23.90	5.23
45	62.70	11.29	30.47	9.96	26.89	3.59
50	58.63	10.55	31.66	9.96	29.87	1.79
55	55.09	9.92	32.73	9.96	32.86	-0.14
60	51.99	9.36	33.69	9.96	35.85	-2.16
65	49.23	8.86	34.56	9.96	38.84	-4.28
70	46.78	8.42	35.36	9.96	41.82	-6.46
75	44.57	8.02	36.10	9.96	44.81	-8.71
80	42.57	7.66	36.78	9.96	47.80	-11.02
85	40.76	7.34	37.42	9.96	50.79	-13.37
90	39.11	7.04	38.01	9.96	53.77	-15.76

50-Year Storage Calculation - Maximum Storage = 10.62 m^3						
Time (t) (min)	Intensity (I) (mm/hr) *(A/(B+t) C)*	Controlled Flow (Q_t) (L/s) *(=2.78CIA)*	Volume In Q_t*t*60/1000 (m^3)	Restricted Outflow (Q_o) (L/s)	Volume Out (V_o) Q_o*t*60/1000	Storage Required (m^3)
10	142.94	25.73	15.44	11.06	6.64	8.80
15	124.55	22.42	20.18	11.06	9.95	10.22
20	110.60	19.91	23.89	11.06	13.27	10.62
25	99.63	17.93	26.90	11.06	16.59	10.31
30	90.76	16.34	29.41	11.06	19.91	9.50
35	83.44	15.02	31.54	11.06	23.23	8.31
40	77.28	13.91	33.38	11.06	26.55	6.84
45	72.02	12.96	35.00	11.06	29.86	5.14
50	67.48	12.15	36.44	11.06	33.18	3.26
55	63.51	11.43	37.73	11.06	36.50	1.22
60	60.01	10.80	38.89	11.06	39.82	-0.93
65	56.91	10.24	39.95	11.06	43.14	-3.19
70	54.13	9.74	40.92	11.06	46.45	-5.53
75	51.63	9.29	41.82	11.06	49.77	-7.96
80	49.36	8.88	42.65	11.06	53.09	-10.44
85	47.30	8.51	43.42	11.06	56.41	-12.99
90	45.41	8.17	44.14	11.06	59.73	-15.59

100-Year Storage Calculation - Maximum Storage = 11.63 m^3						
Time (t) (min)	Intensity (I) (mm/hr) *(A/(B+t) C)*	Controlled Flow (Q_t) (L/s) *(=2.78CIA)*	Volume In Q_t*t*60/1000 (m^3)	Restricted Outflow (Q_o) (L/s)	Volume Out (V_o) Q_o*t*60/1000	Storage Required (m^3)
10	151.99	27.36	16.41	11.76	7.06	9.36
15	133.45	24.02	21.62	11.76	10.58	11.03
20	119.17	21.45	25.74	11.76	14.11	11.63
25	107.82	19.41	29.11	11.76	17.64	11.47
30	98.56	17.74	31.93	11.76	21.17	10.77
35	90.86	16.35	34.35	11.76	24.70	9.65
40	84.35	15.18	36.44	11.76	28.23	8.21
45	78.76	14.18	38.28	11.76	31.75	6.52
50	73.91	13.30	39.91	11.76	35.28	4.63
55	69.66	12.54	41.38	11.76	38.81	2.57
60	65.91	11.86	42.71	11.76	42.34	0.37
65	62.56	11.26	43.92	11.76	45.87	-1.95
70	59.56	10.72	45.02	11.76	49.39	-4.37
75	56.85	10.23	46.05	11.76	52.92	-6.88
80	54.39	9.79	46.99	11.76	56.45	-9.46
85	52.15	9.39	47.88	11.76	59.98	-12.10
90	50.10	9.02	48.70	11.76	63.51	-14.81

GRIT ENGINEERING INC

Appendix C

Oil-Grit Separator System Summary

ADS OGS Sizing Summary

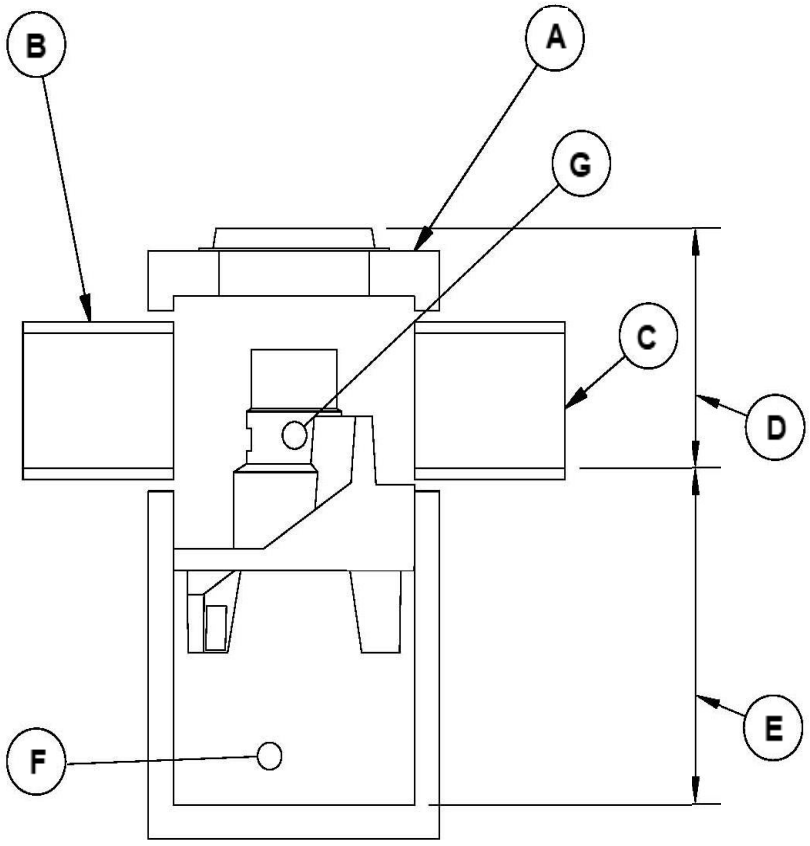
Project Name:	36 Elliott Street
Consulting Engineer:	GRIT Engineering
Location:	Cambridge, ON
Sizing Completed By:	C. Neath
Email:	cody.neath@ads-pipe.com

Treatment Requirements		
Treatment Goal:	Enhanced (MOE)	
Selected Parameters:	80% TSS	90% Volume
Selected Unit:	**FD-4HC**	

Site Details	
Site Area:	0.1 ha
% Impervious:	80%
Rational C:	0.78
Rainfall Station:	Waterloo_Wellington
Particle Size Distribution:	Fine
Peak Flowrate:	---

Summary of Results		
Model	**TSS Removal**	**Volume Treated**
FD-4HC	98.0%	>90%
FD-5HC	99.0%	>90%
FD-6HC	99.0%	>90%
FD-8HC	100.0%	>90%
FD-10HC	100.0%	>90%

FD-4HC Specification	
Unit Diameter (A):	1,200 mm
Inlet Pipe Diameter (B):	300 mm
Outlet Pipe Diameter (C):	300 mm
Height, T/G to Outlet Invert (D):	2000 mm
Height, Outlet Invert to Sump (E):	1515 mm
Sediment Storage Capacity (F):	0.78 m³
Oil Storage Capacity (G):	723 L
Recommended Sediment Depth for Maintenance:	440 mm
Max. Pipe Diameter:	600 mm
Peak Flow Capacity:	510 L/s



Site Elevations:	
Rim Elevation:	100.00
Inlet Pipe Elevation:	98.00
Outlet Pipe Elevation:	98.00

Notes:

Removal efficiencies are based on NJDEP Test Protocols and independently verified.

All units supplied by ADS have numerous local, provincial, and international certifications (copies of which can be provided upon request). The design engineer is responsible for ensuring compliance with applicable regulations.

Project Name:	36 Elliott Street
Consulting Engineer:	GRIT Engineering
Location:	Cambridge, ON

Net Annual Removal Efficiency Summary: FD-4HC

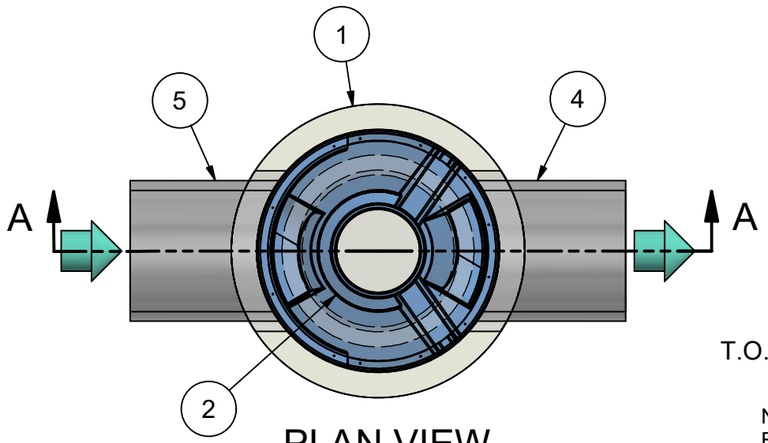
Rainfall Intensity[1]	Fraction of Rainfall[1]	FD-4HC Removal Efficiency[2]	Weighted Net-Annual Removal Efficiency
mm/hr	%	%	%
0.50	0.3%	100.0%	0.3%
1.00	27.0%	100.0%	27.0%
1.50	3.2%	100.0%	3.2%
2.00	13.6%	100.0%	13.6%
2.50	7.2%	100.0%	7.2%
3.00	1.8%	100.0%	1.8%
3.50	6.7%	100.0%	6.7%
4.00	3.7%	100.0%	3.7%
4.50	1.5%	100.0%	1.5%
5.00	4.8%	100.0%	4.8%
6.00	3.3%	100.0%	3.3%
7.00	4.7%	100.0%	4.7%
8.00	2.8%	98.8%	2.7%
9.00	2.0%	97.8%	1.9%
10.00	2.5%	96.8%	2.4%
20.00	9.0%	90.8%	8.2%
30.00	3.1%	87.4%	2.7%
40.00	1.0%	85.1%	0.9%
50.00	0.8%	83.4%	0.6%
100.00	0.9%	78.1%	0.7%
150.00	0.1%	75.3%	0.1%
200.00	0.0%	73.3%	0.0%
		Total Net Annual Removal Efficiency:	98.1%
		Total Runoff Volume Treated:	>90%

Notes:

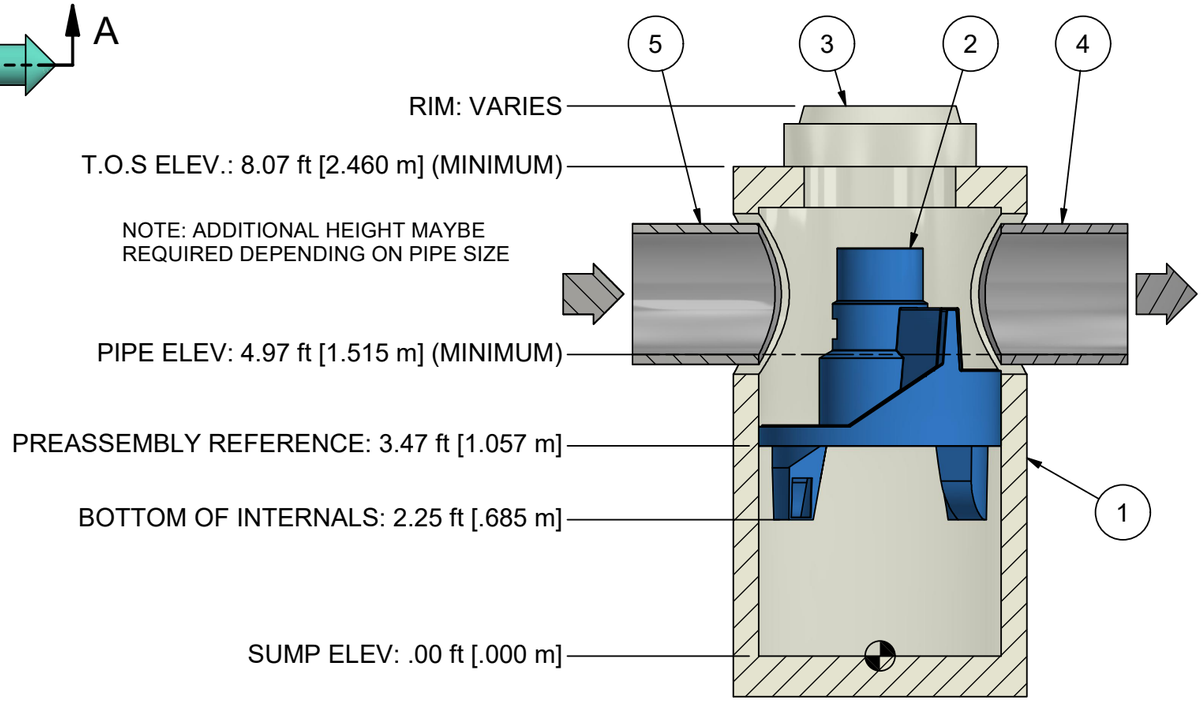
(1) Rainfall Data: 1981:2007,HLY03 6149387, Waterloo/Wellingotn Airport, ON

(2) Based on third party verified data and appoximating the removal of a PSD similar to the STC Fine distribution

(3) Rainfall adjusted to 5 min peak intensity based on hourly average.



PLAN VIEW



SECTION A-A

HYDRO FRAME AND COVER (INCLUDED)

GRADE RINGS BY OTHERS AS REQUIRED

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.

2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.

3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

PRODUCT SPECIFICATION:

1. Peak Hydraulic Flow: 18.0 cfs (510 l/s)
2. Min Sediment Storage Capacity: 0.7 cu. yd. (0.5 cu. m.)
3. Maximum Inlet/Outlet Pipe Diameters: 24 in. (600 mm)
4. The Treatment System Shall Use An Induced Vortex To Separate Pollutants From Stormwater Runoff.
5. For More Product Information Including Regulatory Acceptances, Please Visit https://hydro-int.com/en/products/first-defense

GENERAL NOTES:
1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plan.s)
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	48	1200	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1	30	750	FRAME AND COVER (ROUND)
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)

PROJECTION

IF IN DOUBT ASK

DATE:	SCALE:
10/7/2019	1:30

DRAWN BY:	CHECKED BY:	APPROVED BY
ER	MRJ	

Title
4-ft DIAMETER
FIRST DEFENSE

GENERAL ARRANGEMENT

Hydro International®
hydro-int.com
HYDRO INTERNATIONAL

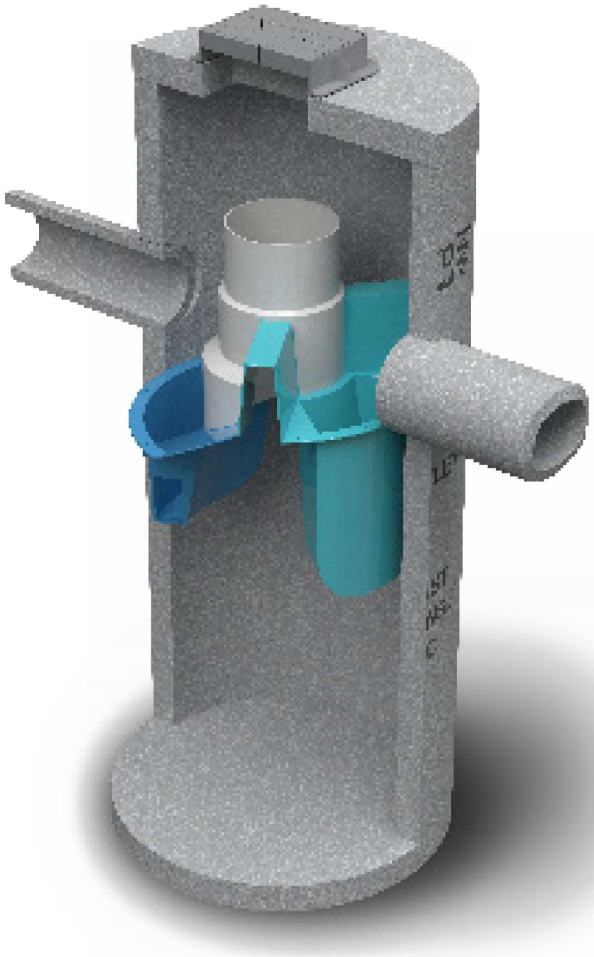
WEIGHT:	MATERIAL:
19448 lbmass	

STOCK NUMBER:

DRAWING NO.: FD GA-4

SHEET SIZE:	SHEET:	Rev:
B	1 OF 1	-

Hydro International



Operation and Maintenance Manual

First Defense® High Capacity and First Defense®Optimum

Vortex Separator for Stormwater Treatment

Table of Contents

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

I. First Defense® by Hydro International

Introduction

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations to accommodate a wide range of pipe sizes, peak flows and depth constraints.

The two product models described in this guide are the First Defense® High Capacity and the First Defense® Optimum; they are inspected and maintained identically.

Operation

The First Defense® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The First Defense® has been designed to allow for easy and safe access for inspection, monitoring and clean-out procedures. Neither entry into the unit nor removal of the internal components is necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

Pollutant Capture and Retention

The internal components of the First Defense® have been designed to optimize pollutant capture. Sediment is captured and retained in the base of the unit, while oil and floatables are stored on the water surface in the inner volume (Fig.1).

The pollutant storage volumes are isolated from the built-in bypass chamber to prevent washout during high-flow storm events. The sump of the First Defense® retains a standing water level between storm events. This ensures a quiescent flow regime at the onset of a storm, preventing resuspension and washout of pollutants captured during previous events.

Accessories such as oil absorbent pads are available for enhanced oil removal and storage. Due to the separation of the oil and floatable storage volume from the outlet, the potential for washout of stored pollutants between clean-outs is minimized.

Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for “offline” arrangements using separate junction manholes
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

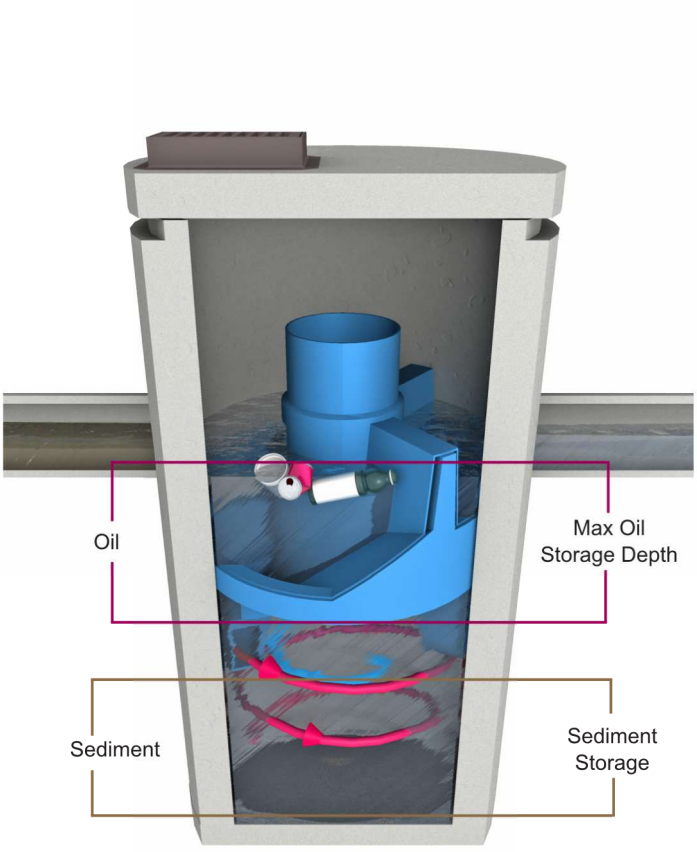


Fig.1 Pollutant storage volumes in the First Defense®.

II. Model Sizes & Configurations

The First Defense® inlet and internal bypass arrangements are available in several model sizes and configurations. The components have modified geometries allowing greater design flexibility to accommodate various site constraints.

All First Defense® models include the internal components that are designed to remove and retain total suspended solids (TSS), gross solids, floatable trash and hydrocarbons (Fig.2). First Defense® model sizes (diameter) are shown in Table 1.

III. Maintenance

First Defense® Components

1. **Built-In Bypass**
2. **Inlet Pipe**
3. **Inlet Chute**
4. **Floatables Draw-off Port**
5. **Outlet Pipe**
6. **Floatables Storage**
7. **Sediment Storage**
8. **Inlet Grate or Cover**

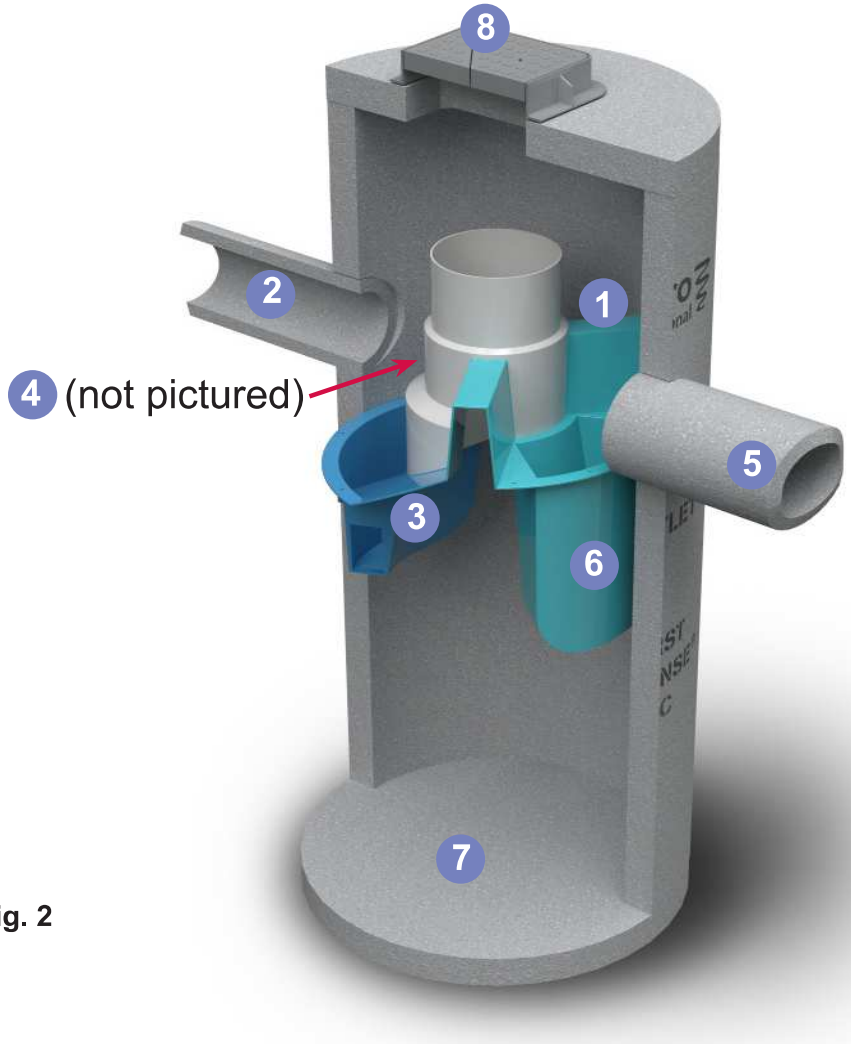


Fig. 2

Table 1

First Defense® Model Sizes
(ft / m) diameter
3 / 0.9
4 / 1.2
5 / 1.5
6 / 1.8
7 / 2.1
8 / 2.4
10 / 3.0

Overview

The First Defense® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the First Defense®. The First Defense® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the First Defense® will no longer be able to store removed sediment and oil.

The First Defense® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the First Defense®, nor do they require the internal components of the First Defense® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

Maintenance Equipment Considerations

The internal components of the First Defense® have a centrally located circular shaft through which the sediment storage sump can be accessed with a sump vac hose. The open diameter of this access shaft is 15 inches in diameter (Fig.3). Therefore, the nozzle fitting of any vactor hose used for maintenance should be less than 15 inches in diameter.

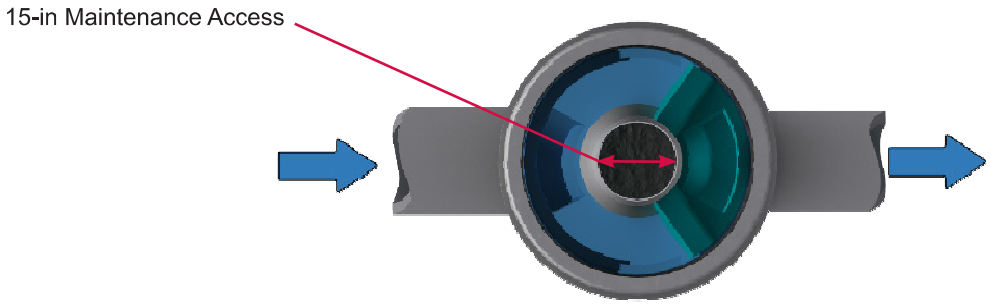


Fig.3 The central opening to the sump of the First Defense®is 15 inches in diameter.

Determining Your Maintenance Schedule

The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge-Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil / flotables removal, for First Defense® typically takes less than 30 minutes and removes a combined water/oil volume of about 765 gallons.

Inspection Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. Fig.4 shows the standing water level that should be observed.

4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the components and water surface.

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel.

6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.

7. Securely replace the grate or lid.

8. Take down safety equipment.

9. Notify Hydro International of any irregularities noted during inspection.

Floatables and Sediment Clean Out

Floatables clean out is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.4).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose to be lowered to the base of the sump.

Scheduling

- Floatables and sump clean out are typically conducted once a year during any season.

- Floatables and sump clean out should occur as soon as possible following a spill in the contributing drainage area.

Fig.4 Floatables are removed with a vactor hose

Recommended Equipment

- Safety Equipment (traffic cones, etc)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge Judge®)
- Vactor truck (flexible hose recommended)
- First Defense® Maintenance Log

Floatables and Sediment Clean Out Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.

4. Remove oil and floatables stored on the surface of the water with the vactor hose or with the skimmer or net

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (page 9).

6. Once all floatables have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris off the sump floor

7. Retract the vactor hose from the vessel.

8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components, blockages, or irregularly high or low water levels.

9. Securely replace the grate or lid.

Maintenance at a Glance

Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Oil and Floatables Removal	- Once per year, with sediment removal - Following a spill in the drainage area
Sediment Removal	- Once per year or as needed - Following a spill in the drainage area
NOTE: For most clean outs the entire volume of liquid does not need to be removed from the manhole. Only remove the first few inches of oils and floatables from the water surface to reduce the total volume of liquid removed during a clean out.	

First Defense® Installation Log

HYDRO INTERNATIONAL REFERENCE NUMBER:	
SITE NAME:	
SITE LOCATION:	
OWNER:	CONTRACTOR:
CONTACT NAME:	CONTACT NAME:
COMPANY NAME:	COMPANY NAME:
ADDRESS:	ADDRESS:
TELEPHONE:	TELEPHONE:
FAX:	FAX:

INSTALLATION DATE: / /

MODEL SIZE (CIRCLE ONE): [3-FT] [4-FT] [5-FT] [6-FT] [7-FT] [8-FT] [10-FT]

INLET (CIRCLE ALL THAT APPLY): GRATED INLET (CATCH BASIN) INLET PIPE (FLOW THROUGH)

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

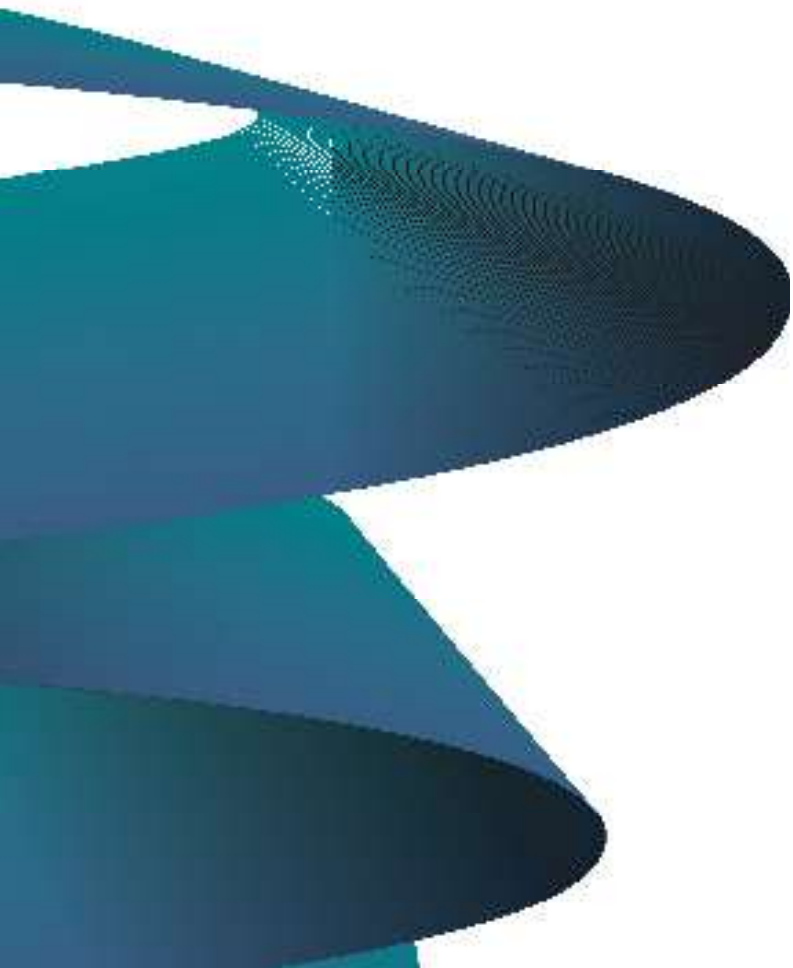
First Defense® Inspection and Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment Depth Measured	Volume of Sediment Removed	Site Activity and Comments

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International®



Stormwater Solutions

94 Hutchins Drive
Portland, ME 04102

Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com

Turning Water Around...®

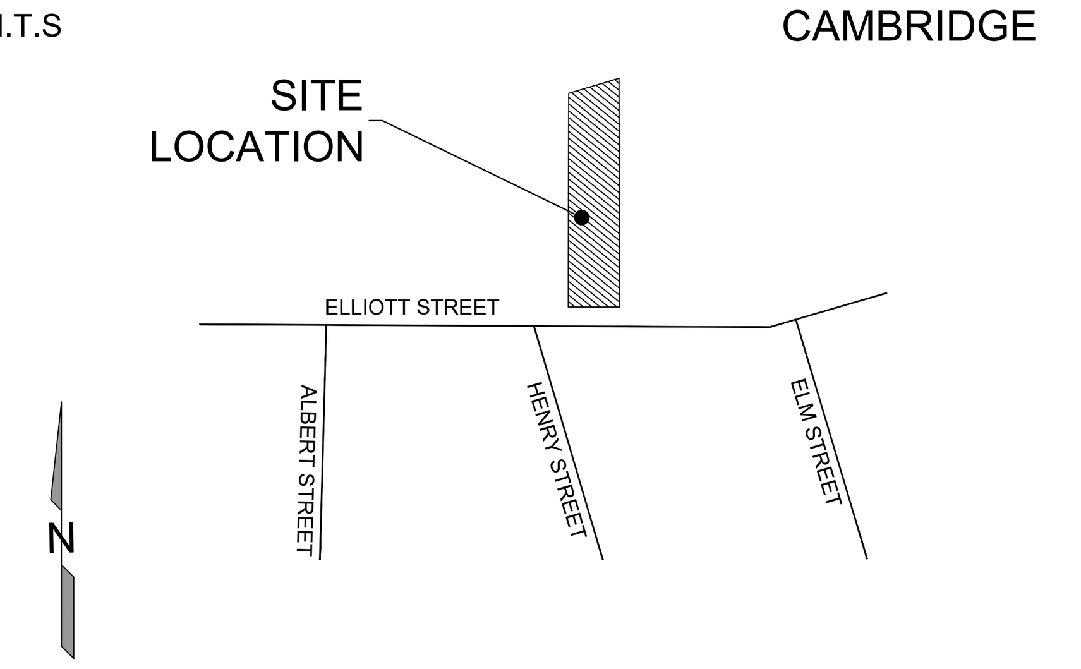
FD_O+M_K_2105

Appendix E –

Preliminary Grading and Servicing Plans

KEY PLAN
N.T.S

CITY OF CAMBRIDGE



CONTRACTOR NOTES:

CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY ERRORS TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

ALL DRAWINGS SHALL REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION. DRAWING SHOULD NOT BE SCALED FOR DIMENSIONS PURPOSES.

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT BE USE EXCEPT FOR THE PURPOSES INDICATED. BEARING AND DISTANCES SHOWN WERE DERIVED FROM PLAN OF SURVEY BY GUENTHER RUEB SURVEYING LTD. FILE NO B-2699

BENCHMARK (GEODETIC)

CONCRETE MONUMENT IN NORTH SIDE OF SIDEWALK OF CONCESSION STREET, TABLET IN TOP, 70cm FROM SOUTH EDGE OF SIDEWALK, 1.8m FROM CONCRETE RETAINING WALL NORTH SIDE OF SIDEWALK, 2.0m SOUTHWESTERLY FROM CONCRETE LAMP POST, 16.8m WEST OF WEST SIDE OF CENTRE STREET.

ELEVATION: 283.949

BENCHMARK (SITE)

TOP NUT ON FIRE HYDRANT

ELEVATION: 287.716

No.	ISSUED DESCRIPTION	DATE (YYYY-MM-DD)
1	ISSUED FOR CLIENT REVIEW	2023-12-22
2	ISSUED FOR APPROVAL	2024-02-14
3	REISSUED FOR APPROVAL	2024-02-27
4		
5		
6		
7		
8		
9		

GRIT ENGINEERING INC

CERTIFIED ENGINEERING TECHNOLOGIST
2024-02-27
OACETT ONTARIO
NICHOLAS PREIKSCHAS
No 862583

NEW RESIDENTIAL DEVELOPMENT

PROJECT INFORMATION: 36 ELLIOTT STREET, CAMBRIDGE, ONATRIO

DRYDEN, SMITH & HEAD PLANNING

CLIENT INFORMATION: 54 CEDAR STREET NORTH, KITCHENER, ONTARIO

DRAWING NAME:

GRADING, SERVICING, EROSION AND SEDIMENT CONTROL PLAN

PROJECT No: GE23-0527-1

DRAWING No: C300

SCALE: 1 : 100 METRIC

SHEET SET No: 2 OF 3

GENERAL NOTES & CONSTRUCTION SPECIFICATIONS

ALL STANDARDS ARE AS FOLLOWS, UNLESS INDICATED OTHERWISE.

1. GENERAL NOTES

1.1. THE WORK PROPOSED, UNLESS OTHERWISE NOTES IS TO CONFORM TO THE APPLICABLE OPSS AND OPSD DOCUMENTS.

1.2. THE PLANS ARE NOT TO BE WHOLE OR PARTLY REPLICATED WITHOUT THE AUTHORIZATION OF GRIT ENGINEERING INC.

1.3. ALL CONSTRUCTION WORK TO BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE (MOST RECENT) STANDARDS.

1.4. THESE PLANS PREPARED BY GRIT ENGINEERING INC. ARE NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ENGINEER AND ACCEPTED BY THE APPROVING AGENCY.

1.5. CHANGES TO THE DRAWINGS ARE NOT PERMITTED UNTIL REVIEWED AND APPROVED BY THE ENGINEER AND ACCEPTED BY THE APPROVING AUTHORITY.

1.6. THIS DRAWING IS TO BE READ COMBINATION WITH THE FOLLOWING:

1.6.1. FUNCTIONAL SERVICING & STORMWATER MANAGEMENT REPORT FEB 12, 2024.

1.7. EXISTING TOPOGRAPHIC INFORMATION TAKEN FROM PLAN PREPARED BY GRIT ENGINEERING INC., DATED JULY 20, 2023.

2. CONTRACTOR NOTES

2.1. THE CONTRACTOR TO VERIFY THAT THE DRAWINGS BEING USED FOR THE CONSTRUCTION ARE THE MOST RECENT APPROVED VERSION.

2.2. THE CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS, UTILITY LOCATES AND CLEARANCE REQUIREMENTS PRIOR TO THE START OF CONSTRUCTION.

2.3. THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS, WHICH INCLUDE BUT NOT LIMITED TO LOCATIONS AND ELEVATIONS OF BENCHMARKS, AND EXISTING SERVICING AND FEATURES. CONTRACTOR TO REPORT ALL DISCREPANCIES TO APPROVING ENGINEER PRIOR TO PROCEEDING.

2.4. THE CONTRACTOR TO ASSUME ALL LIABILITY FOR DAMAGE TO EXISTING FEATURES AND STRUCTURES.

2.5. THE CONTRACTOR TO ASSUME ALL COSTS ASSOCIATED WITH THE TEMPORARY SUPPORT OF EXISTING UNDERGROUND AND ABOVE GROUND UTILITIES.

2.6. ALL UNDERGROUND SERVICES ARE TO BE CONSTRUCTED IN FULL COMPLIANCE WITH THE ONTARIO PROVINCIAL BUILDING CODE (PART 7, PLUMBING), THE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS) AND THE REQUIREMENTS OF THE LOCAL MUNICIPALITY; WHICH CODES AND REGULATIONS SHALL SUPERSEDE ALL OTHERS.

2.7. SITE SERVICING CONTRACTOR TO TERMINATE ALL SERVICES 1 METER FROM FOUNDATION WALL.

2.8. FOLLOWING COMPLETION OF PROPOSED WORKS AND PRIOR TO OCCUPANCY INSPECTION, ALL STORM AND SANITARY SEWERS ARE TO BE FLUSHED, AND ALL CATCHBASIN AND CATCHBASIN MANHOLE SUMPS ARE TO BE CLEANED OF DEBRIS AND SILT.

2.9. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC AND SAFETY MEASURES THROUGH THE DURATION OF CONSTRUCTION, WHICH INCLUDES BUT NOT LIMITED TO THE INSTALLATION AND REMOVAL OF ALL NECESSARY SIGNALS, DELINEATORS, MARKERS, AND BARRIERS PER THE APPROVING AGENCY STANDARDS.

2.10. THE CONTRACTOR IS TO ASSUME ALL LIABILITY FOR DAMAGE TO ALL ABOVE GROUND AND BELOW GROUND INFRASTRUCTURE, UTILITIES AND STRUCTURES THAT MAY NOT BE ILLUSTRATED ON THESE DRAWINGS.

2.11. THE CONTRACTOR TO MAINTAIN A 'CONFINED TRENCH CONDITION' IN ALL SEWER AND SERVICE TRENCHES.

2.12. THE CONTRACTOR IS TO OBTAIN CONSENT FROM THE NEIGHBOR IN THE FORM OF WRITTEN CORRESPONDENCE GRANTING PERMISSION TO ENTERING THE PROPERTY TO COMPLETE ANY CONSTRUCTION ACTIVITY. THE WRITTEN CONSENT IS TO BE PROVIDED TO THE APPROVING AUTHORITY PRIOR TO THE CONTINUATION OF WORK FOR APPROVAL. THE CONTRACTOR WILL ASSUME LIABILITY FOR ALL WORKS IF FAILURE TO COMPLY.

3. STORM SEWER SERVICING

3.1. PIPE BEDDING FOR RIGID PIPE TO BE CLASS ``B'' AS PER OPSD 802.030, 802.031, OR 802.032. PIPE BEDDING FOR FLEXIBLE PIPE TO BE AS PER OPSD 802.010. BEDDING MATERIAL AND COVER MATERIAL TO BE GRANULAR ``A''. TRENCH BACKFILL TO BE NATIVE MATERIAL REPLACED IN 300mm LIFTS AND COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.

3.2. STORM SEWERS 200mmØ TO 450mmØ SHALL BE POLYVINYL CHLORIDE (PVC) PIPE DR35 ASTM-D3034 OR RIBBED PVC SEWER PIPE CSA B182.4-M90 ASTM-F794 WITH INTEGRAL BELL AND SPIGOT UTILIZING FLEXIBLE ELASTOMERIC SEALS. RIBBED PVC NOT TO BE USED WITHIN-RIGHT-OF-WAY.

3.3. 150mmØ AND SMALLER - POLYVINYL CHLORIDE PVC DR28 ASTM-D3034 WITH INTERGRATED BELL AND SPIGOT COMPLETE WITH ELASTOMERIC SEALS.

3.4. MAINTENANCE HOLES AND MAINTENANCE HOLE CATCHBASINS TO BE 1200mmØ PRECAST WITH ALUMINIUM STEPS AT 300mm CENTRES AS PER OPSD 701.010 UNLESS OTHERWISE SPECIFIED.

3.5. OIL GRIT SEPARATOR TO BE ADS MODEL FD4HC OR APPROVED EQUIVALENT.
RAINFALL: CITY OF CAMBRIDGE
CATCHMENT AREA; +/- 0.34 ha
CATCHMENT IMPERVIOUS: 72.7%
QUALITY LEVEL: ENHANCED
FLOW RATE: +/- 510L/S

3.6. CATCHBASIN STRUCTURES 600mmX600mm TO BE PER OPSD 705.010

3.7. CATCHBASIN MAINTENANCE HOLES, CATCHBASINS AND DITCH INLET CATCHBASINS TO HAVE A MINIMUM 600mm DEEP SUMP.

3.8. MAINTENANCE HOLE AND CATCHBASIN, FRAMES, GRATES, CASTINGS AND LIDS TO BE QUALITY GREY IRON ASTM A48 CLASS 30B.

3.9. STORM SEWERS AND SERVICES TO HAVE MINIMUM 1.2m COVER TO TOP OF PIPE. WHERE COVER TO TOP OF PIPE IS DEFICIENT, CONTRACTOR SHALL INSTALL SHALLOW BURIED SEWER PIPE PER DETAIL THIS SHEET OR OTHER ENGINEER-APPROVED EQUIVALENT.

4. SANITARY SEWER SERVICING

4.1. PIPE BEDDING FOR RIGID AND FLEXIBLE PIPE TO BE IN ACCORDANCE WITH OPSS.PROV 410, OPSS.MUNI 410 AND LOCAL MUNICIPAL STANDARDS.

4.2. TRENCH BACKFILL FOR RIGID AND FLEXIBLE PIPE TO BE IN ACCORDANCE TO OPSS.PROV 401, OPSS.MUNI 401 AND LOCAL MUNICIPAL STANDARDS. TRENCH BAKFILL TO BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO MINIMUM 95% STANDARD PROCTOR DENSITY.

4.3. FLEXIBLE SANITARY SEWERS:

4.3.1. 150mmØ AND SMALLER - POLYVINYL CHLORIDE PVC DR28 ASTM-D3034 WITH INTERGRATED BELL AND SPIGOT COMPLETE WITH ELASTOMERIC SEALS

4.4. SANITARY MAINTENANCE HOLE STRUCTURES TO BE INTERNALLY BENCHED PER OPSD 701.021 AND COMPLETE WITH ALUMINUM STEPS AT 300mm CENTRES AS PER OPSD 701.010 AND IN ACCORDANCE TO THE FOLLOWING:

4.4.1. 1200mmØ TO BE OPSD 701.010

4.5. SANITARY MAINTENANCE HOLE STRUCTURE LIDS TO BE PER OPSD 401.010 - TYPE 'A' WATER TIGHT.

4.6. SANITARY MAINTENANCE HOLE STRUCTURE FRAMES, CASTINGS AND LIDS TO BE QUALITY GREY IRON ASTM A48 CLASS 30B.

4.7. CONTRACTOR RESPONSIBLE FOR TESTING OF SANITARY SEWERS IN ACCORDANCE WITH OPSS 410 AND LOCAL MUNICIPAL STANDARDS.

5. WATERMAIN AND WATER SERVICING

5.1. PIPE BEDDING FOR RIGID AND FLEXIBLE PIPE TO BE IN ACCORDANCE WITH OPSS.PROV 410, OPSS.MUNI 410 AND LOCAL MUNICIPAL STANDARDS.

5.2. TRENCH BACKFILL FOR RIGID AND FLEXIBLE PIPE TO BE IN ACCORDANCE TO OPSS.PROV 401, OPSS.MUNI 401 AND LOCAL MUNICIPAL STANDARDS. TRENCH BACKFILL TO BE PLACED IN MAXIMUM 150mm LIFTS FROM 150mm BELOW PIPE TO 300mm ABOVE TOP AT 95% STANDARD PROCTOR DENSITY AND 300mm ABOVE THE TOP OF THE PIPE TO THE SUBGRADE OF THE PAVEMENT 300mm LIFTS AND COMPACTED TO MINIMUM 100% STANDARD PROCTOR DENSITY.

5.3. CURB STOPS SHALL BE A FULL PORT BALL VALVE CURB STOP COMPRESSION #110 OR EQUIVALENT CONNECTION, PER MUELLER B-25209 OR FORD B44-444, OR APPROVED EQUIVALENT. SCREW CONNECTION TO BE PROVIDED FOR ATTACHMENTS OF ANODE WIRE.

5.4. VALVES SHALL BE RESILIENT-SEATED, WEDGE GATE VALVES BY MUELER CANADA VALVE OR APPROVED EQUIVALENT, MAIN LINE VALVES TO BE #55 MJ TYPE WITH STANDARD OPERATING NUT CONFORMING TO AWWA. STANDARD C500 OR AWWA. STANDARD C509. HYDRANT VALVES TO BE #525 MJ TO FL GATE VALVE WITH STANDARD OPERATING NUT AND RESILIENT SEAL. ALL VALVES TO BE SUPPLIED WITH "O" RING PACKING FOR WATER USE AND OPEN COUNTER-CLOCKWISE.

5.5. ALL WATERMAINS AND SERVICES TO HAVE MINIMUM 1.6m COVER TO MAXIMUM 1.8m COVER. WHERE COVER OVER SERVICES IS DEFICIENT, THE CONTRACTOR SHALL INSULATE WATERMAIN AND SERVICES AS PER DETAIL THIS SHEET OR APPROVED EQUIVALENT.

6. ROAD CONSTRUCTION

6.1. ALL ORGANIC, UNSTABLE OR UNSUITABLE MATERIAL BENEATH THE ROAD ALLOWANCES MUST BE REMOVED AND THESE AREAS BACKFILLED WITH APPROVED FILL MATERIAL ALL TO THE SATISFACTION OF THE APPROVING AUTHORITY.

6.2. A MINIMUM OF 95% PROCTOR DRY DENSITY (SPDD) IS REQUIRED IN AREAS WHERE FILL IS REQUIRED TO ESTABLISH THE SUB-GRADE ELEVATION.

6.3. GRANULAR 'A' & 'B' ROAD BASE IS TO BE A MINIMUM 98% PROCTOR DENSITY (SPDD).

6.4. ROAD RESTORATION TO BE RESTORED AS PER DETAIL ON DETAIL ON CONSTRUCTION DRAWING.

6.5. MAINTENANCE HOLE STRUCTURES TO BE INSTALLED WITH TOP OF GRATE ELEVATION AT BASE COAT ASPHALT. MAINTENANCE HOLES TO BE RAISED WITH MODULOC RISERS IMMEDIATELY PRIOR TO TOP COAT ASPHALT INSTALLATION.

7. CONCRETE SIDEWALK

7.1. CONCRETE SIDEWALKS ARE TO BE A 1.5m WIDE AND 100mm THICK CONCRETE AND 200mm THICK ACROSS DRIVEWAYS. SIDEWALK TO BE INSTALLED ON 150mm THICKNESS OF COMPACTED GRANULAR "A" BEDDING IN ACCORDANCE WITH OPSD 310.010 UNLESS NOTED OTHERWISE ON THE CONSTRUCTION DRAWINGS.

7.2. CONCRETE MATERIAL TO BE 30MPA USING ACI STON, 7% +/1/-1.5% AIR ENTRAINMENT, WITH BROOM FINISH.

7.3. ALL SIDEWALKS ARE TO HAVE A MINIMUM 2% CROSS FALL AS PER ROAD CROSS SECTION DETAIL UNLESS NOTED OTHERWISE ON THE CONSTRUCTION DRAWINGS.

7.4. SIDEWALK RAMPS ARE TO BE INSTALLED IN ACCORDANCE WITH THE LOCAL MUNICIPAL GUIDELINES OR OPSD 310.030 IN LOCATIONS AS SHOWN ON THE CONSTRUCTION DRAWINGS.

8. EROSION AND SEDIMENT CONTROL

8.1. PRIOR TO THE START OF ANY CONSTRUCTION THE CONTRACTOR IS TO INSTALL THE EROSION AND SEDIMENT CONTROLS IN ACCORDANCE TO THE APPROVED PLAN.

8.2. NO ALTERNATE EROSION AND SEDIMENT CONTROLS ARE PERMITTED WITHOUT APPROVAL FROM THE ENGINEER AND APPROVING AUTHORITY.

8.3. AS CONSTRUCTION PROGRESSES, ADDITIONAL EROSION AND SEDIMENT CONTROLS MAY BE REQUIRED. THE ADDITIONAL MEASURES AS SPECIFIED BY THE ENGINEER AND APPROVING AUTHORITY WILL BE REQUIRED TO BE INSTALLED BY THE CONTRACTOR.

8.4. REGULAR MAINTENANCE, REPAIRS AND REPLACEMENT IS REQUIRED TO BE PERFORMED BY THE CONTRACTOR ON ALL EROSION AND SEDIMENT CONTROLS TO ENSURE PROPER FUNCTIONING UNTIL DEVELOPMENT IS COMPLETE AND FINISHED HARD SURFACE MATERIALS AND VEGETATION IS STABILIZED WITH MATURE GROWTH.

8.5. CONTRACTOR TO REMOVE ALL EROSION AND SEDIMENT CONTROLS WHEN DEVELOPMENT IS COMPLETE AND FINISHED HARD SURFACE MATERIALS AND VEGETATION IS STABILIZED WITH MATURE GROWTH.

8.6. EROSION CONTROL FENCING TO BE INSTALLED AROUND THE BASE OF ALL STOCKPILES. ALL STOCKPILES TO BE KEPT 2.5m MINIMUM FROM PROPERTY LINE.

8.7. EROSION PROTECTION TO BE PROVIDED AT ALL STORM AND SANITARY STRUCTURES.

8.8. THE CONTRACTOR IS TO CLEAN ALL ROADWAYS AND SIDEWALKS OF SEDIMENTS RESULTING FROM CONSTRUCTION TRAFFIC FROM THE SITE EACH DAY.

8.9. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED LOCATION IN CONFORMANCE TO THE MECP EXCESS SOIL REGULATION.

8.10. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION

8.11. PROTECT ALL PIPES ENDS FROM SEDIMENT INTRUSION WITH PIPE CAPS

8.12. PREVENT WINDBLOWN DUST DURING CONSTRUCTION WITH AN ACCEPTABLE DUST SUPPRESSANT

9. INSPECTION AND CERTIFICATION

9.1. GRIT ENGINEERING INC. REQUIRES A MINIMUM OF 48 HOURS NOTICE PRIOR TO THE REQUIRED INSPECTION BE REQUESTED. INSPECTIONS ARE REQUIRED TO VERIFY, PIPE INSTALLATION (MATERIALS, SIZE, LOCATION AND ELEVATION), STRUCTURE PLACEMENT, SURFACE MATERIAL AND FINISHED GRADING

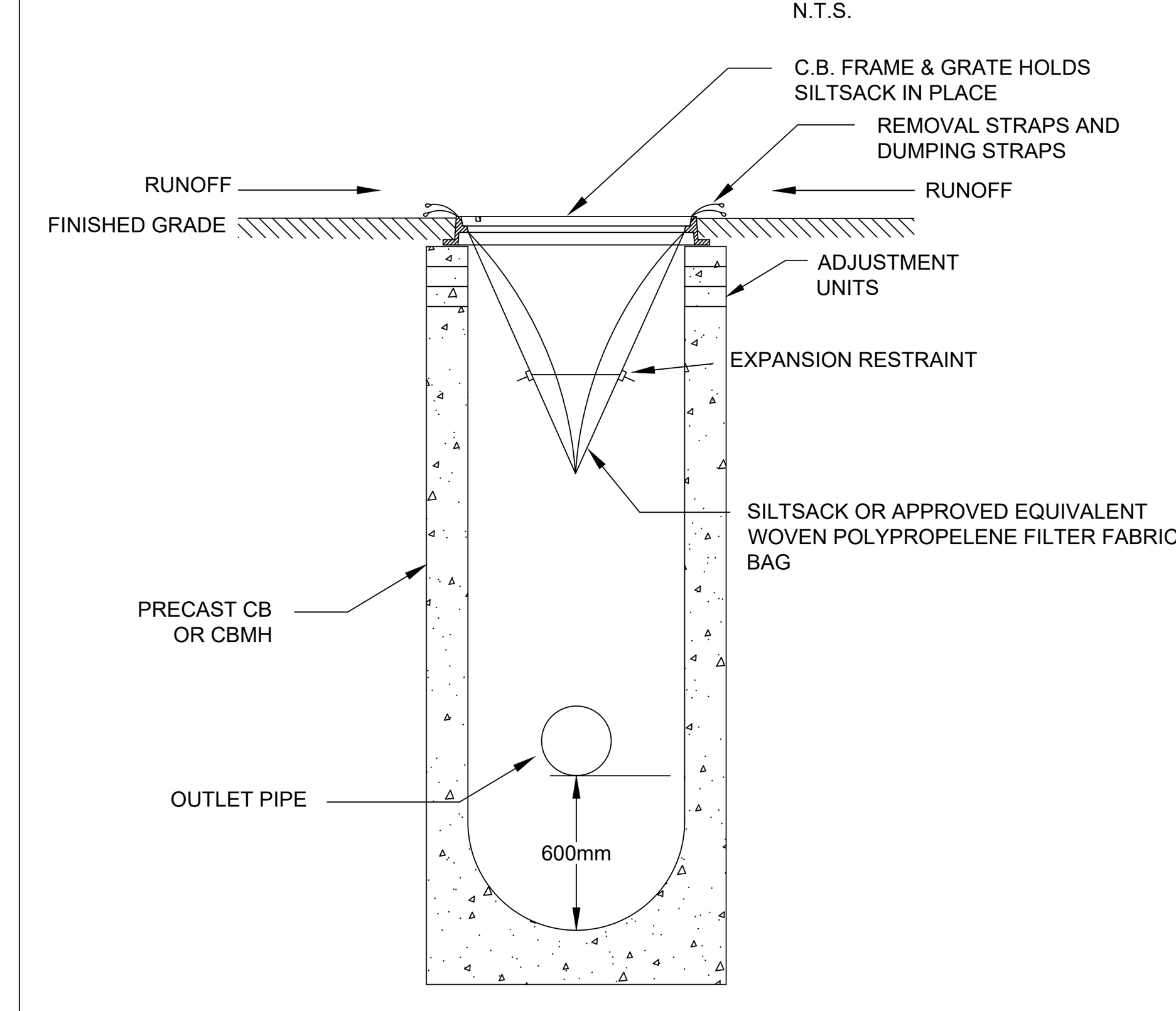
9.2. CONSTRUCTION WORKS WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRE FULL TIME INSPECTION.

9.3. CONSTRUCTION WORKS WITHIN PRIVATE LANDS ARE REQUIRED ON A PART TIME AND AS NEEDED BASIS.

9.4. FAILURE TO COMPLY WITH GRIT ENGINEERING INC. INSPECTION REQUIREMENTS, WILL RESULT IN ADDITIONAL CONSTRUCTION INSPECTION AND VERIFICATION AT THE EXPENSE OF THE CONTRACTOR.

TEMPORARY SILTSACK SILTATION CONTROL IN CB

N.T.S.

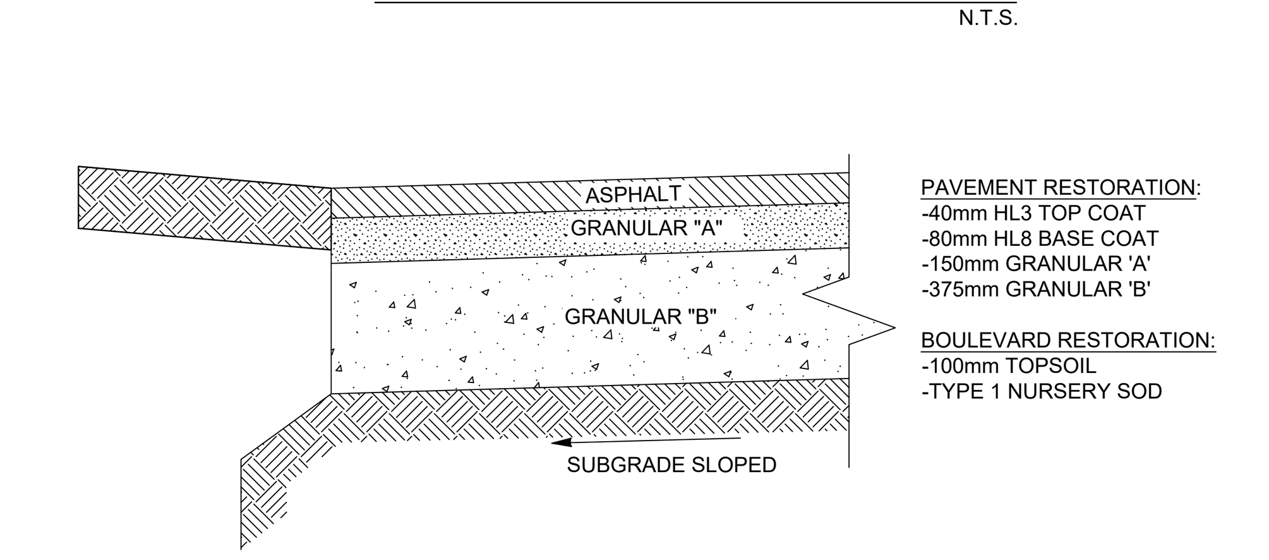


MAINTENANCE SCHEDULE

-INSPECT AFTER EVERY MAJOR RAIN EVENT.
-INSPECT EVERY 3 WEEKS MINIMUM.
-SILTSACK SHOULD NEVER BE OVER HALF FULL.
-FULL BAG CAN BE REMOVED, DUMPED, CLEANED AND REUSED
(TO REMOVE INSERT 25mm REBAR INTO REMOVAL FLAP POCKETS)
(TO DUMP INSERT 25mm REBAR INTO BOTH DUMPING STRAPS)

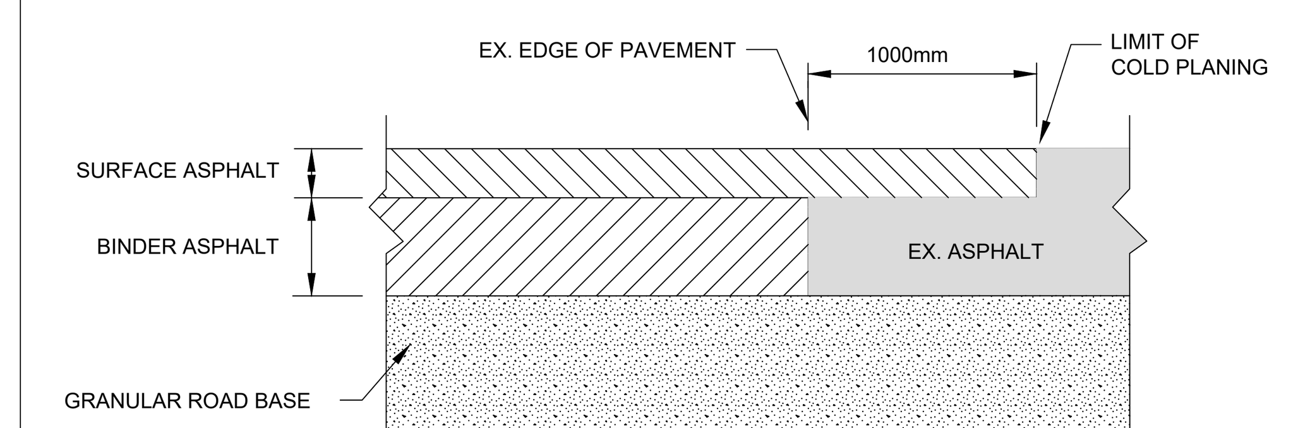
ELLIOT STREET RESTORATION

N.T.S.



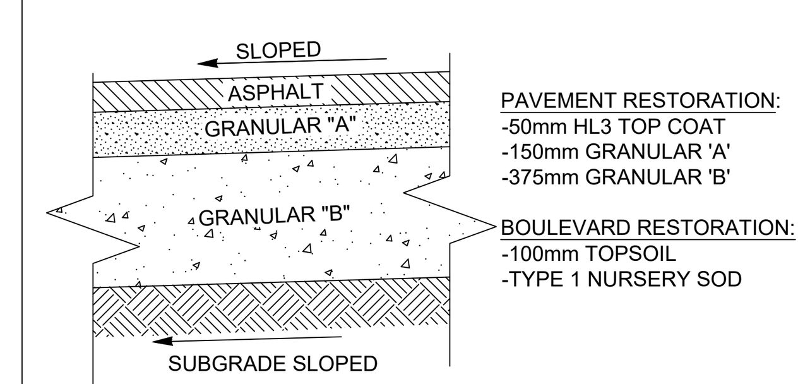
ASPHALT JOINT DETAIL

N.T.S.



PRIVATE PAVEMENT STRUCTURE

N.T.S.

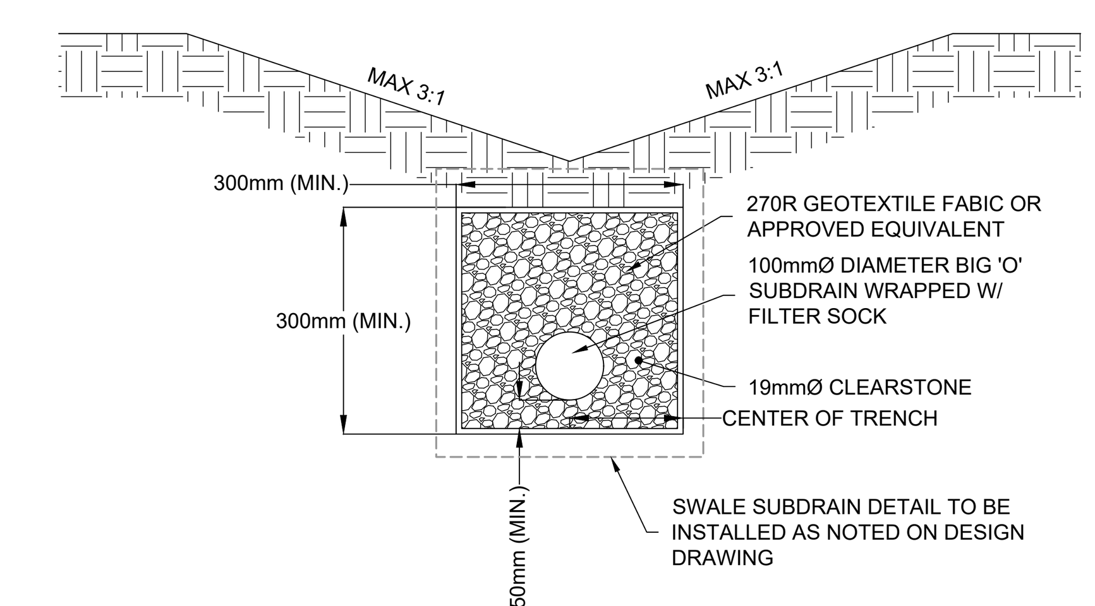


NOTE: PAVEMENT STRUCTURE RECOMMENDED AND TO BE VERIFIED ONSITE BY A QUALIFIED GEOTECHNICAL ENGINEER

ENHANCED GRASSED SWALE WITH SUBDRAIN

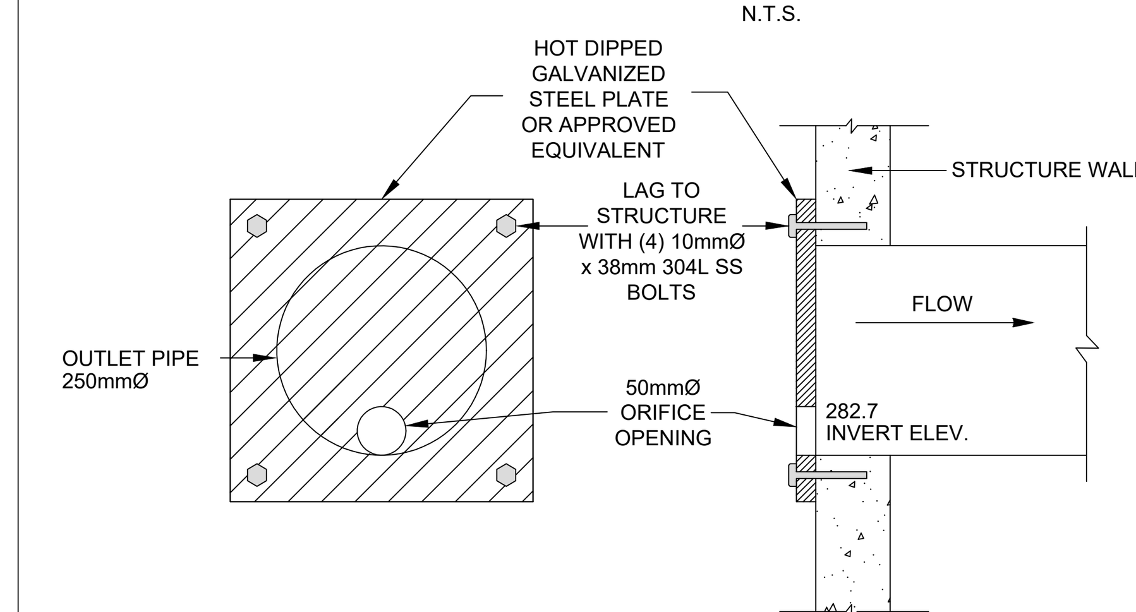
N.T.S.

NOTE: SWALE TO BE CONSTRUCTED TO ACHIEVE POSITIVE DRAINAGE



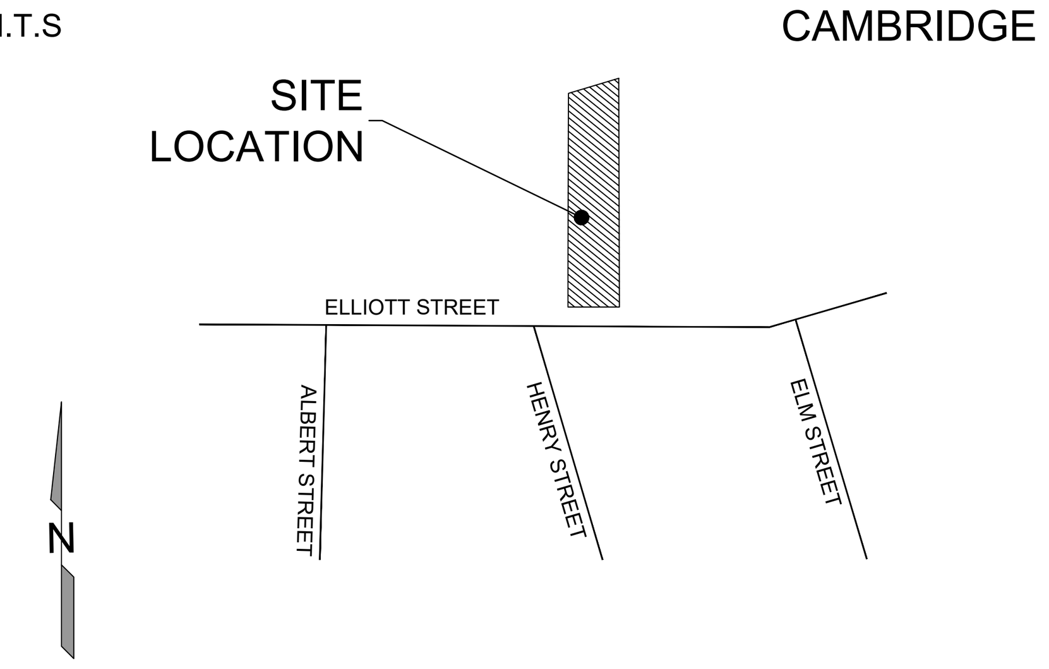
ON-LINE ORIFICE DETAIL

N.T.S.



KEY PLAN
N.T.S

CITY OF CAMBRIDGE



CONTRACTOR NOTES:

CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY ERRORS TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

ALL DRAWINGS SHALL REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION. DRAWING SHOULD NOT BE SCALED FOR DIMENSIONS PURPOSES.

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT BE USE EXCEPT FOR THE PURPOSES INDICATED. BEARING AND DISTANCES SHOWN WERE DERIVED FROM PLAN OF SURVEY BY GUENTHER RUEB SURVEYING LTD. FILE NO B-2699

BENCHMARK (GEODETIC)

CONCRETE MONUMENT IN NORTH SIDE OF SIDEWALK OF CONCESSION STREET, TABLET IN TOP, 70cm FROM SOUTH EDGE OF SIDEWALK, 1.8m FROM CONCRETE RETAINING WALL NORTH SIDE OF SIDEWALK, 2.0m SOUTHWESTERLY FROM CONCRETE LAMP POST, 16.8m WEST OF WEST SIDE OF CENTRE STREET.

ELEVATION: 283.949

BENCHMARK (SITE)

TOP NUT ON FIRE HYDRANT

ELEVATION: 287.716

No.	ISSUED DESCRIPTION	DATE (YYYY-MM-DD)
1	ISSUED FOR CLIENT REVIEW	2023-12-22
2	ISSUED FOR APPROVAL	2024-02-14
3	REISSUED FOR APPROVAL	2024-02-27
4		
5		
6		
7		
8		
9		

GRIT ENGINEERING INC

CERTIFIED ENGINEERING TECHNOLOGIST 2024-02-27 OACETT ONTARIO NICHOLAS PREIKSCHAS Nº 862583

NEW RESIDENTIAL DEVELOPMENT

PROJECT INFORMATION: 36 ELLIOTT STREET, CAMBRIDGE, ONATRIO

DRYDEN, SMITH & HEAD PLANNING

CLIENT INFORMATION: 54 CEDAR STREET NORTH, KITCHENER, ONTARIO

DRAWING NAME: NOTES AND DETAILS PLAN

PROJECT No: GE23-0527-1

SCALE: 1 : 500 METRIC

0 10 20 30

DRAWING No: C500

SHEET SET No: 3 OF 3

Appendix F –

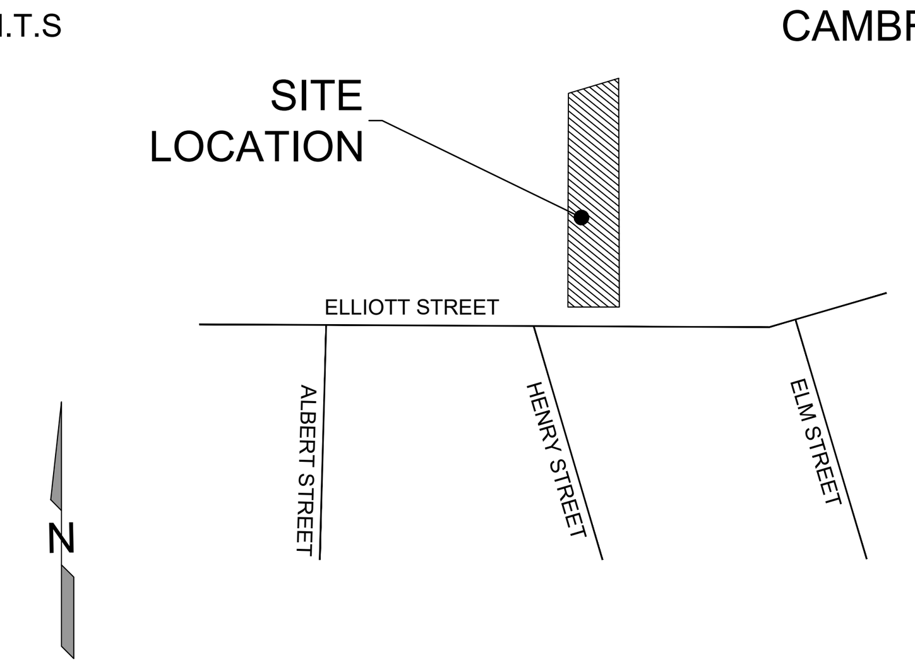
Truck Turning Plan


EXISTING FEATURES
SITE BOUNDARY
PROPERTY LINE (OTHERS)
EX. BUILDING
EX. CONTOURS
PROPOSED FEATURES
PROPOSED BUILDING
PROPOSED ELEVATION
360.00
PROPOSED ASPHALT
PROPOSED CONCRETE
PROPOSED DOWNSPOUT
DS
PROPOSED SANITARY SEWER
SA-MH1
PROPOSED WATERMAIN
XXXmmØ PVC WTM
PROPOSED STORM SEWER
PROPOSED SWALE
0.2%
N
ELLIOTT STREET
PROPOSED RETAINING WALL TO BE DESIGNED BY OTHERS IN ACCORDANCE WITH THE OBC.
TRENCH DRAIN
GRASS
CB1
T/G:285.55
STM C/O 39
STM C/O 40
STM C/O 41
STMH3
T/G:285.17
COVERED STAIRS TO BASEMENT UNIT
COVERED PORCH & STAIRS TO MAIN LEVEL
COVERED PORCH & STAIRS TO MAIN LEVEL
COVERED STAIRS TO BASEMENT UNIT
COVERED PORCH & STAIRS TO MAIN LEVEL
COVERED STAIRS TO BASEMENT UNIT
UNIT #5 (ground and upper lev.) & UNIT #6 (basement)
PROP. 2-STOREY, 6 UNIT APARTMENT HOUSE
UNIT #3 & #4
FF=287.8m
BASEMENT FF=285.0m
UNIT #1 (ground and upper lev.) & UNIT #2 (basement)
30.00m
7.80m
SNOW STORAGE AREA
DROP CURB
LANDSCAPED / AMENITY AREA
ASPHALT
CBMH2
T/G:284.90
STMHOGS
T/G:285.01
SAMH1
T/G:284.62
SAN C/O 37
T/G:285.64
8 PARKING SPACES
23.20m
2.90m
5.50m
6.00m
1.5m CONCRETE WALKWAY
PATIO / REAR YARD PRIVATE AMENITY AREA
3.00m
2.50m
PROPOSED RETAINING WALL TO BE DESIGNED BY OTHERS IN ACCORDANCE WITH THE OBC.
garage
shed
shed
2.5 storey house

KEY PLAN

N.T.S

CITY OF CAMBRIDGE



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BENCHMARK (GEODETIC)

CONCRETE MONUMENT IN NORTH SIDE OF SIDEWALK OF CONCESSION STREET, TABLET IN TOP, 70cm FROM SOUTH EDGE OF SIDEWALK, 1.8m FROM CONCRETE RETAINING WALL NORTH SIDE OF SIDEWALK, 2.0m SOUTHWESTERLY FROM CONCRETE LAMP POST, 16.8m WEST OF WEST SIDE OF CENTRE STREET.

ELEVATION: 283.949

BENCHMARK (SITE)

TOP NUT ON FIRE HYDRANT

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GRIT ENGINEERING INC

NEW RESIDENTIAL DEVELOPMENT

PROJECT INFORMATION: 36 ELLIOTT STREET, CAMBRIDGE, ONATRIO

DRYDEN, SMITH & HEAD PLANNING

CLIENT INFORMATION: 54 CEDAR STREET NORTH, KITCHENER, ONTARIO

DRAWING NAME: SITE PLAN

PROJECT No: GE23-0527-1

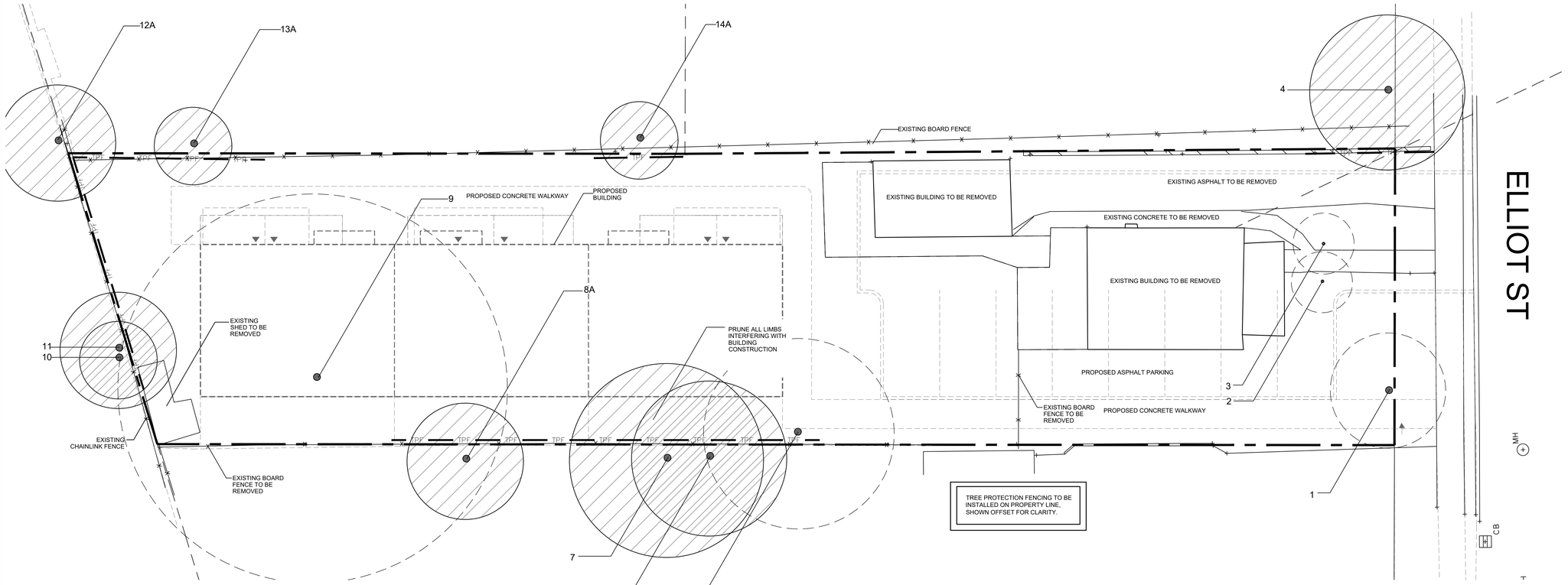
SCALE: 1 : 100 METRIC

DRAWING No: C200

SHEET SET No: 1 OF 3

Appendix G –

Landscaping Plans



LEGEND

	EXISTING INVENTORIED TREES TO REMAIN
	EXISTING INVENTORIED TREES TO BE REMOVED
TPF	TREE PROTECTION FENCE

NOTES:

SITE VISIT DATE: OCTOBER 12, 2023

TREE INVENTORY COMPLETED BY ISA CERTIFIED ARBORIST CATHERINE HODGINS #ON-2258A

TREE LOCATIONS AND DRIPLINES BASED ON TOPOGRAPHY SKETCH PROVIDED BY GUENTHER RUEB SURVEYING LTD AND HILL DESIGN STUDIO FIELD SURVEY ON OCTOBER 12, 2023.

#A DENOTES APPROXIMATE TREE LOCATION BASED ON HILL DESIGN FIELD SURVEY ON OCTOBER 12, 2023 AND AERIAL PHOTOGRAPHY.

TREE IMPACT NOTES:

TREES #4,6, 7, 8A, 10, 11, 12A, 13A, AND 14A ARE ON ADJACENT PROPERTIES OR ARE PRESUMED BOUNDARY TREES AND WILL BE IMPACTED BY PROPOSED CONSTRUCTION ACTIVITIES.
THE LISTED TREES REQUIRE A SIGNED LETTER OF UNDERSTANDING FROM ADJACENT PROPERTY OWNERS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

TREE #1 IS A PRESUMED BOUNDARY TREE WHICH REQUIRES PERMISSION FROM THE CITY TO BE REMOVED.

TREE INVENTORY

ID #	Tree Species (Latin)	Tree Species (Common)	D.B.H (cm)	Condition	Status	Ownership	Additional Notes
1	Acer platanoides 'Globosum'	Globe Norway Maple	23	Fair	Remove	Presumed Boundary Tree	20% Dead
2	Thuja occidentalis	Cedar	41	Fair	Preserve	Subject Site	
3	Thuja occidentalis	Cedar	23	Poor	Remove	Subject Site	30% Dead
4	Acer platanoides	Norway Maple	42	Poor	Remove	Subject Site	50% Dead
5	Tilia americana	Basswood	40	Good	Remove	Subject Site	
6	Acer saccharum	Sugar Maple	25	Good	Preserve	Adjacent Property	
7	Acer saccharum	Sugar Maple	30	Fair	Preserve	Adjacent Property	
8A	Picea pungens	Blue Spruce	25	Fair	Preserve	Adjacent Property	Thin crown, limbed up
9	Julgans nigra	Black Walnut	86	Good	Remove	Subject Site	
10	Tilia americana	Basswood	12	Good	Preserve	Adjacent Property	
11	Picea glauca	White Spruce	34	Poor	Preserve	Presumed Boundary Tree	75% Dead, thin crown, limbed up
12A	Morus alba	Mulberry	15/15	Fair	Preserve	Adjacent Property	
13A	Quercus macrocarpa	Burr Oak	10	Good	Preserve	Adjacent Property	
14A	Quercus macrocarpa	Burr Oak	10	Good	Preserve	Adjacent Property	

TREE PROTECTION NOTES

1. AS PART OF ANY TREE REMOVAL OPERATION ALL STEMS, LIMBS AND STUMPS SHOULD BE REMOVED FROM THE SITE.

2. UPON COMPLETION OF ANY TREE REMOVAL OPERATIONS, TREE PROTECTION FENCING SHOULD BE INSTALLED AS ILLUSTRATED. THIS PROTECTION FENCING SHOULD BE MAINTAINED UNTIL ALL EXCAVATION AND BUILDING CONSTRUCTION WORK IS COMPLETED.

3. ANY ROOTS DISTURBED DURING CONSTRUCTION SHOULD BE CUT CLEANLY AND BURIED IMMEDIATELY.

4. NO HEAVY EQUIPMENT OR STOCKING OF MATERIAL SHALL OCCUR WITHIN THE DRIPLINES OF ANY TREES THAT ARE TO BE PRESERVED.

5. TREE PROTECTION MEASURES TO BE INSPECTED BY LANDSCAPE ARCHITECT AND CITY STAFF PRIOR TO START OF CONSTRUCTION.

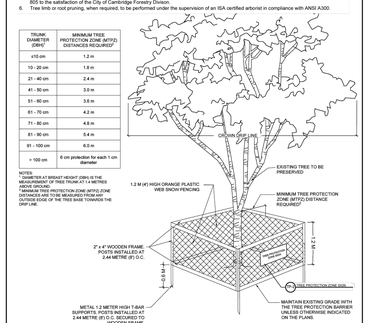
6. IF CONSTRUCTION OR ANY WORK OCCURS WITHIN THE TREE PRESERVATION ZONE, INSIDE THE LIMITS OF THE TREE PROTECTION FENCE, IT IS NECESSARY TO ONLY USE HAND TOOLS. NO MACHINERY WILL BE PERMITTED IN THIS ZONE.

TREE PROTECTION BARRIER

1. Tree protection barrier and signage to be installed as prescribed in approved tree preservation plan prior to any construction activity, including demolition, removals or grading.
2. Tree protection barrier and signage is to be maintained in good repair during construction and may not be removed without written authorization from the City of Cambridge Forestry Division.
3. The area within the boundary of the tree protection barrier is identified as the tree protection zone, maintain minimum tree protection zone distances required in this detail or greater, unless otherwise prescribed in approved Tree Inventory and Preservation Plan.
4. Construction activities are prohibited in the tree protection zone, including but not limited to:
   i. operating, storing, parking, repairing or refuelling any equipment or vehicles.
   ii. temporary or permanent grade changes (cutting, filling or excavating)
   iii. storing construction materials.
5. Protect tree protection zone from erosion and sediment as prescribed in the approved erosion and sediment control plan. When an erosion and sediment control plan does not exist, install and maintain, temporary erosion and sediment control measures in accordance with OPSS 805 to the satisfaction of the City of Cambridge Forestry Division.
6. Tree limb or root pruning, when required, to be performed under the supervision of an ISA certified arborist in compliance with ANSI A300.

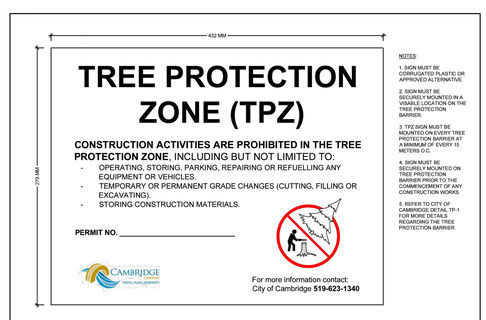
TRUNK DIAMETER LIMIT	MINIMUM TREE PROTECTION ZONE (MTPZ) DISTANCES REQUIRED*
≤10 cm	1.2 m
10 - 20 cm	1.8 m
21 - 40 cm	2.4 m
41 - 50 cm	3.0 m
51 - 60 cm	3.6 m
61 - 70 cm	4.2 m
71 - 80 cm	4.8 m
81 - 90 cm	5.4 m
91 - 100 cm	6.0 m
> 100 cm	6 cm protection for each 1 cm diameter

NOTES:
* DIAMETER AT BREAST HEIGHT (DBH) IS THE MEASUREMENT OF TREE TRUNK AT 1.4 METRES ABOVE GROUND.
* MINIMUM TREE PROTECTION ZONE (MTPZ) ZONE IS MEASURED FROM THE TREE BASE TO THE OUTSIDE EDGE OF THE TREE BASE TO INVADE THE DRIP LINE.

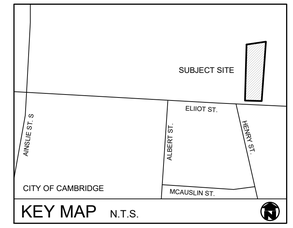


Title: TREE PROTECTION BARRIER DETAIL	Drawing No: TP-1	Date: MARCH 2019 Scale: N.T.S. Page: 1 of 1	CAMBRIDGE

1 TREE PROTECTION FENCING AND SIGNAGE DETAIL
NTS



Title: TREE PROTECTION ZONE SIGN DETAIL	Drawing No: TP-2	Date: MARCH 2019 Scale: N.T.S. Page: 1 of 1	CAMBRIDGE



GENERAL NOTES

1. CONTRACTOR TO LOCATE ALL UNDERGROUND UTILITIES.
2. EXISTING CONDITIONS PLAN AS PER MTE.
3. SITE PLAN INFORMATION AS PER DSH PLANNING LTD.
4. SITE GRADING AND SERVICING INFORMATION AS PER OTHERS AND IS FOR INFORMATIONAL PURPOSES ONLY.
5. SITE LIGHTING BY OTHERS.

PRELIMINARY
For Discussion Purposes Only

REVISIONS

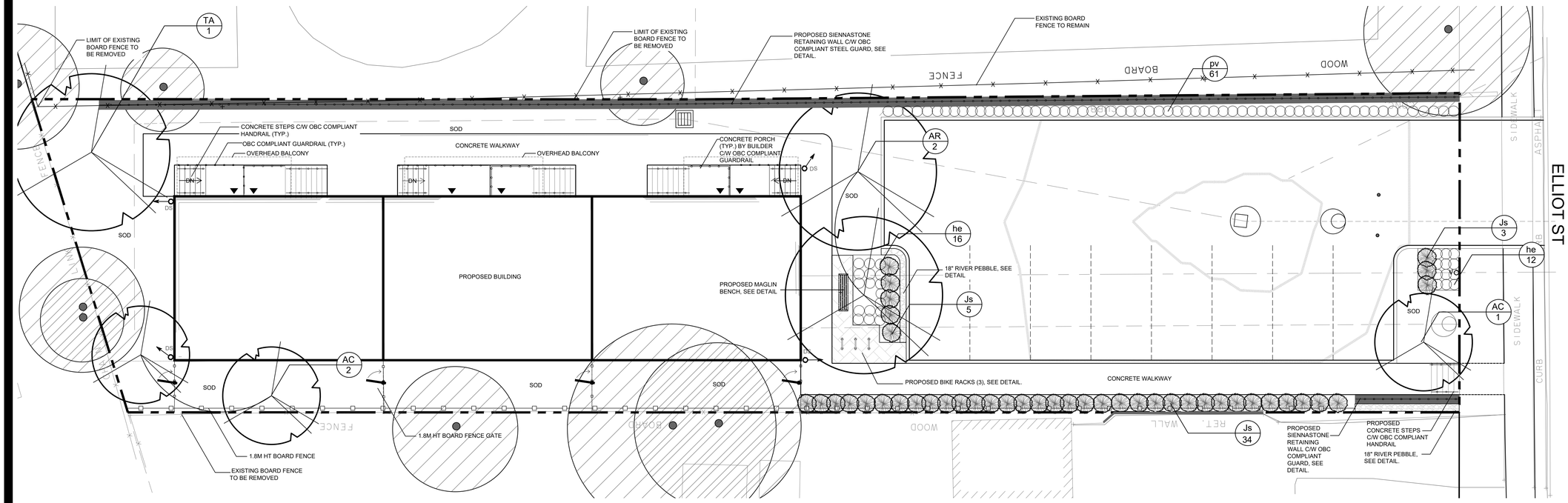
date	description	by

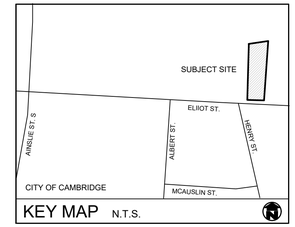
Caiden-Keller Homes Inc.
36 Elliot St,
Cambridge, ON

Tree Management Plan

Hill Design Studio Inc.
226-686-0700 www.hilldesign.ca

PROJECT NO.: 2023-11	DRAWN BY: EA
SCALE: 1:125	DESIGNED BY: EA
SHEET: L1	APPROVED BY: AWH
	PLOT DATE: 01/04/2024





GENERAL NOTES

1. ALL WORKMANSHIP WILL BE TO THE STANDARDS OF LANDSCAPE ONTARIO.
2. ALL PLANT MATERIAL TO BE NO.1 GRADE NURSERY GROWN IN ACCORDANCE WITH THE CANADIAN STANDARDS FOR NURSERY STOCK, 6TH EDITION, 1998, BY THE CANADIAN NURSERY TRADES ASSOCIATION.
3. BACKFILL WILL CONSIST OF SOIL NATIVE TO THE SITE OR GENERAL SOIL TYPE/CLASS NATIVE TO THE SITE. TOPSOIL TO BE TESTED FOR NUTRIENT VALUE, AND AMENDED FOR OPTIMAL GROWTH AS PER THE RECOMMENDATIONS OF THE SOIL TEST.
4. CONTRACTOR SHALL MAINTAIN ALL LANDSCAPE AREAS UNTIL OWNER'S ACCEPTANCE OF PROJECT.
5. CONTRACTOR TO LOCATE ALL UNDERGROUND UTILITIES.
6. PLANTING MAY BE ADJUSTED TO SUIT LOCATIONS OF SITE UTILITY STRUCTURES/SERVICES.
7. ALL MATERIALS MUST BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
8. SPREAD MULCH TO A MINIMUM OF 100mm COMPACTED DEPTH ON ALL TREE PITS AND PLANTING BEDS.
9. CHECK AND VERIFY ALL DIMENSIONS AND QUANTITIES PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES ARE TO BE REPORTED IN WRITING TO THE LANDSCAPE ARCHITECT. QUANTITIES NOTED WITHIN THE PLAN SUPERCEDE THOSE IN THE PLANT LIST. ANY SUBSTITUTIONS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT.
10. SOD AS MARKED WITH NURSERY SOD ON A MINIMUM OF 100mm OF CLEAN TOPSOIL. FINE GRADE AND SOD ALL BOULEVARD AREAS TO MUNICIPAL SPECIFICATIONS AND REPAIR DAMAGE TO ADJACENT PROPERTIES, AS REQUIRED.
11. FINAL INSPECTION AND ACCEPTANCE OF PLANTING WORK SHALL COINCIDE WITH THE FINAL INSPECTION AND ACCEPTANCE OF ALL WORK INCLUDED IN THE CONTRACT.
12. ALL SEEDED SLOPES 3:1 AND GREATER TO RECEIVE EROSION CONTROL MATTING (COIR MAT, OR OTHER WILDLIFE FRIENDLY ALTERNATIVE). PIN SOD ON ALL SLOPES OF 3:1 OR GREATER.
13. SUBMIT A WRITTEN GUARANTEE TO THE EFFECT THAT ALL PLANTS ACCEPTED DURING THE PERIOD OF JANUARY 1st TO JULY 15th SHALL BE GUARANTEED UNTIL JULY 15th THE FOLLOWING YEAR. PLANTS ACCEPTED DURING THE PERIOD OF JULY 15th TO DECEMBER 31st SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE. THE GUARANTEE PERIODS LISTED ABOVE SHALL APPLY TO ALL "NURSERY GROWN" PLANTS.
14. AT THE TIME OF FINAL INSPECTION ALL PLANTS SHALL BE IN A HEALTHY, VIGOUROUS GROWING CONDITION, PLANTED IN FULL ACCORDANCE WITH DRAWINGS AND CONDITIONS.
15. EXISTING CONDITIONS PLAN AS PER .
16. SITE PLAN INFORMATION AS PER DSH PLANNING LTD.
17. SITE GRADING AND SERVICING INFORMATION AS PER AND IS FOR INFORMATIONAL PURPOSES ONLY.
18. SITE LIGHTING BY OTHERS.

*ANY SODDING, PLANTING OR WORK ON LANDS ABUTTING THE PROPERTY FROM THE LOT LINES TO SIDEWALK AND CURBING SHALL BE TO THE SATISFACTION OF THE CITY.

*ALL LANDSCAPING SHALL BE INSTALLED PRIOR TO THE END OF THE FIRST GROWING SEASON FOLLOWING OCCUPANCY OF THE DEVELOPMENT

*UNLESS OTHERWISE SPECIFIED ALL LANDSCAPED AREAS TO BE SODDED

*UNLESS OTHERWISE SPECIFIED ALL UNDEVELOPED AREAS SHALL BE KEPT FREE AND CLEAR OF DEBRIS AND MAINTAINED.

ALL SOD TO BE INSTALLED ON 150mm TOPSOIL

LEGEND

- PROPOSED CONIFEROUS SHRUBS
- PROPOSED DECIDUOUS SHRUBS
- PROPOSED PERRENIALS / GRASSES
- PROPOSED DECIDUOUS TREES
- EXISTING INVENTORIED TREES TO REMAIN

PLANT MATERIAL LIST

KEY	QUANT.	COMMON NAME	BOTANICAL NAME	SIZE	COND.
AC	3	Serviceberry (tree form)	Amelanchier canadensis (tree form)	60mm cal.	W.B.
AR	2	Autumn Spire Maple	Acer rubrum 'Autumn Spire'	60mm cal.	W.B.
TA	1	Basswood	Tilia americana	60mm cal.	W.B.
Js	42	Savin Juniper	Juniperus sabina	50cm 3 gal.	F.P.
pv	61	Panicum virgatum 'Cheyenne Sky'	Cheyenne Sky Switchgrass	1 gal.	Pot
he	28	Little Wine Cup Daylily	Hemerocallis 'Little Wine Cup'	1 gal.	Pot

PRELIMINARY
For Discussion Purposes Only

REVISIONS

date	description	by

Caiden-Keller Homes Inc.
36 Elliot St,
Cambridge, ON

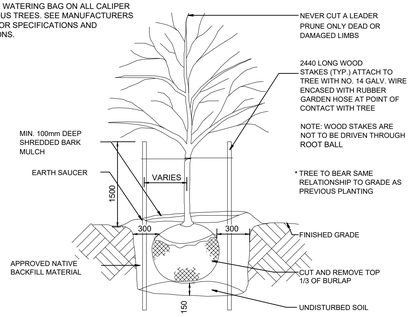
Landscape Plan

Hill Design Studio Inc.
226-686-0700 www.hilldesign.ca

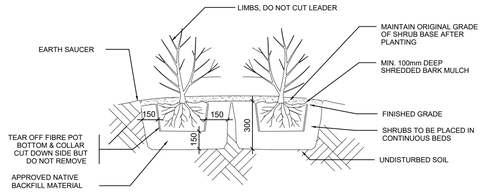
PROJECT NO.: 2023-57
DRAWN BY: EA
SCALE: 1:100
DESIGNED BY: EA
SHEET: L2
APPROVED BY: AWH
PLOT DATE: 01/04/2024

TREEGATOR:

INSTALL TREEGATOR ORIGINAL SLOW RELEASE WATERING BAG ON ALL CALIPER DECIDUOUS TREES. SEE MANUFACTURERS DETAIL FOR SPECIFICATIONS AND DIRECTIONS.



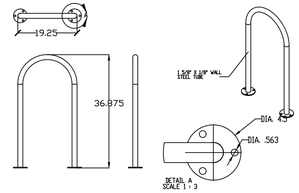
1 DECIDUOUS TREE PLANTING DETAIL
NTS



2 SHRUB PLANTING DETAIL
NTS

BIKE RACK BY MAGLIN
(OR APPROVED EQUAL)
T 1-800-716-5506
F 1-877-260-9393
WWW.MAGLIN.COM
SALES@MAGLIN.COM

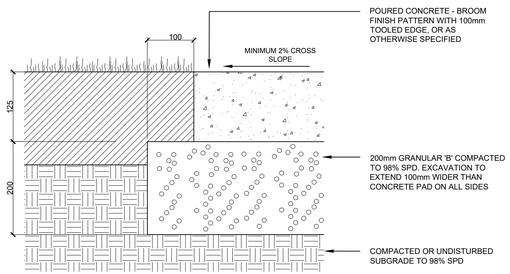
SPECIFICATIONS:
MODEL: MBR-0500-00003
FINISH: BLACK POWDER COAT
OPTIONS: NONE
INSTALLATION: SURFACE MOUNT



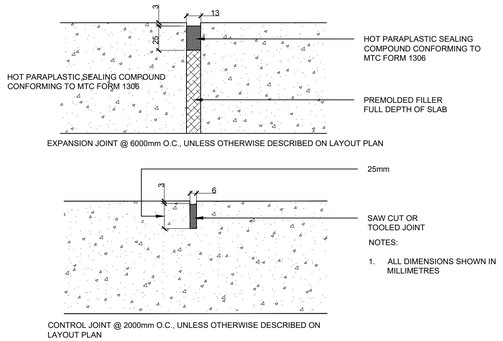
3 BIKE RACK DETAIL
NTS

NOTES:

1. REFER TO DETAIL: CONCRETE JOINTS



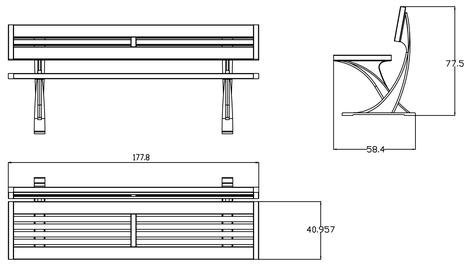
4 PIP CONCRETE PAD DETAIL
NTS



5 CONCRETE JOINT DETAILS
NTS

BENCH BY MAGLIN (OR APPROVED EQUAL)
T 1-800-716-5506
F 1-877-260-9393
WWW.MAGLIN.COM
SALES@MAGLIN.COM

SPECIFICATIONS:
MODEL: MBE-1200-00018
FINISH: BLACK POWDERCOAT LEGS, SANDSTONE HDPC SEAT
OPTIONS: NONE
INSTALLATION: SURFACE MOUNT AS PER MANUFACTURER'S SPECIFICATIONS



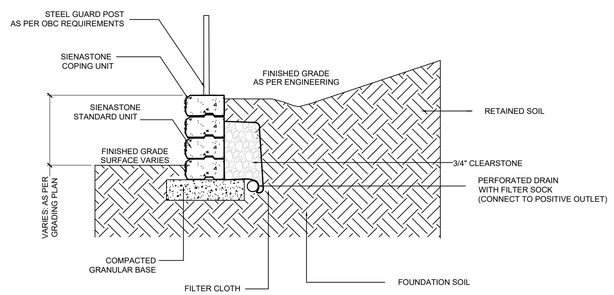
6 BENCH DETAIL
NTS

ENGINEERING OF WALL BY OTHERS

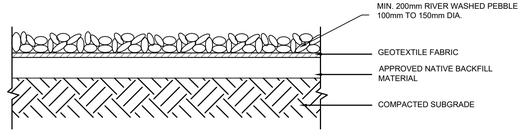
NOTES:

1. SIENASTONE 500 RETAINING WALL BY UNILOCK (OR APPROVED EQUAL)
COLOUR: NATURAL

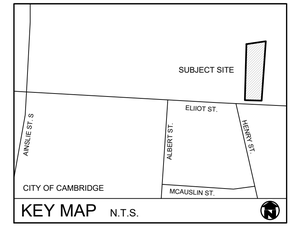
WWW.UNILOCK.COM
1-800-265-6124



7 TYPICAL SIENASTONE RETAINING WALL DETAIL
NTS



8 RIVER PEBBLE MULCH DETAIL
NTS



REVISIONS

date	description	by
Jan.04.24	Issued for approval	AWH

Caiden-Keller Homes Inc.
36 Elliot St.,
Cambridge, ON

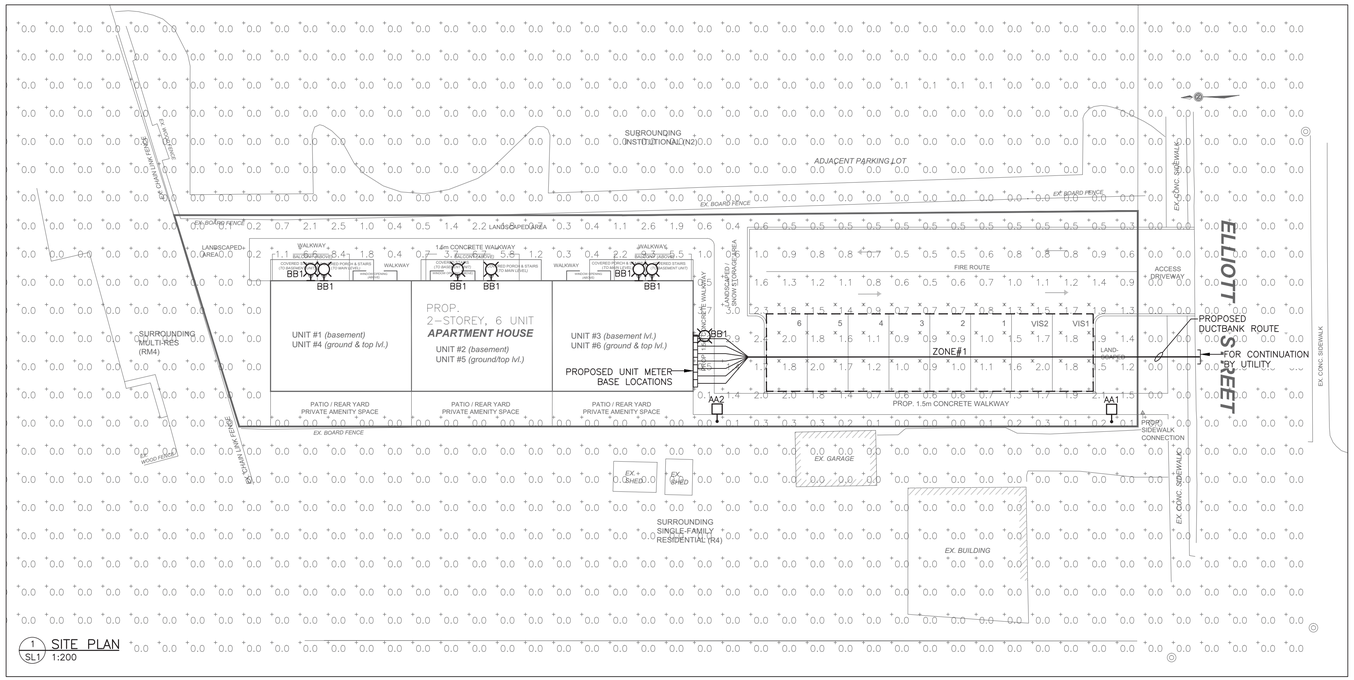
Landscape Details

Hill Design Studio Inc.
226-686-0700 www.hilldesign.ca

PROJECT NO.: 2023-57	DRAWN BY: EA
SCALE: AS SHOWN	DESIGNED BY: EA
SHEET: L3	APPROVED BY: AWH
	PLOT DATE: 01/04/2024

Appendix H –

Lighting/Photometrics Plan



1 SL1 SITE PLAN
1:200

LIGHTING LEVEL CALCULATIONS	
MEASUREMENT (ZONE#1)	HORIZONTAL ILLUMINATION (FC)
AVERAGE	1.4
MAXIMUM	2.0
MINIMUM	0.7
MAXIMUM:MINIMUM	2.9:1
AVERAGE:MINIMUM	2.0:1

ELECTRICAL LEGEND

z	WALL MOUNTED LIGHT FIXTURE (z = TYPE AS PER SCHEDULE)
z	POLE LIGHT FIXTURE (z = TYPE AS PER SCHEDULE)

SITE LIGHTING NOTES:

1. THIS DRAWING IS FOR FIXTURE LOCATIONS AND PHOTOMETRIC LAYOUT OF SITE LIGHTING ONLY. CONTACT ELECTRICAL CONSULTANT FOR BUILDING ELECTRICAL SITE PLAN TO CONFIRM LAYOUT OF CONDUIT ROUTING, CIRCUIT ARRANGEMENT, AND WIRE SIZING.
2. VOLTAGES OF FIXTURES ARE TO BE VERIFIED WITH THE ELECTRICAL SITE PLANS PRIOR TO ORDERING FIXTURES.
3. ELEVATIONS OF BASES ARE TO BE COORDINATED WITH SITE GRADING PLAN.
4. LIGHT STANDARDS ARE TO BE COORDINATED WITH WINDOW LOCATIONS. ANY FIXTURES WITHIN 10' (3m) OF THE BUILDING OR ANY CHANGES MADE TO THE BUILDING ENVELOPE ARE TO BE BROUGHT TO THE ATTENTION OF THE SITE LIGHTING CONSULTANT OR PROJECT MANAGER.
5. SUBSTITUTIONS OF LIGHT FIXTURES ARE NOT PERMITTED. IF THE CONTRACTOR SUBSTITUTES LIGHTING FIXTURES THE CONTRACTOR SHALL CARRY ALL COSTS TO HAVE PHOTOMETRIC CALCULATIONS DONE BY THE OFFICE OF THE SITE LIGHTING CONSULTANT AND ALL COSTS ASSOCIATED WITH SITE PLAN RE-SUBMISSION TO THE CITY.
6. PHOTOMETRICS SHOWN CONSIDER ALL FACTORS AFFECTING LIGHT OUTPUT LEVELS SUCH AS LAMP AND BALLAST DEPRECIATION AND DIRT ACCUMULATION OVER AN ESTIMATED ONE-YEAR PERIOD.
7. PHOTOMETRIC VALUES ARE SHOWN IN FOOTCANDLES(fc). A LIGHT LOSS FACTOR OF 0.9 WAS USED IN THE CALCULATION.
8. HOUSE SIDE SHIELDS ARE USED WHERE INDICATED IN LUMINAIRE SCHEDULE. NO ADDITIONAL SHIELDING IS PROVIDED.
9. ALL EXTERIOR LIGHTING POLES ARE TO BE GALVANIZED TO PREVENT CORROSION.
10. ALL EXTERIOR LIGHTING MUST BE CONTROLLED BY PHOTOCELL, ASTRONOMICAL TIME CLOCK, OR A COMBINATION OF BOTH TO ENSURE THAT IT IS NOT 'ON' DURING TIMES WHEN SUFFICIENT DAYLIGHT IS AVAILABLE. THIS REQUIREMENT DOES NOT APPLY TO TENANT CONTROLLED EXTERIOR LIGHTING.

SUITES – UNIT#1 THROUGH UNIT#6
AS PER RULE 8-202 SENTENCE 1 OF THE ONTARIO ELECTRICAL SAFETY CODE

(i)	3500W
(ii)	1500W
(iii)	0W
(iv)	3000W
(v)	6000W
(vi)	0W
(vii)	1248W

TOTAL LOAD 15.25kW

1 SL1 ESTIMATED SUITE LOADS
NTS

APARTMENT LOAD AS PER ONTARIO ELECTRICAL SAFETY CODE

PER RULE 8-202 SENTENCE 3

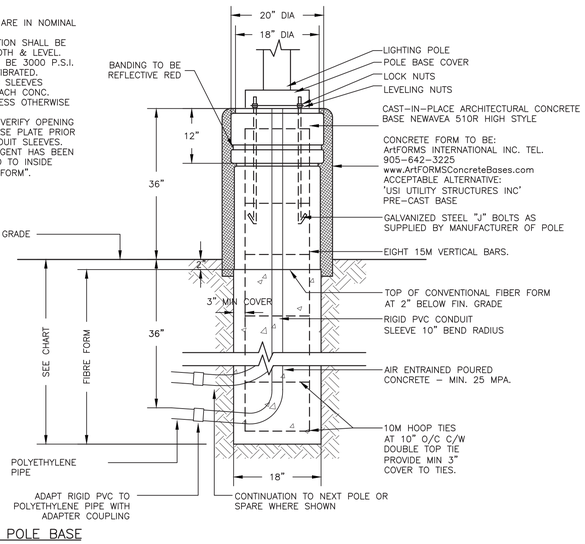
(A) LOADS FROM APARTMENTS

(I)	12.25kW x 100% x 1 =		12.25 kW
(II)	12.25kW x 65% x 2 =		15.92 kW
(III)	12.25kW x 40% x 2 =		9.80 kW
(IV)	12.25kW x 25% x 1 =		3.06 kW
(B)	A/C GREATER THAN ELECTRIC HEAT [8-106(4)]		0.00 kW
(C)	HVAC LOADS SUITES	3.00kW x 6 =	18.00 kW
(D)	ELECTRIC VEHICLE SUPPLY EQUIPMENT LOADS	0.00kW x 100% =	0.00 kW
(E)	LOADS FROM HOUSE SERVICE EXTERIOR LIGHTING	0.12kW x 75% =	0.09 kW
TOTAL DEMAND LOAD			59.12 kW

TOTAL ANTICIPATED LOAD 246A @ 240/120V 1ø 3W

4 SL1 BUILDING SERVICE SIZE
NTS

NOTES:
1. ALL DIMENSIONS ARE IN NOMINAL FEET OR INCHES.
2. TOP OF FOUNDATION SHALL BE TROWELLED SMOOTH & LEVEL.
3. CONCRETE SHALL BE 3000 P.S.I. AND SHALL BE VIBRATED.
4. MINIMUM OF TWO SLEEVES REQUIRED FOR EACH CONC. FOUNDATION UNLESS OTHERWISE SHOWN.
5. CONTRACTOR TO VERIFY OPENING SIZE IN POLE BASE PLATE PRIOR TO SETTING CONDUIT SLEEVES.
6. FORM RELEASE AGENT HAS BEEN FACTORY-APPLIED TO INSIDE SURFACE OF "ArtForm".



POLE LENGTH	BASE BURIAL DEPTH
10'	5'
19'	7'
29'	8'
35'	8.5'
40'	9'
45'	9.5'
50'	10'

2 SL1 ARTFORMS POLE BASE
N.T.S.

FIXTURE TYPE 'AA1' & 'AA2'

FIXTURE TYPE 'BB1'

EXTERIOR LUMINAIRE SCHEDULE

TYPE	ACCEPTABLE MANUFACTURES	MODELS	CATALOGUE NUMBERS	DESCRIPTION NUM OF LAMPS VOLTAGE	LOCATION MOUNTING HEIGHT	NOTES
AA1	LITHONIA	DSX0	DSX0.LED.P1.30K.RCCO.80CRI. MVOLT.SPA.DBLXD	LED POLE LIGHT 3000K 33W 120V	EXTERIOR POLE 18' A.F.G	PROVIDE 4"X4" SQUARE STEEL POLE. REFER TO DETAIL 2/SL1 FOR POLE BASE DETAILS.
AA2	LITHONIA	DSX0	DSX0.LED.P1.30K.LCCO.80CRI. MVOLT.SPA.DBLXD	LED POLE LIGHT 3000K 33W 120V	EXTERIOR POLE 18' A.F.G	PROVIDE 4"X4" SQUARE STEEL POLE. REFER TO DETAIL 2/SL1 FOR POLE BASE DETAILS.
BB1	LITHONIA	WPX0	WPX0.LED.ALO.SWW2.MVOLT.PE. DDBXD	LED WALLPACK 3000K 7W 120V	EXTERIOR SURFACE 7' A.F.G	SET ALO SETTING TO 1 AND COLOR TEMPERATURE TO 3000K.

LICENSED PROFESSIONAL ENGINEER
T. ALI
100084607
Dec 22, 2023
PROVINCE OF ONTARIO

No	REVISION	DATE
5		
4		
3		
2	ISSUED FOR SPA	2023.12.22
1	ISSUED FOR SPA	2023.11.10

MIGHTON ENGINEERING
300 VICTORIA ST N, 2ND FL
KITCHENER, ON
N2H 6R9
PH (519) 745-3703
FAX (519) 745-5081
WEB www.mighton.com

PROJECT TITLE:
NEW 2-STOREY APARTMENT

36 ELLIOT STREET,
CAMBRIDGE, ON

DRAWING TITLE:
SITE LIGHTING PLAN

DRAWN BY: J.L	CUSTOMER PROJECT No. ---
CHECKED BY: T.A	MIGHTON PROJECT No. 44044
DATE: NOV 2023	DRAWING No. SL1
SCALE AS NOTED	

Appendix I –

Archeological Study

Stage 1-2 Archaeological Assessment
36 Elliott Street, Cambridge

Part of Lot 3 East of Grand River, Concession 10,
Geographic Township of North Dumfries,
Historical County of Waterloo,
Now Plan 445, Part of Lot 11, the City of Cambridge,
Regional Municipality of Waterloo, Ontario

Submitted to:

Dryden, Smith & Head Planning Consultants Ltd.
54 Cedar Street N.
Kitchener, ON N2H 2X1

and

Ontario's Ministry of Citizenship and Multiculturalism

Submitted by:

196 Westheights Drive, Kitchener, Ontario, N2N 1J9
Mobile/Office: 519-744-7018
email: garth@golden.net www.detritusconsulting.ca

Licensee: Dr. Walter McCall
License Number: P389
PIF Number: P389-0676-2023
CP Number: 2023-55

ORIGINAL REPORT

December 8, 2023

Executive Summary

Detritus Consulting Ltd. ('Detritus') was retained by Mr. Sam Head of Dryden, Smith & Head Planning Consultants Ltd. ('the Proponent') to conduct a Stage 1-2 archaeological assessment on part of Lot 3 East of Grand River, Concession 10 in the Geographic Township of North Dumfries and historical County of Waterloo, now Plan 445, part of Lot 11 within the City of Cambridge in the Regional Municipality of Waterloo, Ontario (Figure 1). This assessment was undertaken in advance of a proposed residential development at 36 Elliott Street in Cambridge (the 'Study Area'; Figure 5).

The assessment was triggered by the Provincial Policy Statement ('PPS') that is informed by the *Planning Act* (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (Government of Ontario 1990b). According to Section 2.6.2 of the PPS, "development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved." To meet the condition, a Stage 1-2 assessment of the Study Area was conducted during the application phase of the proposed residential development, under archaeological consulting license P389 issued to Dr. Walter McCall by the Ministry of Ministry of Citizenship and Multiculturalism ('MCM') and adheres to the archaeological license report requirements under subsection 65 (1) of the *Ontario Heritage Act* (Government of Ontario 1990b) and the MCM 2011 *Standards and Guidelines for Consultant Archaeologists* ('*Standards and Guidelines*'); (Government of Ontario 2011).

The Study Area is a rectangular town lot measuring 0.1 hectares ('ha'). At the time of the assessment, the Study Area comprised a single-family house with a covered front porch, a rear cement patio, an asphalt driveway, two concrete sidewalks, a garden shed, and a garage surrounded by derelict rear-yard vegetation and a manicured front lawn (Figure 3). The Study Area comprises the entirety of the development property. The Study Area was bound by residential properties to the west, institutional properties to the east and north, and Elliott Street to the south.

The Stage 1 background research indicated that the Study Area exhibited moderate to high potential for the identification and recovery of archaeological resources; therefore, a Stage 2 assessment was recommended for the manicured front lawn and derelict rear-yard vegetation portions of the Study Area.

The subsequent Stage 2 assessment conducted on August 28th, 2023. This investigation began with a property inspection, conducted according to Section 2.1.8, which is informed by Section 1.2 of the *Standards and Guidelines* (Government of Ontario 2011). Based on the results of this inspection, the existing house with its covered front porch and rear cement patio, the asphalt driveway, the two concrete sidewalks, the garden shed, and the garage were determined to retain low or no archaeological potential based on the Stage 2 identification of extensive a deep land alteration that has severely damaged the integrity of archaeological resources. Additionally, the western edge of the Study Area and most of the front lawn area adjacent to Elliott Street were observed as steeply sloping. These steeply sloping areas were determined to retain no archaeological potential, due to a steep slope of greater than 20 degrees. The previously disturbed and steeply sloped components of the Study Area were mapped and photographed. The remainder of the Study Area, including the non-sloping portions of the derelict rear-yard and front manicured lawn, were test pit surveyed at a five-metre interval. No archaeological resources were observed.

The Stage 2 assessment of the Study Area resulted in the identification of no archaeological resources; **therefore, no additional archaeological assessment of the Study Area is recommended.**

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Project Personnel

Project Manager:	Walter McCall, P389
Field Director:	Jon Cousins, R296
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Report Preparation:	Colin MacKenzie
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Licensee Review:	Walter McCall, P389

Project Acknowledgements

Generous contributions by Mr. Sam Head of Dryden, Smith & Head Planning Consultants Ltd. and Jane Gurney of Regional Municipality of Waterloo for making this report possible.

1.0 Project Context

1.1 Development Context

Detritus Consulting Ltd. ('Detritus') was retained by Mr. Sam Head of Dryden, Smith & Head Planning Consultants Ltd. ('the Proponent') to conduct a Stage 1-2 archaeological assessment on part of Lot 3 East of Grand River, Concession 10 in the Geographic Township of North Dumfries and historical County of Waterloo, now Plan 445, part of Lot 11 within the City of Cambridge in the Regional Municipality of Waterloo, Ontario (Figure 1). This assessment was undertaken in advance of a proposed residential development at 36 Elliott Street in Cambridge (the 'Study Area'; Figure 5).

The assessment was triggered by the Provincial Policy Statement ('PPS') that is informed by the *Planning Act* (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (1990b). According to Section 2.6.2 of the PPS, "development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved." To meet the condition, a Stage 1-2 assessment of the Study Area was conducted during the application phase of a proposed residential development, under archaeological consulting license P389 issued to Dr. Walter McCall by the Ministry of Ministry of Citizenship and Multiculturalism ('MCM') and adheres to the archaeological license report requirements under subsection 65 (1) of the *Ontario Heritage Act* (Government of Ontario 1990b) and the MCM 2011 *Standards and Guidelines for Consultant Archaeologists* ('*Standards and Guidelines*'); (Government of Ontario 2011).

The purpose of a Stage 1 Background Study is to compile all available information about the known and potential archaeological heritage resources within the Study Area and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the *Standards and Guidelines* (Government of Ontario 2011), the objectives of the following Stage 1 assessment are as follows:

- To provide information about the Study Area's geography, history, previous archaeological fieldwork and current land conditions;
- to evaluate in detail, the Study Area's archaeological potential which will support recommendations for Stage 2 survey for all or parts of the property; and
- to recommend appropriate strategies for Stage 2 survey.

To meet these objectives Detritus archaeologists employed the following research strategies:

- A review of relevant archaeological, historic and environmental literature pertaining to the Study Area;
- a review of the land use history, including pertinent historic maps; and
- an examination of the Ontario Archaeological Sites Database ('ASDB') to determine the presence of known archaeological sites in and around the Study Area.

The purpose of a Stage 2 Property Assessment is to provide an overview of any archaeological resources within the Study Area, and to determine whether any of the resources might be archaeological sites with cultural heritage value or interest ('CHVI'), and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the *Standards and Guidelines* (Government of Ontario 2011), the objectives of the following Stage 2 assessment are as follows:

- To document all archaeological resources within the Study Area;
- to determine whether the Study Area contains archaeological resources requiring further assessment; and
- to recommend appropriate Stage 3 assessment strategies for archaeological sites identified.

1.2 Historical Context

1.2.1 Post-Contact Aboriginal Resources

Prior to the arrival of European settlers, much of the central and southern Ontario was occupied by Iroquoian speaking linguistic groups that had united to form confederacies, including the Huron-Wendat, the Neutral (or Attawandaran), and the Petun in Ontario, as well as the Five Nations Iroquois Confederacy in upper New York State (Birch 2010; Warrick 2013). Of these groups, the Huron-Wendat established themselves to the east of the Niagara escarpment and the Neutral, to the west (Warrick 2000).

The earliest recorded history of the area began in 1626, when French Recollet Father Daillon travelled the entire length of the Grand River and documented 28 Neutral villages in the area (Harper 1950; White 1978). A dozen such Neutral sites were identified along the Lower Grand River in the general location of a possible Neutral community known as the Antouaronon (White 1978; Poulton et al. 1996).

Throughout the middle of the 17th century, the Iroquois Confederacy sought to expand upon their territory and to monopolize the fur trade between the European markets and the tribes of the western Great Lakes region. A series of bloody conflicts followed known as the Beaver Wars or the French and Iroquois Wars, contested between the Iroquois Confederacy and the Algonkian speaking communities of the Great Lakes region. Many communities were destroyed including the Huron, Neutral, Susquehannock and Shawnee leaving the Iroquois as the dominant group in the region. By 1653 after repeated attacks, the area comprising Waterloo County and most of Southern Ontario had been vacated (Heidenreich 1990), while the Neutral had been assimilated by the Five Nations (Jamieson 1992; Noble 1978).

At this same time, the Anishinaabeg Nation, an Algonkian-speaking community situated inland from the north shore of Lake Huron, began to challenge the Haudenosaunee for dominance in the Lake Huron and Georgian Bay region in order to advance their own role in the fur trade Gibson 2006. The Algonkian-speaking groups that settled in the area bound by Lake Ontario, Lake Erie, and Lake Huron were referred to by the English as the Chippewas or Ojibwas. By 1680, the Ojibwa began expanding into the evacuated Huron-Wendat territory, and eventually into Southern Ontario. By 1701, the Haudenosaunee had been driven out of Ontario completely and were replaced by the Ojibwa (Gibson 2006; Schmalz 1991).

The late 17th and early 18th centuries also mark the arrival of an Ojibwa band known as the Mississaugas into Southern Ontario and, in particular, the watersheds of the lower Great Lakes. 'The Mississaugas' is the name that the Jesuits had used in 1840 for the Algonquin community living near the Mississagi River on the northwestern shore of Lake Huron Smith 2002. The oral traditions of the Mississaugas, as recounted by Chief Robert Paudash and recorded in 1904, suggest that the Mississaugas defeated the Mohawk Nation, who retreated to their homeland south of Lake Ontario. Following this conflict, a peace treaty was negotiated between the two groups (Praxis Research Associates n.d.).

From the beginning of the 18th century until the end of the Seven Year War in 1763, the Ojibwa nation, including the Mississaugas, experienced a golden age in trade holding no alliance with either the French or the British (Schmalz 1991). The Mississaugas that moved into the West Gwillimbury area experienced much success in the local fur trade, particularly after the Northwest Fur Company established a fur trading post at Holland Landing in nearby East Gwillimbury. At the end of the 17th century, the Mississaugas' settled permanently in Southern Ontario (Praxis Research Associates n.d.). Around this same time, in 1722, the Five Nation Iroquois Confederacy adopted the Tuscarora in New York becoming the Six Nations (Pendergast 1995).

On May 22nd, 1784, the Mississaugas ceded to the Crown approximately 3,000,000 acres of land between Lake Huron, Lake Erie and Lake Erie in return for trade goods valued at £1180. One of the stated objectives of this transaction, known as the “Between the Lakes Purchase” was “to procure for that part of the Six Nation Indians coming into Canada a permanent abode” (Morris 1943: 17). Shortly after the transaction had been finalised, Sir Frederick Haldimand, Governor of Québec, made preparations to grant a large plot of land in south-central Ontario to those Six

Nations who remained loyal to the Crown during the American War of Independence. More specifically, Haldimand arranged for the purchase of the Haldimand Tract in south-central Ontario from the Mississaugas.

The Haldimand Tract, also known as the 1795 Crown Grant to the Six Nations, was provided for in the Haldimand Proclamation of October 25th, 1784 (Weaver 1978: 525). According to the specifics of the treaty,

> *'...this Grant was composed of the following Townships: Dunn, Sherbrooke, Moulton, Canborough, North and South Cayuga, Oneida and Seneca in Haldimand County; Tusc[aro]ra, Onondaga, Brantford and South Dumfries in Brant County; North Dumfries, Waterloo and Woolwich in Waterloo County; Pilkington and Nichol in Wellington County; and is described as a parcel or tract of land six miles on each side of the Ouse or Grand River from it's mouth toward its source, to be bounded by the tract of land deeded December the 7th, 1792 by the Mississa[u]ga Chiefs and people to the Crown. This part was set aside as a suitable retreat for the Six Nation Indians who had shewn attachment and Fidelity to the British Government during the troublous times 1759 to 1783 and was granted to the Chiefs, Warriors, Women and People of the Six Nations and their heirs forever.*
>
> Morris 1943:19-21

By the end of 1784, representatives from each member nation of the Six Nations, as well as other allies, relocated to the Haldimand Tract with Joseph Brant (Weaver 1978; Tanner 1987).

Throughout southern Ontario, the size and nature of the pre-contact settlements and the subsequent spread and distribution of Aboriginal material culture began to shift with the establishment of European settlers. By 1834 it was accepted by the Crown that losses of portions of the Haldimand Tract to Euro-Canadian settlers were too numerous for all lands to be returned. Lands in the Lower Grand River area were surrendered by the Six Nations to the British Government in 1832, at which point most Six Nations people moved into Tuscarora Township in Brant County and a narrow portion of Oneida Township (Page & Co. 1879; Weaver 1978; Tanner 1987). Following the population decline and the surrender of most of their lands along the Credit River, the Mississaugas were given 6000 acres of land on the Six Nations Reserve, establishing the Mississaugas of New Credit First Nation (now the Mississaugas of the Credit First Nation), in 1847 (Smith 2002).

Despite the encroachment of European settlers on previously established Aboriginal territories, "written accounts of material life and livelihood, the correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to Iroquoian systems of ideology and thought" (Ferris 2009: 114). As Ferris observes, despite the arrival of a competing culture, First Nations communities throughout Southern Ontario have left behind archaeologically significant resources that demonstrate continuity with their pre-contact predecessors, even if they have not been recorded extensively in historical Euro-Canadian documentation.

1.2.2 Euro-Canadian Resources

The current Study Area occupies part of Lot 3 East of Grand River, Concession 10 in the Geographic Township of North Dumfries within the historical County of Waterloo, now the City of Cambridge in the Regional Municipality of Waterloo, Ontario.

On July 24, 1788, Sir Guy Carleton, the Governor-General of British North America, divided the Province of Québec into the administrative districts of Hesse, Nassau, Mecklenburg and Lunenburg (Archives of Ontario 2012-2015). Further change came in December 1791 when the Province of Québec was rearranged into Upper Canada and Lower Canada under the - Constitutional Act. Colonel John Graves Simcoe was appointed as Lieutenant-Governor of Upper

Canada; he began several initiatives to populate the province including the establishment of shoreline communities with effective transportation links between them (Coyne 1895:33).

In July 1792, Simcoe divided Upper Canada into 19 counties, including Waterloo County, stretching from Essex in the west to Glengarry in the east. Later that year, the four districts originally established in 1788 were renamed as the Western, Home, Midland and Eastern Districts. In 1816, further administrative changes were made, with the creation of Gore District of which Waterloo County, including the Township of Waterloo, was a part.

Waterloo Township was originally known as Block Two of the Grand River land grant to the Six Nations following the American War of Independence. In 1796, Block Two, a 38,045 hectare ('ha') tract, was acquired by Richard Beasley. Who surveyed and subdivided the land, selling roughly 24,000 ha to the German Company of Pennsylvania, which included notable early settlers such as Samuel and John Bricker, and the Erb brothers, Daniel, Jacob, and John Augustus Jones further surveyed the tract into 160 farm lots for resale. Most of those who purchased these German Company lots were Mennonites from Pennsylvania. Later settlers were generally of Scottish, English, Irish, and continental German heritage (Janusas 1988).

The *Tremaine's Map of the County of Waterloo,* ('*Tremaine Map*') (Tremaine 1861; Figure 2) indicates that the Study Area lies in part of Lot 3 East of Grand River, Concession 10 in the Geographic Township of North Dumfries. This lot is confirmed as Lot 3 East of Grand River, Concession 10 by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry OGS historical administrative boundaries dataset (Carlson 2021).

However, twenty years later on the *Illustrated Atlas of the County of Waterloo, Ont.* ('*Historical Atlas*'; Parsell & Co. 1881; Figure 3), the Study Area also very clearly lies within Lot 3 East of Grand River, Concession 10. This reporting however seems speculative at first glance as many of the properties throughout North Dumfries township have no ownership information and lots around the town boundaries in Galt and Ayr seem to follow a grid like pattern, almost appearing as though the atlas is incomplete.

The boundaries of the specific plot of land within which the Study Area lies changes between the *Tremaine Map* from 1861 and the *Historical Atlas* from 1881, and the modern boundaries provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry. According to the Tremaine map, the Study Area was situated on an unmarked lot between Lot 3 East of Grand River, Concession 10, immediately adjacent to the town confines of Galt. The property was owned by A. Elliot. In addition, both the *Tremaine Map* and the *Historical Atlas* demonstrates the extent to which North Dumfries Township had been settled by middle to late 19th century.

Although significant information was provided in the *Historical County* map of Township of North Dumfries, it should be recognized that historical county atlases were funded by subscriptions fees and were produced primarily to identify factories, offices, residences, and landholdings of subscribers. Landowners who did not subscribe were not always listed on the maps (Caston 1997). Moreover, associated structures were not necessarily depicted or placed accurately (Gentilcore & Head 1984).

1.3 Archaeological Context

1.3.1 Property Description and Physical Setting

The Study Area is a rectangular town lot measuring 0.1 hectares ('ha'). At the time of the assessment, the Study Area comprised a single-family house with a covered front porch, a rear cement patio, an asphalt driveway, two concrete sidewalks, a garden shed, and a garage surrounded by derelict rear-yard vegetation and a manicured front lawn (Figure 3). The Study Area comprises the entirety of the development property. The Study Area was bound by residential properties to the west, institutional properties to the east and north, and Elliott Street to the south.

The majority of the region surrounding the Study Area has been subject to European-style agricultural practices for over 100 years, having been settled by Euro-Canadian farmers by the early 19th century. Much of the region today continues to be used for agricultural purposes.

The Study Area is situated within the Guelph Drumlin Field physiographic region. According to Chapman and Putnam,

> *...the Guelph drumlin field occupies an area of 320 square miles lying northwest, or in front of the Paris Moraine. Within this area, including parts of the Regional Municipalities of Hamilton-Wentworth, Waterloo, and Halton, and part of Wellington County, there are approximately 300 drumlins of all sizes. For the most part these hills are of the broad oval type with slopes less steep than those of the Peterborough drumlins.*
>
> Chapman and Putnam 1984:174-176

The soil type within the Study Area is Guelph Loam (Hoffman, Matthews, and Wicklund 1963). Guelph loam is well drained soil consisting of loam till and is suitable for pre-contact and post-contact Aboriginal agriculture.

The closest source of potable water is the Grand River, which is located approximately 100 metres ('m') to the west of the Study Area.

1.3.2 Pre-Contact Aboriginal Land Use

The Study Area is located within a portion of southwestern Ontario has been occupied by people as far back as 11,000 years ago as the glaciers retreated. For the majority of this time, people were practicing hunter gatherer lifestyles with a gradual move towards more extensive farming practices. Table 1 provides a general outline of the cultural chronology of North Dumfries Township (Ellis and Ferris 1990).

Table 1: Cultural Chronology for North Dumfries Township

Time Periods	Cultural Periods	Comments
9500 - 7000 BC	Paleo-Indian	first human occupation hunters of caribou and other extinct Pleistocene game nomadic, small band society
7500-1000 BC	Archaic	ceremonial burials increasing trade network hunter gatherers
1000 BC - 400 BC	Early Woodland	large and small camps spring congregation/fall dispersal introduction of pottery
400 BC - AD 800	Middle Woodland	kinship based political system incipient horticulture long distance trade networks
AD 800 - 1300	Early Iroquoian (Late Woodland)	limited agriculture developing hamlets and villages
AD 1300 - 1400	Middle Iroquoian (Late Woodland)	shift to agriculture complete increasing political complexity large, palisaded villages
AD 1400 - 1650s	Late Iroquoian	regional warfare and political/tribal alliances destruction of Huron and Neutral

1.3.3 Previously Identified Archaeological Work

To compile an inventory of archaeological resources, the registered archaeological site records were consulted. In Ontario, information concerning archaeological sites stored in the ASDB (Government of Ontario n.d.) is maintained by the MCM. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 kilometres ('km') east to west and approximately 18.5km north to south. Each Borden Block is referenced by a four-

letter designator and sites within a block are numbered sequentially as they are found. The Study Area under review is situated within Borden Block AiHb.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the Freedom of Information and Protection of Privacy Act (Government of Ontario 1990c). The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MCM will provide information concerning site location to the party or an agent of the party holding title to a property, or a licensed archaeologist with relevant cultural resource management interests.

An examination of the ASDB has shown that there are five archaeological sites registered within a 1km radius of the Study Area (Table 2). This includes four post-contact Euro-Canadian sites and an additional pre-contact Aboriginal site dating to the Middle Woodland period.

Table 2: Registered Archaeological Sites within 1km of the Study Area

Borden Number	Site Names	Time Period	Affinity	Site Types
AiHb-3	Moffat's Creek 1	Woodland, Middle	Aboriginal	camp/campsite
AiHb-161	Cambridge City Hall	Post-Contact	Euro-Canadian	building, administrative, market
AiHb-225	St. Andrews Cemetery	Post-Contact	Euro-Canadian	cemetery
AiHb-352	-	Post-Contact	Euro-Canadian	residential
AiHb-383	H1	Post-Contact	Euro-Canadian	homestead

To the best of Detritus' knowledge, no sites have been observed within 50m of the Study Area and no assessments have been conducted on lands adjacent to it.

1.3.4 Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Detritus applied archaeological potential criteria commonly used by the MCM to determine areas of archaeological potential within the Study Area. According to Section 1.3.1 of the *Standards and Guidelines* (Government of Ontario 2011) these variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography, and the general topographic variability of the area.

Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, when considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site locations and types to varying degrees. As per Section 1.3.1 of the *Standards and Guidelines* (Government of Ontario 2011), water sources may be categorized in the following manner:

- Primary water sources, lakes, rivers, streams, creeks;
- secondary water sources, intermittent streams and creeks, springs, marshes and swamps;
- past water sources, glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- accessible or inaccessible shorelines, high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

As was discussed above, the closest source of potable water is the Grand River which runs approximately 100m to the west of the Study Area.

The Study Area is situated within the Guelph Drumlin Field physiographic region. As was discussed earlier, the soils within this region are well drained and suitable for pre-contact and post-contact Aboriginal agricultural. Given this, the distance to potable water and the length of occupation of historical North Dumfries Township prior to the arrival of Euro-Canadian settlers, the pre-contact and post-contact Aboriginal archaeological potential of the Study Area is judged to be moderate to high.

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* (Government of Ontario 1990b) or property that local histories or informants have identified with possible historical events.

The *Tremaine Map* (Figure 2; Tremaine 1861) and *Historical Atlas* (Figure 3; Parsell & Co. 1881), demonstrates that North Dumfries Township was densely occupied by Euro-Canadian farmers by the late 19th century. Much of the established road system and agricultural settlement from that time is still visible today. Both maps demonstrate the Study Area existing within the historical boundaries of the historical settlement of Galt and proximity to the early Great Western Railway. Considering these factors, the Euro-Canadian archaeological potential of the Study Area is judged to be moderate to high.

Finally, despite the factors mentioned above, extensive land disturbance can eradicate archaeological potential within a Study Area, as per Section 1.3.2 of the *Standards and Guidelines* (Government of Ontario 2011). Current aerial imagery identified a number of potential disturbance areas within the Study Area including a single-family house with a covered front porch, a rear cement patio, an asphalt driveway, a concrete sidewalk, a garden shed, and a garage (see Section 1.3.1 above). It is recommended that these areas of potential disturbance be subject to a Stage 2 property inspection, conducted according to Section 2.1.8, Section 1.2 of the *Standards and Guidelines* (Government of Ontario 2011), to confirm and document the degree and extent of the disturbance.

2.0 Field Methods

The Stage 2 assessment of the Study Area was conducted on August 28th 2023, under archaeological consulting license P389 issued to Dr. Walter McCall by the MCM. Buried utility locates were obtained prior to initiating fieldwork.

During the Stage 2 field work assessment, the weather was sunny with a high of 21°C; the soil was dry and screened easily. Assessment conditions were excellent and at no time were the field, weather, or lighting conditions detrimental to the recovery of archaeological material as per Section 2.1, Standard 3 of the *Standards and Guidelines* (Government of Ontario 2011). Photos 1-16 demonstrate the land conditions at the time of the survey throughout the Study Area, including areas that met the requirements for a Stage 2 archaeological assessment, as per Section 7.8.6, Standards 1a of the *Standards and Guidelines* (Government of Ontario, 2011). Figure 4 illustrates the Stage 2 assessment methods, as well as photograph locations and directions all in relation to the proposed development of the Study Area.

The limits of the Study Area were not staked out prior to the assessment; therefore, shapefiles were created based on the development mapping provided by the Proponent and uploaded to Detritus' handheld GPS.

The Stage 2 field assessment began with a property inspection conducted as per Section 2.1.8, of the *Standards and Guidelines* (Government of Ontario 2011). According to the results of the inspection, approximately 20% of the Study Area comprised the possible disturbance areas identified on the current aerial imagery of the Study Area (see Section 1.3.4 above). These areas include, a single-family house with a covered front porch, a rear cement patio, an asphalt driveway, two concrete sidewalks, a garden shed, and a garage (Photos 9 and 11). Based on the Stage 2 assessment these areas were evaluated as having no potential based on the identification of extensive and deep land alteration that has severely damaged the integrity of archaeological resources, as per Section 2.1, Standard 2b of the *Standards and Guidelines* (Government of Ontario 2011). These areas of disturbance were mapped, and photo documented in accordance with Section 2.1, Standard 6 and Section 7.8.1, Standard 1b of the *Standards and Guidelines* (Government of Ontario 2011).

Also observed was an additional 20% of the Study Area that comprised steeply sloping manicured lawn and derelict rear-yard. These areas were determined to retain no archaeological potential due to the identification of physical features of low archaeological potential as per Section 2.1, Standards 2.a.iii of the *Standards and Guidelines* (Government of Ontario 2011). These steeply sloping areas, as confirmed during the Stage 2 property inspection, were mapped and photo documented in accordance with Section 2.1, Standard 6 and Section 7.8.1, Standards 1a and 1b of the *Standards and Guidelines* (Government of Ontario 2011).

The remaining 60% of the Study Area comprised the flat portions of the manicured lawn and derelict rear-yard, which were inaccessible for ploughing. These areas were subject to a typical test pit survey at 5m intervals following Section 2.1.2 of the *Standards and Guidelines* (Government of Ontario 2011). Test pits were excavated to within 1m of all standing structures, or until test pits demonstrated evidence of recent ground disturbance as per Section 2.1.2, Standard 4 of the *Standards and Guidelines* (Government of Ontario 2011; Photos 1-8, 10). All test pits were at least 30 centimetres ('cm') in diameter and were excavated 5cm into sterile subsoil. The soils were then examined for stratigraphy, cultural features, or evidence of fill. The test pits ranged in depth from 16 to 27cm and featured a single soil layer (topsoil) above the subsoil. Given that the test pits were excavated 5cm into subsoil the topsoil ranged in depth from 11 to 22cm. All soil was screened through six-millimetre mesh hardware cloth to facilitate the recovery of small artifacts and then used to backfill the pit, as per Section 2.1.2, Standards 7 and 9 of the *Standards and Guidelines* (Government of Ontario 2011). No further archaeological methods were employed since no artifacts were identified during the test pit survey.

3.0 Record of Findings

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.0. An inventory of the documentary record generated by fieldwork is provided in Table 3 below.

Table 3: Inventory of Document Record

Document Type	Current Location	Additional Comments
1 page of field notes	Detritus office	stored digitally in project file
1 map provided by the Proponent	Detritus office	stored digitally in project file
1 field map	Detritus office	stored digitally in project file
20 digital photographs	Detritus office	stored digitally in project file

No archaeological resources were identified within the Study Area and so no material culture was collected. As a result, no storage arrangements were required.

4.0 Analysis and Conclusions

Detritus was retained by the Proponent to conduct a Stage 1-2 archaeological assessment in advance of a proposed residential development at 36 Elliott Street in Cambridge.

The Stage 1 background research indicated that the Study Area exhibited moderate to high potential for the identification and recovery of archaeological resources; therefore, a Stage 2 assessment was recommended for the manicured front lawn and derelict rear-yard vegetation portions of the Study Area.

The Stage 1 background research indicated that the Study Area exhibited moderate to high potential for the identification and recovery of archaeological resources; therefore, a Stage 2 assessment was recommended for the manicured front lawn and derelict rear-yard vegetation portions of the Study Area.

The subsequent Stage 2 assessment conducted on August 28th, 2023. This investigation began with a property inspection, conducted according to Section 2.1.8, which is informed by Section 1.2 of the *Standards and Guidelines* (Government of Ontario 2011). Based on the results of this inspection, the existing house with its covered front porch and rear cement patio, the asphalt driveway, the two concrete sidewalks, the garden shed, and the garage were determined to retain low or no archaeological potential based on the Stage 2 identification of extensive a deep land alteration that has severely damaged the integrity of archaeological resources. Additionally, the western edge of the Study Area and most of the front lawn area adjacent to Elliott Street were observed as steeply sloping. These steeply sloping areas were determined to retain no archaeological potential, due to a steep slope of greater than 20 degrees. The previously disturbed and steeply sloped components of the Study Area were mapped and photographed. The remainder of the Study Area, including the non-sloping portions of the derelict rear-yard and front manicured lawn, were test pit surveyed at a 5m interval. No archaeological resources were observed.

5.0 Recommendations

The Stage 2 assessment of the Study Area resulted in the identification of no archaeological resources; therefore, **no additional archaeological assessment of the Study Area is recommended.**

6.0 Advice on Compliance with Legislation

This report is submitted to the Minister of Citizenship and Multiculturalism as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

The Cemeteries Act, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Government and Consumer Services.

7.0 Bibliography and Sources

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8.0 Maps

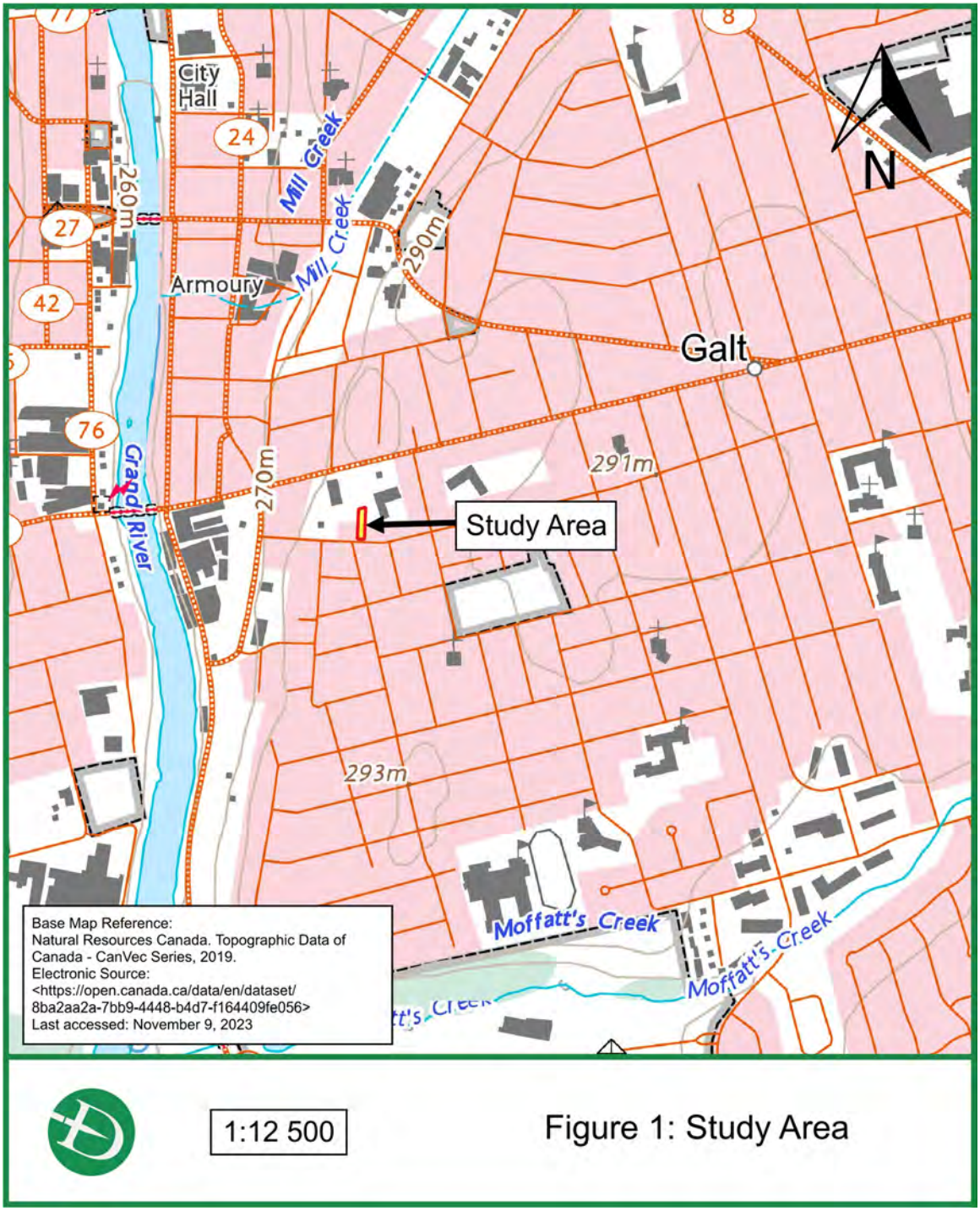
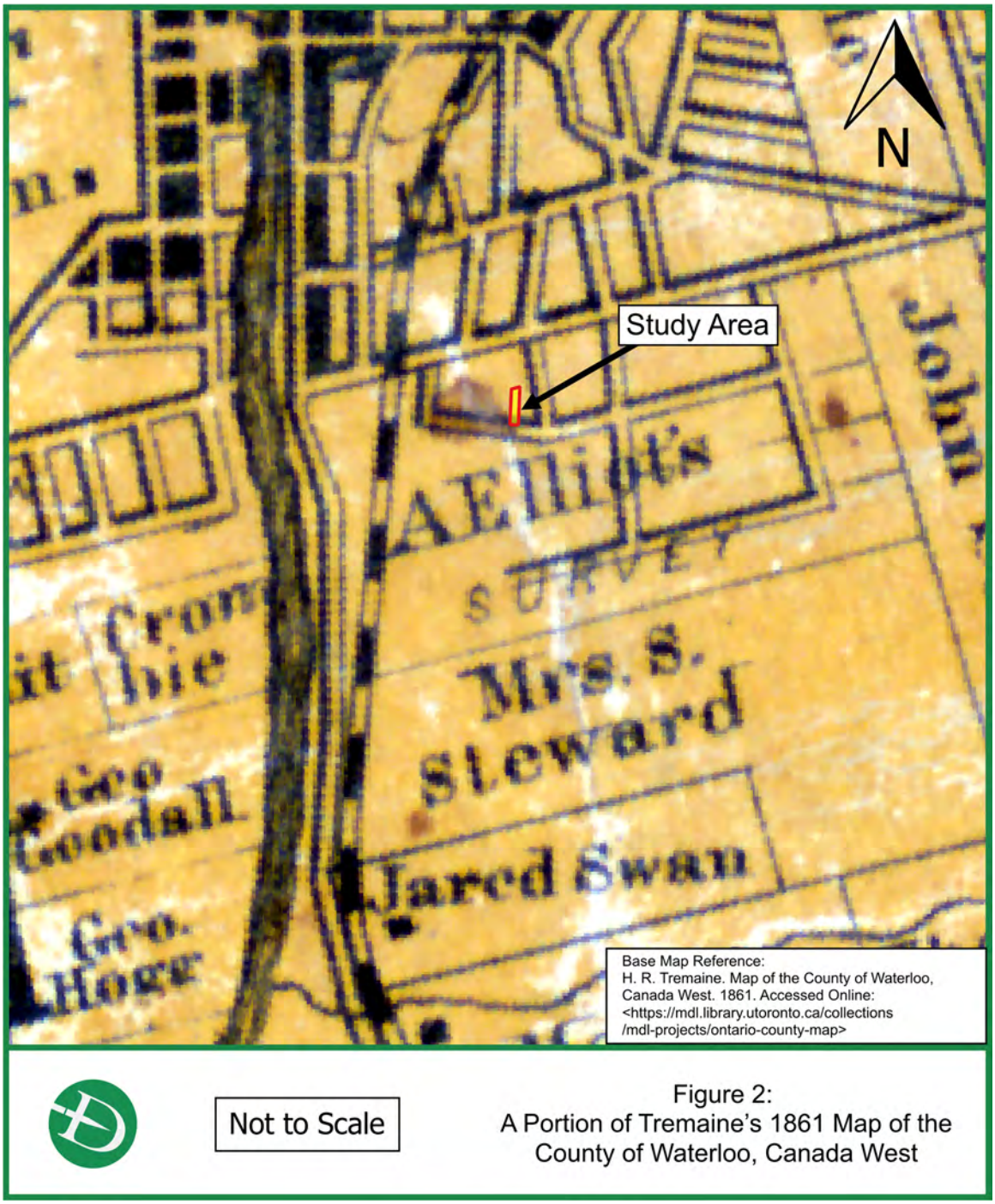


Figure 1: Study Area



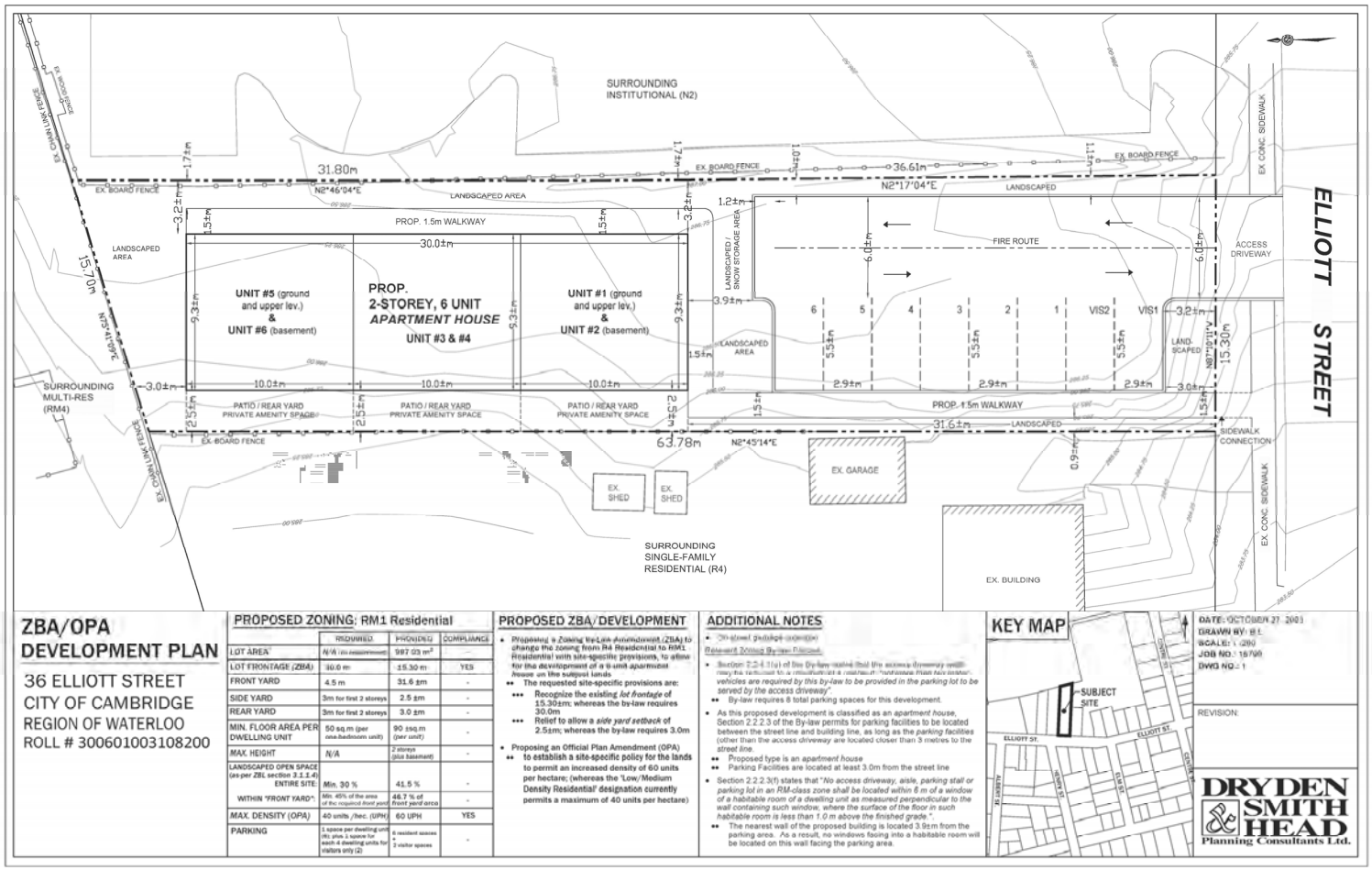
Not to Scale

Figure 2:
A Portion of Tremaine's 1861 Map of the County of Waterloo, Canada West

Figure 3:
Part of North Dumfries Township Map (1881)

Figure 4: Stage 2 Survey Methods in Relation to the Development

Figure 5: Development Map



9.0 Photos

Photo 1: Derelict Rear-Yard Vegetation Test Pit Surveyed at 5m Intervals; Disturbed Garage No Archaeological Potential, facing north

Photo 2: Derelict Rear-Yard Vegetation Test Pit Surveyed at 5m Intervals, facing south

Photo 3: Derelict Rear-Yard Vegetation Test Pit Surveyed at 5m Intervals, facing south

Photo 4: Derelict Rear-Yard Vegetation Test Pit Surveyed at 5m Intervals; Disturbed Shed No Archaeological Potential, facing northwest

Photo 5: Derelict Rear-Yard Vegetation Test Pit Surveyed at 5m Intervals; Disturbed House and Garage No Archaeological Potential, facing south

Photo 6: Flat Derelict Rear-Yard Vegetation Test Pit Surveyed at 5m Intervals; Steeply Sloping Rear-Yard No Archaeological Potential, facing south

Photo 7: Flat Derelict Rear-yard Vegetation Test Pit Surveyed at 5m Intervals; Steeply Sloping Rear-Yard No Archaeological Potential, facing north

Photo 8: Derelict Rear-yard Vegetation Test Pit Surveyed at 5m Intervals, facing south

Photo 9: Disturbed Asphalt Driveway and Concrete Sidewalk No Archaeological Potential, facing south

Photo 10: Manicured Lawn Test Pit Surveyed at 5m Intervals; Disturbed Concrete Sidewalks No Archaeological Potential, facing west

Photo 11: Disturbed Asphalt Driveway and Concrete Sidewalk No Archaeological Potential, facing northwest

Photo 12: Steeply Sloped Manicured Lawn No Archaeological Potential, facing northeast

Photo 13: Steeply Sloped Manicured Lawn No Archaeological Potential, facing north

Photo 14: Derelict Lawn Test Pit Surveyed at 5m Intervals, facing north

Photo 15: Derelict Lawn Test Pit Surveyed at 5m Intervals, facing south

Photo 16: Flat Manicured Lawn Test Pit Surveyed at 5m Intervals; Steeply Sloped Manicured Lawn No Archaeological Potential, facing southwest

Photo 17: Sample Test Pit 1

Photo 18: Sample Test Pit 2

Photo 19: Sample Test Pit 3

Photo 20: Sample Test Pit 4

Appendix J –

Risk Management Plan, and Section 59 Compliance

Risk Management Plan for Winter Maintenance New activities

Version 2, 2022

This document serves as the Risk Management Plan (RMP) for the protection of municipal wells and wellfields. It reflects current requirements of the Assessment Report, Source Protection Plan and Clean Water Act, 2006 (the "Act")

Contents

Definitions

Act: Clean Water Act (2006)

Applicant: Person Engaged in Prescribed Activity

RMI: Risk Management Inspector, appointed for the Region of Waterloo

RMO: Risk Management Official, appointed for the Region of Waterloo

RMP: Risk Management Plan

SPP: Grand River Source Protection- Plan, effective July 1, 2016

Section 1 Property and Activity Verification

1. Property Information

Property Location:

Municipal Address: 36 Elliott St, Cambridge

Roll Number: 300601003108200

Legal Description: PLAN 445 PT LOT 11

Property Owner:

Name: Caiden-Keller Homes

Mailing Address: 30 Gerber Meadows Dr, Wellesley, ON N0B 2T0

Phone Number: 519-404-4090

Email Address: cory@caiden-kellerhomes.com

2. Prescribed Activities Managed by this Risk Management Plan

- Salt Application (parking lot)

3. Person Engaged in Prescribed Activity ("Applicant")

Applicant Name: Cory Ziolkoski on behalf of Caiden-Keller Homes

Mailing Address: 30 Gerber Meadows Dr, Wellesley, ON N0B 2T0

Email Address: cory@caiden-kellerhomes.com

Phone Number: 519-404-4090

Applicant's Relationship to Property (circle one):

(Owner) Tenant Other: _____

Authorized Representative: Brock Linklater

Title: Planner

Company/Business Name: Dryden, Smith, and Head Planning Consultants Ltd.

Mailing Address (if different from above): 54 Cedar St N, Kitchener, ON N2H 2X1

Section 2 Agreement

I/We, the Applicant and Property Owner (if applicable), hereby declare that I/we have reviewed the content of this Risk Management Plan and, to the best of my/our knowledge, the information contained herein and attached to this Risk Management Plan is accurate and complete.

I/We the Applicant and Property Owner (if applicable), hereby agree to implement this Risk Management Plan and the stipulated risk management practices in accordance with its terms and conditions.

Risk Management Plan Number: 00238

Applicant: Cory Ziolkoski on behalf of Caiden-Keller Homes

DocuSigned by:
22553C1E5A9243C...
Signature (I have the authority to bind the corporation)

3/5/2024 | 15:46:06 PST
Date (MM/DD/YYYY)

Property owner if different from above:

Signature (I have the authority to bind the corporation)

_____/_____/_____
Date (MM/DD/YYYY)

DocuSigned by:
Eric Thuss
1D9A9A700FE44DD...
Eric Thuss, Risk Management Official
Regional Municipality of Waterloo

3/6/2024 | 05:17:58 PST
Date (MM/DD/YYYY)

Notes:

The information in this Risk Management Plan is collected pursuant to the Clean Water Act. In accordance with the Clean Water Act and Regulations thereto this Risk Management Plan is a public document.

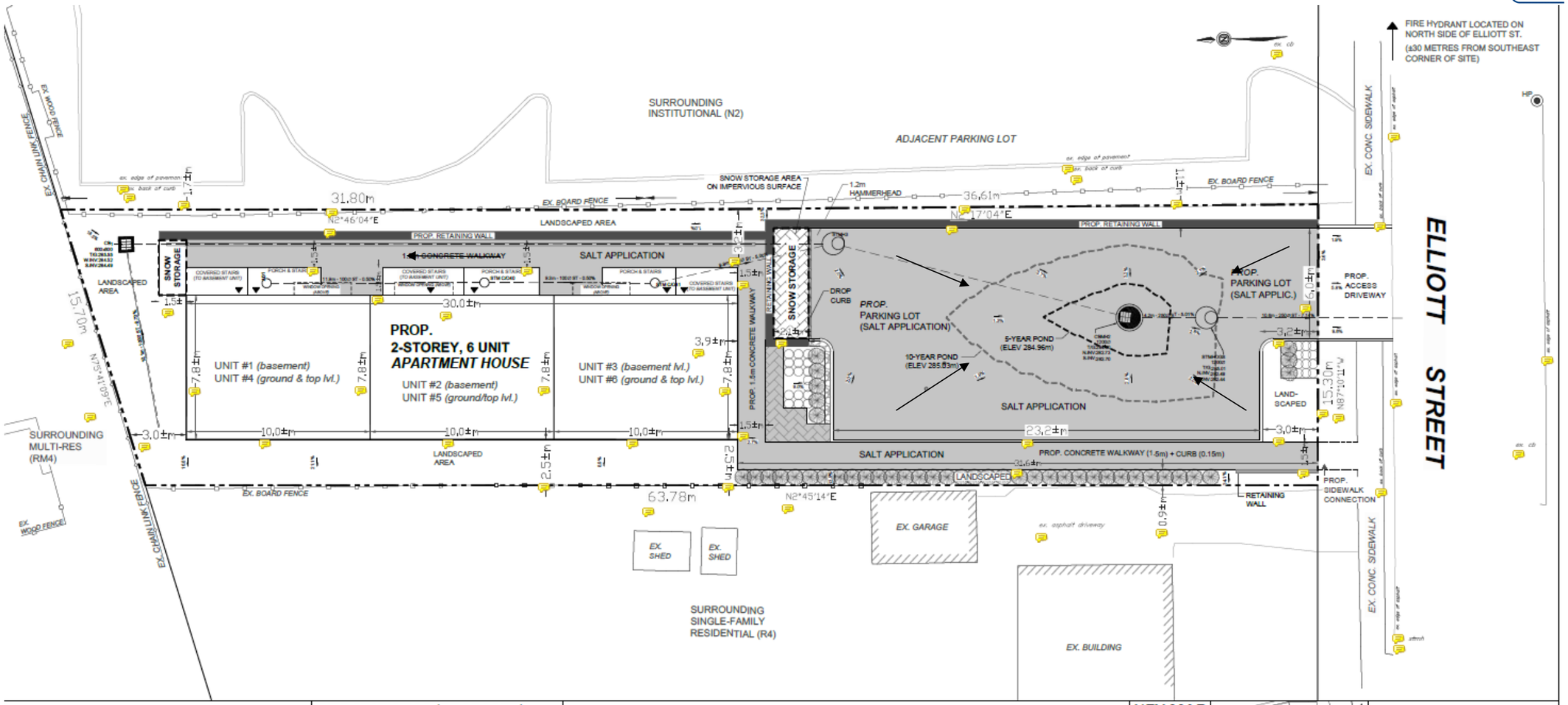
All information in the Risk Management Plan and Worksheet is subject to the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA). Information may also be provided to the Ministry of the Environment and Climate Change, other regulatory bodies and/or local municipalities.

Section 3 Terms and Conditions

- This Risk Management Plan (RMP) will be in effect on the date it is signed by the Region of Waterloo Risk Management Official (RMO) and will expire after five years. The Applicant must ensure there is an RMP in effect with respect to the Prescribed Activities and contact the RMO to renew this RMP not less than 2 months before the expiry date.
- The Applicant must contact the RMO within a month following the sale, closure, or change in location of the business/operations that carry on the Prescribed Activities.
- The Owner agrees to disclose to any purchaser of the Property or the business/operations that carry on the Prescribed Activities the designated requirements as presented in this RMP.
- The Applicant must contact the RMO prior to implementing any alterations or additions to the activities conducted. The RMO will determine if amendments to the RMP are required.
- This RMP cannot be transferred to another person without the prior written consent of RMO. Fees may apply.
- This RMP has been agreed to under the authority of the RMO appointed for the Region of Waterloo. This RMP was developed in accordance with the Act.
- The agreement to this RMP and the implementation of the risk management practices within it does not relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement necessary to carry out activities at the site, including but not limited to obtaining all necessary authorizing instruments, such as licences, permits and approvals.
- The Applicant will ensure any person undertaking an activity covered by this RMP is aware of the contents of the RMP and the Applicant will take all reasonable measures to ensure such persons comply with the requirements of the RMP.
- This RMP should be on site while an activity covered by this RMP is undertaken.
- Inspections by a Region of Waterloo Risk Management Inspector (RMI) will be completed to assess the implementation of this RMP.
- The Applicant will not move anything related to or covered by the RMP that is indicated on the site map.

Section 4 Site Map

Risk Management Plan number: 00238 Version number: 01 Approval date (MM/DD/YYYY): 3/6/2024 | 05:17:58 PST Initials (Property/RMO): DS / DS



WINTER MAINTENANCE MAP

36 ELLIOTT STREET
PLAN 445, PT LOT 11
CITY OF CAMBRIDGE
REGION OF WATERLOO
ROLL # 300601003108200

SITE STATISTICS (PROPOSED):

	REQUIRED	PROVIDED
LOT AREA	*N/A*	997.03 m²
LOT FRONTAGE *(ZBA)*	30.0 m	15.30 m
FRONT YARD SETBACK	4.5 m	31.6 ±m
SIDE YARD SETBACK	3m for first 2 storeys	2.5 ±m
REAR YARD SETBACK	3m for first 2 storeys	3.0 ±m
GROSS FLOOR AREA (m² / *DWELLING UNIT*)	50 sq.m (per one-bedroom unit)	90 ±sq.m *(per unit)*
MAX. HEIGHT	*N/A*	2 storeys (plus basement)
LANDSCAPED OPEN SPACE WITHIN *"FRONT YARD"*:	*Min.* 45% of the req. *front yard* area	47.7% of *req. front yard area*
ENTIRE SITE:	Minimum of 30%	41.5%
MAX. DENSITY (*Official Plan*)	40 units/hec.(UPH)	60 UPH
MAX. DENSITY (*Zoning Bylaw*)	250 units/hec.(UPH)	60 UPH
PARKING	1 space /unit (6); plus 1 space for each 4 units for visitors only (2)	6 Resident + 2 Visitor (8 total)

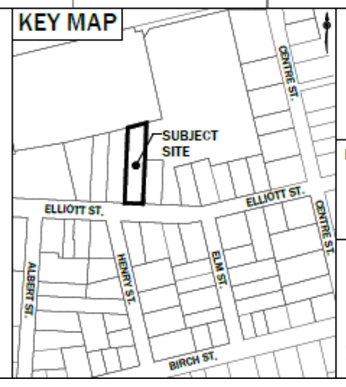
WINTER MAINTENANCE LEGEND:

SALT APPLICATION AREA

SNOW STORAGE AREA

SLOPE

KEY MAP



DATE: FEBRUARY 27, 2024
DRAWN BY: B.L.
SCALE:
JOB NO.: 16790 - 36 Elliott Street
DWG NO.: 2 (Winter Maintenance)

REVISION:

DRYDEN & SMITH HEAD Planning Consultants Ltd.

Section 5 Table of Risk Management Practices

Risk Management Plan number: 00238 Version number: 01 Approval date (MM/DD/YYYY): 3/6/2024 | 05:17:58 PST Initials (Property/RMO): DS / DS ET

Part	Section heading	Description of risk management practices	Status of practice	Describe actions required Provide attachments if require additional space	Documentation and record-keeping requirements	Expected completion date
S.1	Certifications, training and tracking	Property is Smart About Salt™ certified	Planned	Smart About Salt property certification is planned or in progress. If Smart About Salt property certification is not completed the property owner will notify the RMO, and the plan will be amended as necessary.	☐ Certification records	10/31/2025 Month/Day/Year
S.2	Certifications, training and tracking	Individuals (employees and/or contractors) performing or supervising winter maintenance activities are Smart About Salt™ trained	Planned	The property supervisor responsible for overseeing winter maintenance on the property to complete Smart About Salt™ Essentials of Salt Management Training. Contractor is to be Smart About Salt™ certified, and all staff to be trained. Ensure all new contractors or staff performing winter maintenance are certified or trained prior to the winter season.	☐ Training records	10/31/2025 Month/Day/Year
S.3	Certifications, training and tracking	Maintain documentation of winter maintenance activities and employee and/or contractor training for five years	Planned	Documents will be obtained from the contractor annually, or upon request. Ensure that documents are retained for the calendar year and an additional five years. Record and retain documentation related to salt and snow management by on-site staff, if applicable, for the calendar year and an additional five years.	☐ Weather and site condition logs ☐ Application records ☐ Training records ☐ Spreader calibration logs ☐ Salt and snow management protocols: application rates, snow plowing and storage, salt storage inspections	10/31/2025 Month/Day/Year
S.4	Salt contract	Contract salt by unit price per event or lump sum per season	Planned	The contract will price salt using a unit price per event or by lump sum per season. This encourages contractors to use less salt compared to contracts that price salt for the amount applied on the property.	☐ Winter maintenance contract	10/31/2025 Month/Day/Year
S.5	Salt contract	Contract specifies that all winter maintenance activities are performed by persons who have successfully completed Smart About Salt™ Operator Training	Planned	Contract will specify that all winter maintenance activities are performed by persons who are Smart About Salt™ trained.	☐ Training records	10/31/2025 Month/Day/Year
S.6	Ice formation prevention and parking lot design	Direct roof drainage away from paved areas, includes walkways and entrances	Planned	The roof of the proposed building is designed to divert rainwater away from paved areas such as walkways and entrances. The roof is sloped to direct runoff towards the back of the building to a landscaped area.	☐ Site plan drawing or design plan	10/31/2025 Month/Day/Year

Part	Section heading	Description of risk management practices	Status of practice	Describe actions required Provide attachments if require additional space	Documentation and record-keeping requirements	Expected completion date
S.7	Ice formation prevention and parking lot design	Construct parking lots using curb and gutter design and grade parking lots to prevent ponding	Planned	Parking lot is to be constructed using curb and gutter design, and graded to prevent ponding during typical winter conditions.	☐ Site plan drawing or design plan	10/31/2025 Month/Day/Year
S.8	Ice formation prevention and parking lot design	Close off areas not requiring maintenance during winter months	Not applicable	All areas require winter maintenance to maintain site access.		N/A
S.9	Winter maintenance practices	Clean up excess applied salt	Planned	Notify contractor of the requirement to clean up spilled salt. If excess applied salt is common on-site, consider if the application rate is appropriate. Notify on-site staff, if applicable, of the requirement to clean up spilled salt and provide appropriate training and materials.	☐ Site plan drawing or design plan	10/31/2025 Month/Day/Year
S.10	Winter maintenance practices	Prepare and implement a maintenance strategy for temperatures below -10C, when salt is less effective	Planned	Prepare and implement a cold weather maintenance strategy and communicate the strategy to the winter maintenance contractor. The strategy may include immediate and frequent clearing of snow and ice, switching to alternative products when temperatures are consistently below -10 °C, sand, or other approaches. For more information contact rmo@regionofwaterloo.ca.	☐ Maintenance strategy	10/31/2025 Month/Day/Year
S.11	Winter maintenance practices	Remove areas of drifting snow	Planned	Drifting snow will be reduced through existing fencing around the property, and proposed retaining walls. The contractor will clear drifting snow that does occur by active maintenance.	☐ Site plan drawing or design plan	10/31/2025 Month/Day/Year
S.12	Winter maintenance practices	Store snow on a sufficiently-sized impermeable surface adjacent to a catch basin	Planned	See site map in Section 4. Snow is stored on a paved surface draining to a catch basin or on the low side of the property. Observe snow piles for ice hazards. If ice hazards are common and required additional salt spot treatment consider spot treating with pickled sand, or a solution to prevent ice formed through melt and freeze weather. Ensure that snow is not piled on landscape/pervious surfaces, and that this requirement is communicated to contractor staff.	☐ Site plan drawing or design plan	10/31/2025 Month/Day/Year
S.13 – S.23	Salt storage	Solid and liquid de-icers	Not applicable	The covered storage of salt totaling less than one tonne is not subject to this Risk Management Plan. The uncovered storage of salt is not permitted on the property. Liquid de-icers will not be stored on the property.		N/A

Notice of Source Protection Plan Compliance

Issued under Section 59(2) of the Clean Water Act

Region of Waterloo

Municipal File Number:

Date: March 6, 2024	Application Type: Official Plan Amendment, Zone Change
Applicant Name: Caiden-Keller Homes	Address of Site/Lands: 36 Elliott St, Cambridge

Based on the information submitted as to the Region of Waterloo as of the date above, it has been determined that the potential activity(s) associated with the proposed development or building on the Site/Lands are subject to Section 58 of the Clean Water Act. A Risk Management Plan has been agreed to or established.

- This Notice is only effective as it relates to the above-noted Application.
- Any change to the information submitted under this Application nullifies this Notice, unless otherwise permitted by the Risk Management Official.
- This Notice is valid for 1 year from the date of issuance in respect of the above-noted Application only.
- This Notice is not valid for any subsequent applications for approvals which the proposal may require under the *Planning Act* or for any building permits that may be required under the *Building Code Act*.
- This notice only addresses requirements in the Source Protection Plan under Section 57 (Prohibition) and Section 58 (Risk Management Plan) of the Act. Other Source Protection Plan policies may still apply.
- The applicant acknowledges they provided complete and truthful information to the Region of Waterloo for the generation of this notice. Schedule 1 is an accurate summary of this information.
- The applicant acknowledges any potential prohibitions identified in Schedule 2.

- This notice does not constitute an approval(s) under the *Planning Act* or *Building Code Act*.
- The applicant acknowledges they are the owner or authorized agent of the owner of the above-noted property.

Signature of Applicant

Eric Thuss, Risk Management Official

SCHEDULE 1 – SUMMARY OF ACTIVITIES PROPOSED FOR PROPERTY

The application is related to the following activities on the property:

- Application of road salt (on roads and parking lots)

The following activities are either not occurring on or proposed for the property, or are not related to this application:

Winter Maintenance

- Storage of snow (from off-site)
- Storage of road salt

Farming Activities

- Application of manure
- Livestock yards or pastures
- Storage of manure
- Application of fertilizer
- Storage of fertilizer
- Application of non-agricultural source material (eg: compost or biosolids)
- Storage of non-agricultural source material (eg: compost of biosolids)
- Application of pesticides
- Storage of pesticides

Chemical Handling

- Storage of DNAPLS (dense oils)
- Storage of fuel
- Storage of solvents
- Storage of fertilizer
- Storage of pesticides
- Aircraft de-icing

Waste Handling

- Landfilling of waste
- Storage of hazardous waste
- Storage of PCB waste

Private Sewage Operations

- Septic system
- Storm water management

SCHEDULE 2 – SUMMARY OF ACTIVITIES PROHIBITED AT PROPERTY

The following activities may be prohibited under Section 57 of the Clean Water Act at the location indicated on page 1 of this notice:

- The covered storage of de-icing salt in quantities greater than 1 tonne
- The uncovered storage of de-icing salt in quantities greater than 1 tonne
- Piling of snow from other properties
- The uncovered storage of de-icing salt in quantities up to 1 tonne
- Communal septic systems or holding tanks
- Fuel stored above ground in quantities greater than 2500 litres
- Fuel stored below ground in quantities greater than 250 litres
- The handling and storage of dense non-aqueous phase liquids (DNAPLs)
- The below ground handling and storage of an organic solvent in quantities greater than 25 litres
- The storage of hazardous, liquid industrial, or PCB waste
- The temporary field storage of manure or other agricultural source material