

Planning Department Development Application Form

Complete Application

A complete development application consists of the following:

1. A completed, signed, and notarized application form
2. Supporting information adequate to illustrate your proposal as indicated in **Section H** of this application form
3. Written authorization from the registered owner of the subject lands where the applicant is not the owner as per Section N
4. Cash, debit, credit or cheque payable to Norfolk County in the amount set out in the user fees By-Law that will be accepted and deposited once the application has been deemed complete.

Pre-Submission Consultation:

Norfolk County requires a Pre-Consultation Meeting for all applications; however, minor applications may be exempted depending on the nature of the proposal. The purpose of a Pre-Consultation Meeting is to provide the applicant with an opportunity to present the proposed application, discuss potential issues, and for the Norfolk County and Agency staff to identify the application requirements. Application requirements, as detailed in the Pre-Consultation Meeting Comments, are valid for one year after the meeting date.

Development Application Process

Once an application has been deemed complete by a Planner, Norfolk County staff will circulate the application to adjacent landowners, public agencies, and internal departments for comment. The time involved in application processing varies depending on its complexity, acceptability to the other agencies, and statutory Planning Act decision time-frames.

Payment is required once your application is deemed complete. Pre-payments will not be accepted.

Norfolk County collects personal information submitted through this form under the Municipal Freedom of Information and Protection Act's authority. Norfolk County will use this information for the purposes indicated or implied by this form. You can direct questions about collecting personal information to Norfolk GIS Services at NorfolkGIS@norfolkcounty.ca.

Additional studies required for the complete application shall be at the applicant's sole expense. Sometimes, peer reviews may be necessary to review particular studies at the applicant's expense. In these cases, Norfolk County staff will select the company to complete the peer review.

Norfolk County will refund the original fee if applicants withdraw their applications before circulation. If Norfolk County must recirculate your drawings, there will be an additional fee. If Norfolk County must do more than three reviews of engineering drawings due to revisions by the owner or failure to revise engineering drawings as requested, Norfolk County will charge an additional fee. Full refunds are only available before Norfolk County has circulated the application.

Notification Sign Requirements

For public notification, Norfolk County will provide you with a sign to indicate the intent and purpose of your development application. It is your responsibility to:

1. Post one sign per frontage in a conspicuous location on the subject lands.
2. Ensure one sign is posted at the front of the subject lands at least three feet above ground level and not on a tree.
3. Notify the Planner when the sign is in place.
4. Maintain the sign until the development application is finalized and, after that, remove it.

Contact Us

For additional information or assistance completing this application, please contact a Planner at 519-426-5870 or 519-875-4485 extension 1842 or planning@norfolkcounty.ca. Please submit the completed application and fees to the attention of the Planning Department at 185 Robinson Street, Suite 200, Simcoe, ON N3Y 5L6.

For Office Use Only:

File Number	_____	Public Notice Sign	_____
Related File Number	_____	Application Fee	_____
Pre-consultation Meeting	_____	Conservation Authority Fee	_____
Application Submitted	_____	Well & Septic Info Provided	_____
Complete Application	_____	Planner	_____

Check the type of planning application(s) you are submitting.

- ☐ Official Plan Amendment
- ☒ Zoning By-Law Amendment
- ☐ Temporary Use By-law
- ☐ Draft Plan of Subdivision/Vacant Land Condominium
- ☐ Condominium Exemption
- ☐ Site Plan Application
- ☐ Extension of a Temporary Use By-law
- ☐ Part Lot Control
- ☐ Cash-in-Lieu of Parking
- ☐ Renewable Energy Project or Radio Communication Tower

Please summarize the desired result of this application (for example, a special zoning provision on the subject lands to include additional use(s), changing the zone or official plan designation of the subject lands, creating a certain number of lots, or similar)

Property Assessment Roll Number: _____

A. Applicant Information

Name of Owner

Address

Town and Postal Code

Phone Number

Cell Number

Email

Name of Applicant

Address

Town and Postal Code

Phone Number

Cell Number

Email

Name of Agent

Address

Town and Postal Code

Phone Number

Cell Number

Email

Unless otherwise directed, Norfolk County will forward all correspondence and notices regarding this application to both owner and agent noted above.

☐ Owner

☐ Agent

☐ Applicant

Names and addresses of any holder of any mortgagees, charges or other encumbrances on the subject lands:

B. Location, Legal Description and Property Information

1. Legal Description (include Geographic Township, Concession Number, Lot Number, Block Number and Urban Area or Hamlet):

Municipal Civic Address: _____

Present Official Plan Designation(s): _____

Present Zoning: _____

2. Is there a special provision or site specific zone on the subject lands?

☐ Yes ☐ No If yes, please specify corresponding number:

3. Present use of the subject lands:

4. Please describe **all existing** buildings or structures on the subject lands and whether they will be retained, demolished or removed. If retaining the buildings or structures, please describe the type of buildings or structures, and illustrate the setback, in metric units, from the front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application:

5. If an addition to an existing building is being proposed, please explain what it will be used for (for example: bedroom, kitchen, or bathroom). If new fixtures are proposed, please describe.

6. Please describe **all proposed** buildings or structures/additions on the subject lands. Describe the type of buildings or structures/additions, and illustrate the setback, in metric units, from front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application:

7. Are any existing buildings on the subject lands designated under the *Ontario Heritage Act* as being architecturally and/or historically significant? Yes ☐ No ☐

If yes, identify and provide details of the building:

8. If known, the length of time the existing uses have continued on the subject lands:

9. Existing use of abutting properties:

10. Are there any easements or restrictive covenants affecting the subject lands?

☐ Yes ☐ No If yes, describe the easement or restrictive covenant and its effect:

C. Purpose of Development Application

Note: Please complete all that apply.

1. Please explain what you propose to do on the subject lands/premises which makes this development application necessary:

2. Please explain why it is not possible to comply with the provision(s) of the Zoning By-law/and or Official Plan:

3. Does the requested amendment alter all or any part of the boundary of an area of settlement in the municipality or implement a new area of settlement in the municipality? ☐ Yes ☐ No If yes, describe its effect:

4. Does the requested amendment remove the subject land from an area of employment? ☐ Yes ☐ No If yes, describe its effect:

5. Does the requested amendment alter, replace, or delete a policy of the Official Plan?
☐ Yes ☐ No If yes, identify the policy, and also include a proposed text of the policy amendment (if additional space is required, please attach a separate sheet):

6. Description of land intended to be severed in metric units:

Frontage: _____

Depth: _____

Width: _____

Lot Area: _____

Present Use: _____

Proposed Use: _____

Proposed final lot size (if boundary adjustment): _____

If a boundary adjustment, identify the assessment roll number and property owner of the lands to which the parcel will be added: _____

Description of land intended to be retained in metric units:

Frontage: _____

Depth: _____

Width: _____

Lot Area: _____

Present Use: _____

Proposed Use: _____

Buildings on retained land: _____

7. Description of proposed right-of-way/easement:

Frontage: _____

Depth: _____

Width: _____

Area: _____

Proposed use: _____

8. Name of person(s), if known, to whom lands or interest in lands to be transferred, leased or charged (if known):

9. Site Information**Zoning****Proposed**

Please indicate unit of measurement, for example: m, m² or %

Lot frontage	_____	_____
Lot depth	_____	_____
Lot width	_____	_____
Lot area	_____	_____
Lot coverage	_____	_____
Front yard	_____	_____
Rear yard	_____	_____
Left Interior side yard	_____	_____
Right Interior side yard	_____	_____
Exterior side yard (corner lot)	_____	_____
Landscaped open space	_____	_____
Entrance access width	_____	_____
Exit access width	_____	_____
Size of fencing or screening	_____	_____
Type of fencing	_____	_____

10. Building Size

Number of storeys	_____	_____
Building height	_____	_____
Total ground floor area	_____	_____
Total gross floor area	_____	_____
Total useable floor area	_____	_____

11. Off Street Parking and Loading Facilities

Number of off street parking spaces	_____	_____
Number of visitor parking spaces	_____	_____
Number of accessible parking spaces	_____	_____
Number of off street loading facilities	_____	_____

12. Residential (if applicable)

Number of buildings existing: _____

Number of buildings proposed: _____

Is this a conversion or addition to an existing building? ☐ Yes ☐ No

If yes, describe: _____

Type	Number of Units	Floor Area per Unit in m2
Single Detached	_____	_____
Semi-Detached	_____	_____
Duplex	_____	_____
Triplex	_____	_____
Four-plex	_____	_____
Street Townhouse	_____	_____
Stacked Townhouse	_____	_____
Apartment - Bachelor	_____	_____
Apartment - One bedroom	_____	_____
Apartment - Two bedroom	_____	_____
Apartment - Three bedroom	_____	_____

Other facilities provided (for example: play facilities, underground parking, games room, or swimming pool):

13. Commercial/Industrial Uses (if applicable)

Number of buildings existing: _____

Number of buildings proposed: _____

Is this a conversion or addition to an existing building? ☐ Yes ☐ No

If yes, describe:

Indicate the gross floor area by the type of use (for example: office, retail, or storage):

Seating Capacity (for assembly halls or similar): _____

Total number of fixed seats: _____

Describe the type of business(es) proposed: _____

Total number of staff proposed initially: _____

Total number of staff proposed in five years: _____

Maximum number of staff on the largest shift: _____

Is open storage required: ☐ Yes ☐ No

Is a residential use proposed as part of, or accessory to commercial/industrial use?

☐ Yes ☐ No If yes please describe:

14. Institutional (if applicable)

Describe the type of use proposed: _____

Seating capacity (if applicable): _____

Number of beds (if applicable): _____

Total number of staff proposed initially: _____

Total number of staff proposed in five years: _____

Maximum number of staff on the largest shift: _____

Indicate the gross floor area by the type of use (for example: office, retail, or storage):

15. Describe Recreational or Other Use(s) (if applicable)

D. Previous Use of the Property

1. Has there been an industrial or commercial use on the subject lands or adjacent lands? ☐ Yes ☐ No ☐ Unknown

If yes, specify the uses (for example: gas station or petroleum storage):

2. Is there reason to believe the subject lands may have been contaminated by former uses on the site or adjacent sites? ☐ Yes ☐ No ☐ Unknown

3. Provide the information you used to determine the answers to the above questions:

4. If you answered yes to any of the above questions in Section D, a previous use inventory showing all known former uses of the subject lands, or if appropriate, the adjacent lands, is needed. Is the previous use inventory attached? ☐ Yes ☐ No

E. Provincial Policy

1. Is the requested amendment consistent with the provincial policy statements issued under subsection 3(1) of the *Planning Act, R.S.O. 1990, c. P. 13*? ☐ Yes ☐ No

If no, please explain:

2. It is owner's responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals, including the Endangered Species Act, 2007. Have the subject lands been screened to ensure that development or site alteration will not have any impact on the habitat for endangered or threatened species further to the provincial policy statement subsection 2.1.7? ☐ Yes ☐ No

If no, please explain:

3. Have the subject lands been screened to ensure that development or site alteration will not have any impact on source water protection? ☐ Yes ☐ No

If no, please explain:

Note: If in an area of source water Wellhead Protection Area (WHPA) A, B or C please attach relevant information and approved mitigation measures from the Risk Manager Official.

4. Are any of the following uses or features on the subject lands or within 500 metres of the subject lands, unless otherwise specified? Please check boxes, if applicable.

Livestock facility or stockyard (submit MDS Calculation with application)

☐ On the subject lands or ☐ within 500 meters – distance _____

Wooded area

☐ On the subject lands or ☐ within 500 meters – distance _____

Municipal Landfill

☐ On the subject lands or ☐ within 500 meters – distance _____

Sewage treatment plant or waste stabilization plant

☐ On the subject lands or ☐ within 500 meters – distance _____

Provincially significant wetland (class 1, 2 or 3) or other environmental feature

☐ On the subject lands or ☐ within 500 meters – distance _____

Floodplain

☐ On the subject lands or ☐ within 500 meters – distance _____

Rehabilitated mine site

☐ On the subject lands or ☐ within 500 meters – distance _____

Non-operating mine site within one kilometre

☐ On the subject lands or ☐ within 500 meters – distance _____

Active mine site within one kilometre

☐ On the subject lands or ☐ within 500 meters – distance _____

Industrial or commercial use (specify the use(s))

☐ On the subject lands or ☐ within 500 meters – distance _____

Active railway line

☐ On the subject lands or ☐ within 500 meters – distance _____

Seasonal wetness of lands

☐ On the subject lands or ☐ within 500 meters – distance _____

Erosion

☐ On the subject lands or ☐ within 500 meters – distance _____

Abandoned gas wells

☐ On the subject lands or ☐ within 500 meters – distance _____

F. Servicing and Access

1. Indicate what services are available or proposed:

Water Supply

- | | |
|--|---|
| <input type="checkbox"/> Municipal piped water | <input type="checkbox"/> Communal wells |
| <input type="checkbox"/> Individual wells | <input type="checkbox"/> Other (describe below) |
-

Sewage Treatment

- | | |
|---|---|
| <input type="checkbox"/> Municipal sewers | <input type="checkbox"/> Communal system |
| <input type="checkbox"/> Septic tank and tile bed in good working order | <input type="checkbox"/> Other (describe below) |
-

Storm Drainage

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Storm sewers | <input type="checkbox"/> Open ditches |
| <input type="checkbox"/> Other (describe below) | |
-

2. Existing or proposed access to subject lands:

- | | |
|---|---|
| <input type="checkbox"/> Municipal road | <input type="checkbox"/> Provincial highway |
| <input type="checkbox"/> Unopened road | <input type="checkbox"/> Other (describe below) |

Name of road/street: _____

G. Other Information

1. Does the application involve a local business? ☐ Yes ☐ No

If yes, how many people are employed on the subject lands?

2. Is there any other information that you think may be useful in the review of this application? If so, explain below or attach on a separate page.

- ☐ Functional Servicing Report
- ☐ Geotechnical Study / Hydrogeological Review
- ☐ Minimum Distance Separation Schedule
- ☐ Noise or Vibration Study
- ☐ Record of Site Condition
- ☐ Storm water Management Report
- ☐ Traffic Impact Study – please contact the Planner to verify the scope required

Site Plan applications will require the following supporting materials:

1. Two (2) complete sets of the site plan drawings folded to 8½ x 11 and an electronic version in PDF format
2. Letter requesting that the Holding be removed (if applicable)
3. A cost estimate prepared by the applicant's engineer
4. An estimate for Parkland dedication by a certified land appraiser
5. Property Identification Number (PIN) printout

Standard condominium exemptions will require the following supporting materials:

- ☐ Plan of standard condominium (2 paper copies and 1 electronic copy)
- ☐ Draft condominium declaration
- ☐ Property Identification Number (PIN) printout

Your development approval might also be dependent on other relevant federal or provincial legislation, municipal by-laws or other agency approvals.

All final plans must include the owner's signature as well as the engineer's signature and seal.

I. Development Agreements

A development agreement may be required prior to site plan approval, subdivision and condominium applications. Should this be necessary for your development, you will be contacted by the agreement administrator with further details of the requirements including but not limited to insurance coverage, professional liability for your engineer, additional fees and securities.

J. Transfers, Easements and Postponement of Interest

The owner acknowledges and agrees that if required, it is their solicitor's responsibility on behalf of the owner, to disclose the registration of all transfer(s) of land and/or easement in favour of the County and/or utilities. Also, the owner further acknowledges and agrees that it is their solicitor's responsibility on behalf of the owner for the registration of postponements of any charges in favour of the County.

K. Permission to Enter Subject Lands

Permission is hereby granted to Norfolk County officers, employees or agents, to enter the premises subject to this application for the purposes of making inspections associated with this application, during normal and reasonable working hours.

L. Freedom of Information

For the purposes of the *Municipal Freedom of Information and Protection of Privacy Act*, I authorize and consent to the use by or the disclosure to any person or public body any information that is collected under the authority of the *Planning Act*, R.S.O. 1990, c. P. 13 for the purposes of processing this application.

B. Hays

Owner/Applicant Signature

September 28/23

Date

M. Owner's Authorization

If the applicant/agent is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We 2741112 Ontario Inc. am/are the registered owner(s) of the lands that is the subject of this application.

I/We authorize Arcadis Inc. to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application. Moreover, this shall be your good and sufficient authorization for so doing.

B. Hays

Owner

September 28/23

Date

Owner

Date

N. Declaration

I, CARMEN JANDU of THE TOWN OF OAKVILLE, HALTON REGION

solemnly declare that:

all of the above statements and the statements contained in all of the exhibits transmitted herewith are true and I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of *The Canada Evidence Act*.

Declared before me at:

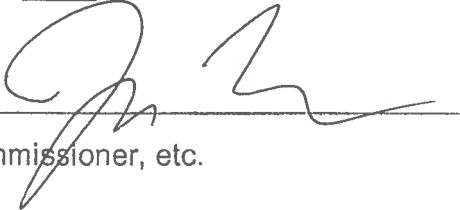
City of Hamilton


Owner/Applicant Signature

In _____

This 19th day of October

A.D., 2023


A Commissioner, etc.

Jared Vail Marcus, a Commissioner, etc
Province of Ontario,
for **Arcadis Professional Services(Canada) Inc.**
Expires June 16, 2026



Pre-Consultation Meeting Minutes

Date: September 23, 2020

Description of Proposal: Residential development on an abandoned industrial site

Property Location: 19 North Street, Courtland

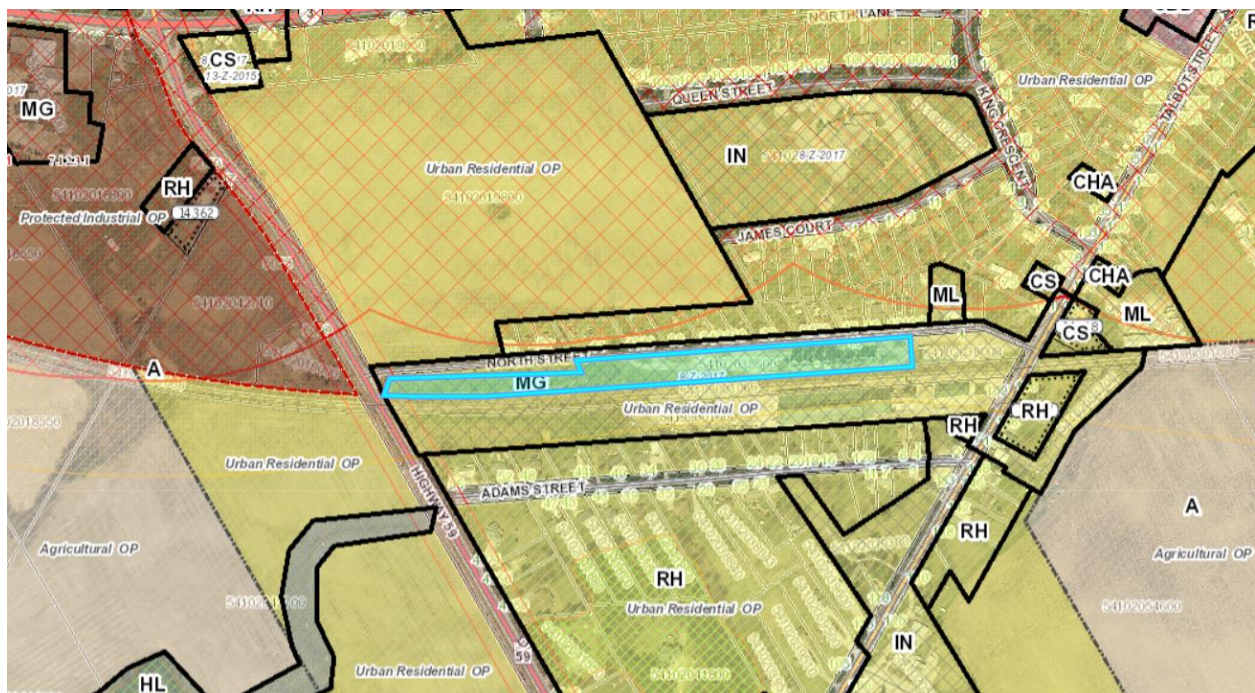
Roll Number: 3310541020355000000

As a result of the information shared at the pre-consultation meeting dated September 23, 2020, the following applications and qualified professional documents / reports are required as part of the development review process.

Please note that various fees are associated with each application and there are also costs for qualified professionals retained to complete various 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. As the proposal proceeds and more information is made available, additional applications, studies, reports, etc. may be required.

This summary including checklists, comments and requests are applicable for a period of one (1) year from the date of meeting. If an application is not received within that time frame, a subsequent pre-consultation meeting may be required due to changes in policies and technical requirements.

Site Map



Attendance List

Proponent	Chris Carson, Paul Emerson
Planning & Development – Planning	Tricia Givens, Director, Planning (Chair) Gaurang Khandelwal, Planner Mohammad Alam, Senior Planner Fabian Serra, Planner Annette Helmig, Agreement Coordinator
Planning & Development – Building	Roxanne Lambrecht, Zoning Administrator Scott Northcott, Building Inspector III
Planning & Development – Development Engineering	Nate Xuereb, Development Technologist
Community Services – Fire	Cory Armstrong-Smith, Fire Prevention Officer
Corporate Support Services – Realty Services	Lydia Harrison, Realty Services Coordinator
Long Point Regional Conservation Authority	Leigh-Anne Mauthe, Supervisor of Planning Services

Privileged Information and Without Prejudice

Table of Contents

Pre-Consultation Meeting Minutes	1
Site Map	1
Attendance List	2
Table of Contents	3
Planning Department.....	4
Summary	4
List of Application Requirements	4
Agreements	6
Development Engineering	7
Conservation Authority	11
Long Point Regional Conservation Authority	11
County Departmental Comments & Requirements	13
Corporate Support Services – Realty Services & Accessibility for Ontarians with Disabilities Act	13
Building.....	13
Fire Department.....	15
Paramedic Services.....	15
Summary of Applicable Legislation, Policy and Zoning	16
Provincial Policy Statement, 2020	16
Norfolk County Official Plan.....	19
Norfolk County Zoning By-Law 1-Z-2014.....	20
Schedule 1: Current Fee Summary	22
Norfolk County Development Application Fees	22
Long Point Region Conservation Authority Current Fees	23
Appendix: Other Attachments List	24

Privileged Information and Without Prejudice

Planning Department

Summary

The subject site is located at 19 North Street in Courtland, Norfolk County.

The subject lands are within the settlement area as defined in the Provincial Policy Statement, 2020 and is consistent with its policies.

The subject lands are designated Urban Residential in the Norfolk County Official Plan.

The subject lands are zoned General Industrial (IG) in the Norfolk County Zoning By-Law 1-Z-2014. The proposed 10 semi-detached buildings (20 dwelling units) are not a permitted use in the General Industrial Zone. A Zoning By-Law Amendment is required. A Draft Plan of Subdivision Application will also be required to facilitate the proposed developments. In order to establish the lots, a Part Lot Control application will also be required.

A geotechnical study is required to ensure that the lots can accommodate private septic systems.

The additional plans and studies listed below will also be required in order to facilitate the proposed development.

List of Application Requirements*

Planning application(s) required to proceed	Required
Official Plan Amendment Application Choose an item.	
Zoning By-law Amendment Application (Major)	X
Site Plan Application Choose an item.	
Draft Plan of Subdivision Application	X
Draft Plan of Condominium Application	
Part Lot Control Application	
Consent / Severance Application	
Minor Variance Application (May be required)	X
Removal of Holding Application	
Temporary Use By-Law Application	
Other - Click here to enter text.	

Privileged Information and Without Prejudice

Planning requirements for a complete application The items below are to be submitted as part of the identified Planning Application(s). ** electronic/PDF copies of all plans, studies and reports are required**	Required at OPA/ Zoning Stage	Required at Draft Plan of Subdivision Stage
Proposed Site Plan / Drawing	X	X
Planning Impact Analysis Report / Justification Report	X	X
Environmental Impact Study Choose an item.		
Neighbourhood Plan (TOR must be approved by the County)		
Agricultural Impact Assessment Report		
Archaeological Assessment		
Heritage Impact Assessment		
Market Impact Analysis		
Dust, Noise and/or Vibration Study		
MOE D-Series Guidelines Analysis	X	X
Landscaping Plan		X
Elevation Plan		X
Photometrics (Lighting) Plan		X
Shadow Analysis Report		
Record of Site Condition	X	X
Contaminated Site Study		
Minimum Distance Separation Schedule		
Parking Assessment		
Hydrogeological Study		
Geotechnical Study	X	X
Restricted Land Use Screening Form		
Topographical Survey Drawing		X
Additional Planning requirements		Required
Development Agreement		X
Parkland Dedication/Cash-in-lieu of Parkland		X

*the list of requirements is based on the information submitted and as presented for this specific pre-consultation meeting. Any changes to a proposal may necessitate changes to Planning Department submission requirements.

Privileged Information and Without Prejudice

Assigned Planner:

Fabian Serra
Planner
Extension 1834
Fabian.Serra@norfolkcounty.ca

Agreements

I am excited to be working with you during the agreement stage of your subdivision until the final release of your performance securities for the infrastructure works. Closer to your subdivision agreement process I will provide you with a checklist for further information and user fees that will be required.

The Owner will be required, at its expense, to obtain and keep in force, insurance coverage until the securities have been released at the completion of your project. Your surveyor, engineer and architect will also be required to provide insurance for professional liability.

Please confirm the ownership and intentions regarding PIN 50150-0157, PIN 50150-0159 and 50150-0160.

Recommended draft plan conditions will be prepared and provided to you as part of the planning report for your draft plan of subdivision application. For example, if it is determined appropriate, a condition of the development of land, might be the requirement for a cash-in-lieu parkland payment. This payment is determined from a land appraisal (preconstruction) prepared for the Owner at its expense.

If there are any charges or mortgage holders on your property they will be required to postpone their interest on the property to the County's development agreement.

All the best.

Annette Helmig
Agreement and Development Coordinator
Extension 1849
Annette.Helmig@norfolkcounty.ca

Privileged Information and Without Prejudice

Development Engineering

Development Engineering requirements to proceed The below requirements are to be submitted as part of the Planning application.	Required at Zoning / DPA Stage	Required at Engineering Review Stage	Potentially Required (See Notes Section)
General Requirements			
Concept Plan	X	X	
Area Rough Grading Plan			X ²⁶
Lot Grading Plan		X	
Siltation and Erosion Control Plan		X	
General Plan of Services		X	
Plan and Profile Drawings			X
Utility Plan			X
Geotechnical Report			X ²⁷
Functional Servicing Report	X ^{21,22}		
Water Servicing Requirements			
Water Modelling (County Consultant)	X ²²		
Storm Water Servicing Requirements			
Storm Water Management Design Report (including calculations)	X	X	
Storm Water Drainage Plan		X	
Establish/Confirm Legal and Adequate Outlet		X ⁹	
Municipal Drainage		X ^{9-19**}	
Transportation Requirements			
Traffic Impact Study	X ²³	X	
Street Signage/Traffic Control Plan			X ²⁸
Improvements to Existing Roads & Sidewalk (urbanization, pavement structure, widening sidewalk replacement, upgrades, extension and accessibility)		X ^{5,6}	

Privileged Information and Without Prejudice

General Notes:

1. As per Norfolk County By-Law 2013-65, only one domestic water service pipe shall be installed per lot.
2. As per Norfolk County By-Law 2016-42, only one entrance is permitted for residential lots.
3. All entrances are to be shown on the plans and are to be paved from back of curb/edge of asphalt to property line.
4. As-constructed engineered plans of North Street has been included as part of this information package.
5. North Street is to be upgraded to urban standards.
6. Sidewalk is to be installed as per Norfolk County's Sidewalk Policy. A copy of this policy has been included as part of this pre-consultation package.
7. Any required infrastructure to facilitate this development will be at the developer's expense.
8. 100% Securities will be required and is to be submitted in the form of a Security Schedule. A Schedule 'H' template has been included as part of this pre-consultation package.

****Drainage Department Notes (Contact Information below):**

9. This development will require a legal and adequate outlet for their stormwater management.
10. The current proposal appears to have conflicts with the top end of the James Street Drain. In order to alter, remove or relocate all or a portion of the drain will require a new Section 78 Drainage Report to be passed under By-law. This report will be required to be completed by a qualified Drainage Engineer if this is the intent. The Engineer should update the concept drawings and verify the location of the James Street Drain on their plan. It looks to be the 52m of the most westerly portion of the development or Lots 1-3.
11. All structures will be required to maintain a 4.5m setbacks from the center of a tile drainage system and 9m from the top of bank of any municipal drain as per the Norfolk County Zoning By-Law.
12. The developer will be responsible to pay for the reapportionments necessary under Section 65 of the Drainage Act for the Purdy Drain, Purdy Highway Branch, Courtland #2 Drain, and the James Street Drain. Actual work will be defined once a final plan is in place and can be addressed within the Subdivision Agreement.
13. The Engineer will need to verify that there is capacity within the downstream systems being the James Street Drain, Purdy Drain - Highway Branch, and the Purdy Drain. The engineer shall verify that there are no negative impacts to the drain or surrounding lands in respect an increased risk of flooding causing damage to life, property, or the environment as a result of this development.
14. If the drain is determined to have limited capacity (based on current as-built conditions), some sort of on-site retention may be required with a controlled release rate to safely discharge the stormwater from the site.

Privileged Information and Without Prejudice

15. Appropriate sediment and erosion controls shall be in place to not cause erosion and unnecessary sediment loadings into the downstream municipal drains during construction.
16. Ideally, no connections will be made to the Courtland #2 Drain due to known issues with this system.
17. A single direct connection the open ditch portion of the James Street Drain would be ideal.
18. The overland flow route on the Purdy Drain will need to be verified on-site. We have records indicating that an existing overland route was used for the drain and the capacity was never verified for major overland events.
19. **The Engineer may reach out to Drainage Services to obtain the necessary reports and plans for the above mentioned drains. Contact Information below;**

Drainage Department Contact Information:

***Chris Dunn, C.E.T.,
Drainage Superintendent
Delhi Administration Building
chris.dunn@norfolkcounty.ca
(519)-582-2100 x.1601***

Required at Zoning / Draft Plan Approval Stage:

20. All reports are to adhere to Norfolk County Design Criteria. An electronic copy of this criteria has been included as part of this pre-consultation package.
21. Recommendations from all reports are to be implemented into the design at the developer's expense.
22. Water modelling will be required and is to be completed at the developer's expense. This is completed by Norfolk County's third-party consultant. The following information will be required to obtain a quote:
 - a. Functional Servicing Report; and
 - b. General Plan of Services.Once a quote is provided, it will need to be approved by the Owner in writing to proceed with the modelling.
23. As per Norfolk County's ISMP Appendix J – TIS Guidelines, a traffic impact study is required when developments produces 75 vehicle trips or more. It has been identified in the pre-consultation submission that this development estimates 100 vehicle trips per day upon full build out. An electronic copy of these guidelines has been included as part of this pre-consultation package.

Required at Engineering Submission Review Stage:

24. As per Norfolk County's Design Criteria, Section 4.1.01(A): Submission of Engineering Drawings for Plans of Subdivision and/or Condominium is to be adhered to.
25. All engineered plans are to adhere to Norfolk County's Design Criteria.

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Potentially Required:

- 26. Area Rough Grading Plan is to be submitted if earth cuts and fills are in excess of 0.5 meters.
- 27. A Geotechnical Report is to be reviewed by Development Engineering if any storm water infiltration measures are proposed for the development.
- 28. Traffic Control Plan is to be submitted based on the recommendations (if any) of the Traffic Impact Study.

Nate Xuereb
Development Technologist
Extension 1701
Nate.Xuereb@norfolkcounty.ca

Conservation Authority

Long Point Regional Conservation Authority

Conservation Authority requirements to proceed	May be Required	Required
Conservation Authority Permit		
Slope Stability Analysis / Erosion Analysis		
Coastal Engineers Report		
Environmental Impact Study		
Subwatershed Plan/Study		
Master Drainage Study		
Stormwater Management Report/Brief		X
Other		

Notes:

Provincial Policy Statement, 2020, Section 3.1 Natural Hazards

Based on the location of the proposed building envelope, the development appears to be outside any area subject to Natural Hazards as defined in the Provincial Policy Statement, 2020. At this time LPRCA has no concerns as it relates to section 3.1 of the PPS, 2020.

Ontario Regulation 178/06

The subject lands are not regulated under Ontario Regulation 178/06 and permission from our office is not required from our office.

Stormwater Management

LPRCA will review the final stormwater management design using the 2003 MECP Stormwater Management Planning and Design Manual, MTO Drainage Manual, LID Stormwater Management Manual, and the Municipal SWM guidelines.

Based on the site and receiving watercourse, an enhanced level of treatment as per the 2003 MECP Stormwater Management Planning and Design Manual is required for the proposed development.

LPRCA requires the following be included and addressed in the design of the stormwater water facility:

- Minimize, or, where possible, prevent increases in contaminant loads.
- Minimize, erosion and changes in water balance, and prepare for the impacts of a changing climate through the effect management of stormwater, including the use of green infrastructure.
- Mitigate risks to human health, safety, property and the environment.

Privileged Information and Without Prejudice

- Maximize the extent and function of vegetative and pervious surfaces.
- Implement stormwater management best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development.
- Adequate and legal outlet for major, minor, and all flow conditions from the site be provided.

In addition to the above requirements, the following must be clearly shown of the submitted design drawings:

- Major flow systems exceeding are delineated on the drawing. Overland flow paths and depths from surcharged storm sewer systems and the stormwater treatment facility must not increase the flood risk to life, property and the environment.
- Minor overland flow systems and paths are to be delineated and shown on the drawings.
- Erosion and sedimentation control during construction.
- Adequate erosion control on inlets and outlets.

Leigh-Anne Mauthe, BES
Supervisor of Planning Services
519-842-4242 or 1-888-231-5408 ext.229
lmauthe@lprca.on.ca

County Departmental Comments & Requirements

Corporate Support Services – Realty Services & Accessibility for Ontarians with Disabilities Act

This property is comprised of one PIN, currently owned by 2741112 Ontario Inc. There are no outstanding mortgages currently registered on title. Should the applicants register a mortgage prior to the Site Plan Agreement being registered, the County will require a Postponement of the any registered mortgages. The applicants should request any postponements as early in the process as possible to ensure the postponement is ready for registration at or shortly after the registration of the Site Plan Agreement.

Lydia Harrison
Realty Services Supervisor
Extension 1323
Lydia.Harrison@norfolkcounty.ca

Building

Zoning Administrator:

- Only one parking space permitted in required front yard. If attached garage, ensure uninterrupted (no stairs or landing) space is 3.3m x 5.8m. Two parking spaces required per unit.
- Minimum 50% of front yard is required to be maintained as landscape area per unit.
- If front porch is proposed, it can only encroach 1.5m into the required front yard.
- If back deck is proposed, it can be minimum 3m from rear lot line and 1.2m from interior lot lines. If rear yard is sloping, where deck reaches 2m above finished grade, the deck is required to be 3m from interior lot lines and 6m from rear lot line.
- Maximum building height is 11m.

Roxanne Lambrecht
Zoning Administrator
Extension 1839
Roxanne.Lambrecht@norfolkcounty.ca

Building Inspector:

Demolition Permit Stage:

- ☐ Obtain demolition permits for building being demolished.
 - ✓ You will need to complete Form 357 to have the buildings removed from the tax roll.
- ☐ A completed Building Permit Application Form

Privileged Information and Without Prejudice

- ✓ Commitment to general review signed by owner and Professional Engineer
- ✓ Application to be signed by owner of the property/authorized agent
- ☐ Completed Demolition checklist
- ☐ Payment of ALL applicable fees

Building Permit Stage:

Please refer to our website for current forms, and fees.

<https://www.norfolkcounty.ca/business/building/>

Proposed development is considered a house as defined by the Ontario Building Code (OBC)

- ☐ A completed Building Permit Application Form
 - ✓ Schedule 1: Designer Information
 - ✓ Application to be signed by owner of the property/authorized agent
- ☐ Editable PDF's of a dimensioned plot plan/survey
- ☐ Editable PDF's of dimensioned construction drawings
 - ✓ BCIN from a qualified designer
- ☐ Roof truss layout (where required)
- ☐ Engineered floor system layout (where required)
- ☐ Engineered beam details (i.e. Parallam, Micro-lam) (where required)
- ☐ Engineered fire wall details (where required)
- ☐ Energy Efficiency Design Summary (EEDS form)
- ☐ Heat loss calculations
- ☐ Ventilation duct design
- ☐ Water connection permit
- ☐ Septic application including soils analysis.
 - Note: Area is known to have high water table and percolation times greater than 15 min/cm.
 - Lot sizes may need to be increase to support leaching bed fill area [OBC 8.7.4.1] or increased septic system clearance for raised bed systems [OBC 8.7.4.2(11)]
- ☐ Zoning review approval
- ☐ Approved lot grading certificate/exemption
- ☐ Payment of ALL applicable fees
- ☐ Payment of development charges

If you have any question on the building permit process or plans required, please contact Scott Northcott, Building Inspector.

Scott Northcott
Senior Building Inspector
Extension 1848
Scott.Northcott@norfolkcounty.ca

Privileged Information and Without Prejudice

Fire Department

No concerns.

Cory Armstrong-Smith
Fire Prevention Officer
Extension 2402
Cory.Armstrong-Smith@norfolkcounty.ca

Paramedic Services

No comments from Paramedic Services at this time.

Stuart Burnett
Deputy Chief
Extension 2429
Stuart.Burnett@norfolkcounty.ca

Summary of Applicable Legislation, Policy and Zoning

Following is a summary of key items related to the proposal as presented; noting these documents are meant to be read in their entirety with relevant policies to be applied in each situation.

Provincial Policy Statement, 2020

The PPS provides policy direction on matters of provincial interest related to land use planning and development. It promotes efficient development and land use patterns and encourages growth and development within existing settlement areas, of which Delhi is considered as.

Policy 1.1.1 states, “Healthy, liveable and safe communities are sustained by:

- a) promoting efficient development and land use patterns which sustain the financial well-being of the Province and municipalities over the long term;
- b) accommodating an appropriate affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing and housing for older persons), employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;
- c) avoiding development and land use patterns which may cause environmental or public health and safety concerns;
- d) avoiding development and land use patterns that would prevent the efficient expansion of *settlement areas* in those areas which are adjacent or close to *settlement areas*;
- e) promoting the integration of land use planning, growth management, *transit-supportive* development, *intensification* and *infrastructure* planning to achieve cost-effective development patterns, optimization of transit investments, and standards to minimize land consumption and servicing costs;
- f) improving accessibility for persons with disabilities and older persons by addressing land use barriers which restrict their full participation in society;
- g) ensuring that necessary *infrastructure* and *public service facilities* are or will be available to meet current and projected needs;
- h) promoting development and land use patterns that conserve biodiversity; and
- i) preparing for the regional and local impacts of a changing climate.

Privileged Information and Without Prejudice

1.1.3.1 *Settlement areas* shall be the focus of growth and development.

1.1.3.2 Land use patterns within *settlement areas* shall be based on densities and a mix of land uses which:

- a) efficiently use land and resources;
- b) are appropriate for, and efficiently use, the *infrastructure* and *public service facilities* which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;
- c) minimize negative impacts to air quality and climate change, and promote energy efficiency;
- d) prepare for the *impacts of a changing climate*;
- e) support *active transportation*;
- f) are *transit-supportive*, where transit is planned, exists or may be developed; and
- g) are *freight-supportive*.

Land use patterns within *settlement areas* shall also be based on a range of uses and opportunities for *intensification* and *redevelopment* in accordance with the criteria in policy 1.1.3.3, where this can be accommodated.

1.1.3.3 Planning authorities shall identify appropriate locations and promote opportunities for *transit-supportive* development, accommodating a significant supply and range of *housing options* through *intensification* and *redevelopment* where this can be accommodated taking into account existing building stock or areas, including *brownfield sites*, and the availability of suitable existing or planned *infrastructure* and *public service facilities* required to accommodate projected needs.

1.1.3.4 Appropriate development standards should be promoted which facilitate *intensification*, *redevelopment* and compact form, while avoiding or mitigating risks to public health and safety.

1.4.1 To provide for an appropriate range and mix of *housing options* and densities required to meet projected requirements of current and future residents of the *regional market area*, planning authorities shall:

- a) maintain at all times the ability to accommodate residential growth for a minimum of 15 years through *residential intensification* and *redevelopment* and, if necessary, lands which are *designated and available* for residential development; and
- b) maintain at all times where new development is to occur, land with servicing capacity sufficient to provide at least a three-year supply of residential units available through lands suitably zoned to facilitate *residential intensification* and *redevelopment*, and land in draft approved and registered plans.

Privileged Information and Without Prejudice

Upper-tier and single-tier municipalities may choose to maintain land with servicing capacity sufficient to provide at least a five-year supply of residential units available through lands suitably zoned to facilitate *residential intensification* and *redevelopment*, and land in draft approved and registered plans.

1.4.3 Planning authorities shall provide for an appropriate range and mix of *housing options* and densities to meet projected market-based and affordable housing needs of current and future residents of the *regional market area* by:

- a) establishing and implementing minimum targets for the provision of housing which is *affordable* to *low and moderate income households* and which aligns with applicable housing and homelessness plans. However, where planning is conducted by an upper-tier municipality, the upper-tier municipality in consultation with the lower-tier municipalities may identify a higher target(s) which shall represent the minimum target(s) for these lower-tier municipalities;
- b) permitting and facilitating:
 - 1. all *housing options* required to meet the social, health, economic and well-being requirements of current and future residents, including *special needs* requirements and needs arising from demographic changes and employment opportunities; and
 - 2. all types of *residential intensification*, including additional residential units, and *redevelopment* in accordance with policy 1.1.3.3;
- c) directing the development of new housing towards locations where appropriate levels of *infrastructure* and *public service facilities* are or will be available to support current and projected needs;
- d) promoting densities for new housing which efficiently use land, resources, *infrastructure* and *public service facilities*, and support the use of *active transportation* and transit in areas where it exists or is to be developed;
- e) requiring *transit-supportive* development and prioritizing *intensification*, including potential air rights development, in proximity to transit, including corridors and stations; and
- f) establishing development standards for *residential intensification*, *redevelopment* and new residential development which minimize the cost of housing and facilitate compact form, while maintaining appropriate levels of public health and safety.

Based on the information provided in the pre-consultation meeting it appears that the proposal meets the intent of the Provincial Policy Statement.

Privileged Information and Without Prejudice

Norfolk County Official Plan

The subject lands are Designated “Urban Residential” in the Norfolk County Official Plan.

Section 7.7.1 Urban Residential Designation outlines the permitted uses. Subject to the other policies of this Plan, the following policies shall apply in determining uses permitted on land designated Urban Residential on Schedule “B”.

- a) The predominant use of land shall be a variety of urban dwelling types, including single detached dwellings, semi-detached dwellings, duplex dwellings and similar low-profile residential buildings not exceeding 2 dwelling units per lot.

Section 7.7.2 outlines the land use policies for Urban Residential Designation. The following policies apply to land designated Urban Residential.

- a) Single, semi-detached and duplex housing forms shall generally have an average net density of 15 units per hectare (uph), save and except for land designated Urban Residential in the Courtland Urban Area, where private servicing limitations shall determine the density of development.

Section 6.4 Urban areas outlines that the following shall be the policy of the County:

- a) The locations of the Urban Areas are illustrated on Schedule “A” – Community Structure. Each Urban Area is unique and will accommodate a varied range and type of growth and development.
- b) It is the policy of this Plan that the Urban Areas will incorporate the following:
 - i. a full range of housing types, including affordable and special needs housing;
 - ii. business opportunities at appropriate locations to provide a wide range of employment and services to residents, businesses and visitors;
 - iii. full municipal services, as feasible and appropriate, and an appropriate level of transportation infrastructure;
 - iv. a concentration of community services for the County, including social, cultural, entertainment, health, educational and other supporting facilities; and
 - v. an open space, natural heritage and recreational network that is integrated with open spaces throughout the County, and provides appropriate passive, natural and active areas.
- c) The County shall ensure through its planning activities that each Urban Area develops with efficient land use patterns that minimize the extension of municipal services and infrastructure and will sustain the community and financial well-being of the County over the long-term.

The proposed development is consistent with the Official Plan.

Privileged Information and Without Prejudice

Norfolk County Zoning By-Law 1-Z-2014

The subject lands are Zoned “General Industrial” (MG) in the Norfolk County Zoning By-Law.

The proposed twenty (20) semi-detached homes are not listed as a permitted use within the General Industrial Zone.

The R2 Zone permits semi detached homes and the zone provisions are as follows:

- | | |
|--|---------------------------------|
| a) minimum lot area | Per Semi-detached dwelling: |
| i. interior lot | 255 square metres |
| ii. corner lot | 345 square metres |
| b) minimum lot frontage | |
| i. interior lot | 8.5 metres |
| ii. corner lot | 11.5 metres for the corner unit |
| c) minimum front yard: | 6 metres |
| i. except where a detached private garage or parking space is accessed via a rear lane | |
| d) minimum exterior side yard: | 6 metres |
| e) minimum interior side yard: | |
| i. detached private garage or parking space accessed via front yard | |
| ii. detached private garage or parking space accessed via a rear lane | 1.2 metres |
| iii. attached private garage | 1.2 metres |
| f) minimum rear yard: | 7.5 metres |
| g) maximum building height: | 11 metres |

The proposed plan will require a Zoning By-Law Amendment to change the zoning to an R2 Zone to permit the use and lot provisions may have to be amended as well.

Site Plan Control:

The subject lands are under site plan control. A high standard of design will be required for this location. The following is required to be included on the future site plan submission:

- All measurements in metric

Privileged Information and Without Prejudice

- Key map
- Scale, legend and north arrow
- Legal description and municipal address
- Development name
- Drawing title, number, original date and revision dates
- Owner's name, address and telephone number
- Engineer's name, address and telephone number
- Professional engineer's stamp
- Existing and proposed easements and right of ways
- Zoning compliance table – required versus proposed
- Parking space totals – required and proposed
- All entrances to parking areas marked with directional arrows
- All dimensions of the subject lands
- Dimensions and setbacks of all buildings and structures
- Gross, ground and useable floor area
- Lot coverage
- Floor area ratio
- Building entrances, building type, height, grades and extent of overhangs
- Names, dimensions and location of adjacent streets including daylighting triangles
- Driveways, curbs, drop curbs, pavement markings, widths, radii and traffic directional signs
- All exterior stairways and ramps with dimensions and setbacks
- Retaining walls including materials proposed
- Fire access and routes
- Location, dimensions and number of parking spaces (including visitor and accessible) and drive aisles
- Location of mechanical room, and other building services (e.g. A/C. HRV)
- Refuse disposal and storage areas including any related screening (if indoors, need notation on site plan).
- Winter snow storage location

Privileged Information and Without Prejudice

Schedule 1: Current Fee Summary

Norfolk County Development Application Fees

Please note that the fees listed below are subject to change. The \$372 pre-consultation fee is credited against future planning applications.

Consent	\$2,761.00
Surplus Farm Dwelling Consent and Zoning Amendment	\$3,301.00
Minor Variance	\$1,529.00
Zoning Amendment – Regular	\$3,727.00
Zoning Amendment – Major	\$5,387.00
Zoning Amendment – Removal of Holding, Temporary Use Extensions, Down Zoning, Garden Suite 20 year reapplication	\$586.00
Official Plan Amendment – Regular	\$3,894.00
Official Plan Amendment – Major	\$5,942.00
Official Plan and Zoning Amendments Combined – Regular	\$4,392.00
Official Plan and Zoning Amendments Combined – Major	\$8,627.00
Site Plan – Regular	\$2,995.00
Site Plan – Major	\$8,152.00
Site Plan – Minor or Amendment	\$1,079.00
Site Plan – Exemption	No Fee
Subdivision and/or Condominium (plus \$75 per lot)	\$5,821.00
Condominium Conversion	\$3,148.00
Condominium Exemption from Draft Approval	\$1,816.00
Communications Tower	\$1,330.00
Deeming	\$1,816.00
Green Energy Act Application	\$1,042.00
Part Lot Control Exemption	\$2,086.00
Lot Grading Review	\$110.00
Peer Review	Full Cost Recovery
Other Engineering Agreements	\$1,357.00
Subdivision or Condominium Preservicing Agreement	\$1,284.00
Site Plan Agreement	\$2,485.00
Subdivision or Condominium Agreement	\$4,173.00
Public Works - Road Signs - Subdivisions (regulatory and non-regulatory per sign) (plus HST)	\$318.00
Revenue & Tax Service - Financial Administration	\$399.00
Community Services - Installation of Trees - Per Tree	\$494.00
Recirculation of Site Plan, Subdivision or Condominium (at third and every recirculation thereafter):	\$745.00

Privileged Information and Without Prejudice

Long Point Region Conservation Authority Current Fees

Please note that the fees listed below are subject to change.

Subdivision and Vacant Land Condominium

To draft plan approval including associated OPA and ZBA: \$1,325.00 + \$100/lot (to a maximum \$15,000.00)

Red-line revision (applicant initiated): \$491.55

Technical plans and reports (SWM with grading & sediment and erosion control plans; EIS; slope stability): \$779.70

Clearance letter (each phase): \$242.95

Zoning By-Law Amendment

Minor: \$491.55

Accompanied by 1 technical report: \$779.70

Accompanied by 2 technical reports: \$1,553.75

Combined Official Plan/Zoning By-Law Amendment

Minor: \$897.00

Accompanied by 1 technical report: \$1,553.75

Accompanied by 2 technical reports: \$2,248.70

Consent (severance)

Minor: \$491.55

Accompanied by 1 technical report: \$779.70

Accompanied by 2 technical reports: \$1,553.75

Minor Variance

Minor: \$491.55

Accompanied by 1 technical report: \$779.70

Accompanied by 2 technical reports: \$1,553.75

Site Plan Control

Minor: \$491.55

Accompanied by 1 technical report: \$779.70

Accompanied by 2 technical reports: \$1,553.75

Complex Application (incl. OPA/ZBL/Site Plan) for golf courses, trailer parks, campgrounds and lifestyle communities: \$2,248.87

Privileged Information and Without Prejudice

Appendix: Other Attachments List

1. Norfolk County Design Criteria;
2. Copy of Site Plan Securities and Constructions Estimates Schedule Template;
3. ISMP Appendix J – TIS Guidelines
4. Sidewalk Installation Policy

Arcadis Inc.
360 James Street North – Suite 200
Hamilton
Ontario L8L 1H5
Canada
Phone: 905-546-1010 ext. 63139
www.arcadis.com



Ms. Tricia Givens
Planning Department
Norfolk County
185 Robinson St.,
Simcoe, ON N3Y 5L6

Subject: Zoning By-law Amendment Application – 2741112 Ontario Inc. – 19 North Street, Courtland
Our Ref: 137929
Date: October 20, 2023

Dear Ms. Givens,

On behalf of our client, 2741112 Ontario Inc., please accept this letter and the following materials as part of our submission of a Zoning By-law Amendment application for the lands municipally known as 19 North Street, Courtland:

- One (1) copy of the signed application form
- Two (2) copies of the Stamped Site Plan prepared by J.H. Cohoon Engineering Ltd.
- One (1) copy of the Planning Justification Report
- One (1) copy of the Draft Zoning By-law Amendment
- One (1) copy of the Record of Pre-Consultation
- One (1) copy of the Traffic Impact Brief prepared by Paradigm Transportation Solutions Ltd.
- One (1) copy of the Functional Servicing Report and Stormwater Management Report prepared by J.H. Cohoon Engineering Ltd.
- One (1) copy of the Geotechnical Investigation Report prepared by Englobe Corp.
- One (1) copy of the Record of Site Condition
- One (1) cheque made payable to Norfolk County in the amount of \$15,089.00 which represents the application fee

Our client is seeking to redevelop the subject lands as a residential use consisting of 24 semi-detached dwelling units with frontage onto North Street, in Courtland. In order to permit the proposed development, a Zoning By-law Amendment is being sought in order to rezone the lands from an Industrial (MG) use to a Residential Zone Type 2 (R2) use with a Site-Specific Exception.

Our client has previously met with the County for a Pre-Consultation meeting on September 23, 2020. At this time, the requirements for a complete application submission were discussed and agreed upon, and these items have been provided as part of our submission package. Furthermore, given the minor changes since the meeting date as well as discussions with County staff, it has been determined that the Record of Pre-Consultation remains applicable past its typical validity period of one year until the time of this submission.

Subsequent to the current Zoning By-law Amendment application, our client intends to submit an application for Draft Plan of Subdivision as soon as possible. It is our understanding based on previous discussion with Staff that

Norfolk County
October 20, 2023

we are required to obtain Zoning By-law Approval prior to making our submission for Draft Plan Approval and that these two application processes may not occur concurrently. It is our desire to expedite the approvals process for both of these applications, and we would greatly appreciate any opportunity to submit our application for Draft Plan Approval during or ahead of the final receipt of Zoning By-law Approval.

We trust the attached materials provide you with sufficient information for the processing of this application. Should you have any questions or require anything further for the processing of the file, or should wish to discuss further, please do not hesitate to contact the undersigned.

Regards,

ARCADIS PROFESSIONAL SERVICES (CANADA) INC.



Ritika Nair
Planner



Carmen Jandu, MCIP RPP
Associate – Senior Planner



Record of site condition
Under Part XV.1 of the *Environmental Protection Act*

Summary

Confirmation number of submitted record of site condition	44869040
Status	Submitted
Date submitted (yyyy/mm/dd)	2021/07/01
Certification date (yyyy/mm/dd)	2021/05/06
Current property use	Industrial
Intended property use	Residential
Certificate of property use number	No CPU
Applicable site condition standards	Full depth generic site condition standards, Potable ground water, Medium and fine textured soil for Residential property use
Property legal description	See attached lawyer's letter
Property municipal address	19 NORTH STREET COURTLAND, ONTARIO N0J 1E0

Notice to readers concerning due diligence

This record of site condition has been filed in the Environmental Site Registry to which the public has access and which contains a notice advising users of the Environmental Site Registry who have dealings with any property to consider conducting their own due diligence with respect to the environmental condition of the property, in addition to reviewing information in the Environmental Site Registry.

Contents of this record of site condition

This record of site condition (RSC) consists of this document which is available to be printed directly from the Environmental Site Registry as well as all supporting documentation indicated in this record of site condition to have been submitted in electronic format to the Ministry of the Environment, Conservation and Parks.

Part 1: Property Ownership, Property Information and Owner's Certifications

Information about the owner who is submitting or authorizing the submission of the record of site condition

Owner name	27411112 ONTARIO INC
Owner type	Firm, corporation or partnership
Authorized person	KRISTIAN CARSON
Mailing address	15 ADI DASSLER WAY, PARIS Ontario, Canada
Postal Code	N3L 0B9
Phone	(519) 757-6221
Fax	
Email address	dave.difrancesco@214carsonco.com

Record of site condition property location information

Municipal address(es)	19 NORTH STREET, COURTLAND, ON N0J 1E0
Municipality	Norfolk County
Legal description	See attached Lawyer's letter
Assessment roll number(s)	
Property identifier number(s)	50150-0158 (LT)

Record of site condition property geographical references

Coordinate system	UTM
Datum	NAD 83
Zone	17
Easting	529,621.00
Northing	4,743,131.00

Record of site condition property use information

The following types of property uses are defined by the Regulation: Agricultural or other use, Commercial use, Community use, Industrial use, Institutional use, Parkland use, and Residential use.

Current property use	Industrial
Intended property use	Residential
Certificate of property use has been issued under section 168.6 of the Environmental Protection Act	No

**Please see the signed statements of property owner, or agent,
or receiver at the end of this record of site condition**

The rest of this page has been left intentionally blank

Part 2: List of reports, summary of site conditions and qualified person's statements and certifications

Qualified person's information

Name	DARREN COLEMAN
Type of licence under Professional Engineers Act	Licence
Licence number	90510413
Qualified person's employer name	COLESTAR ENVIRONMENTAL INC.
Mailing address	178 FINCHAM AVENUE, MARKHAM Ontario, L3P 4B3 Canada
Phone	(647) 938-2653
Fax	(905) 554-4157
Email address	dcoleman@colestarencvironmental.com

Municipal information

Local or single-tier municipality	Norfolk County
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Ministry of the Environment, Conservation and Parks District Office

District office	London District Office
District office address	733 Exeter Road, London ON N6E 1L3

Phase one environmental site assessment report

**Document used as the phase one environmental site assessment report and updates
in submitting the record of site condition for filing**

The date the last work on all of the records review, interviews and site reconnaissance components of the phase one environmental site assessment was done (refer to clause 28(1) (a) of O. Reg. 153/04)	(yyyy/mm/dd) 2021-01-28
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Type of report	Report title	Date of report (yyyy/mm/dd)	Author of report	Name of consulting company
Phase one environmental site assessment	Phase 1 Environmental Site Assessment (Enhanced) - 19 North Street, Courtland, Ontario	2021-01-28	Darren Coleman, P. Eng., QP	COLESTAR ENVIRONMENTAL INC.

Reports and other documents related to the phase one environmental site assessment

**Reports and other documents relied upon in certifying the information set out in section 10 of Schedule A or
otherwise used in conducting the phase one environmental site assessment**

Report title	Date of report (yyyy/mm/dd)	Author of report	Name of consulting company
N/A			

Phase two environmental site assessment report

**Document used as the phase two environmental site assessment report and updates
in submitting the record of site condition for filing**

The date the last work on all of the planning of the site investigation and conducting the site investigation components of the phase two environmental site assessment was done (refer to clause 33.5(1)(a) of O. Reg. 153/04)	(yyyy/mm/dd) 2021-06-14
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Type of report	Report title	Date of report (yyyy/mm/dd)	Author of report	Name of consulting company
Phase two environmental site assessment	Phase 2 Environmental Site Assessment and Site Remediation - 19 North Street, Courtland, Ontario	2021-06-14	Darren Coleman, P. Eng., QP	COLESTAR ENVIRONMENTAL INC.

Reports and other documents related to the phase two environmental site assessment

**Reports and other documents relied upon in making any certifications in the record of site condition for the
purposes of Part IV of Schedule A or otherwise used in conducting the phase two environmental site assessment**

Report title	Date of report (yyyy/mm/dd)	Author of report	Name of consulting company
N/A			

Environmental condition

Section 41 applies?	No
Section 43.1 applies?	No

Site condition information

Certification date (yyyy/mm/dd)	2021/05/06
Total area of record of site condition property (in hectares)	1.60000
Number of any previously filed record of site condition that applies to any part of the record of site condition property	
Number of any previously filed transition notice that applies to any part of the record of site condition property	
Soil texture	Medium and fine
Assessment/restoration approach	Full depth generic
Site investigation includes the investigation, sampling and analysis of ground water?	Yes
Is there soil present that is sufficient to investigate, sample and analyze soil on, in or under the property in accordance with s. 6, Schedule E of O.Reg. 153/04?	Yes
Site investigation includes the investigation, sampling and analysis of soil on, in or under the property which is used in the record of site condition?	Yes
Name of the laboratory used to analyze any samples collected of soil, ground water or sediment	ALS
Ground water condition (potable, non-potable)	Potable
Applicable site condition standard	TABLE 2

Table 1 – Maximum contaminant concentrations compared to applicable site condition standards

Measured concentration for contaminants in soil

Contaminant name		Maximum concentration		Applicable site condition	Unit of measure
1	Acetone	<	0.5	28	µg/g
2	Bromomethane	<	0.05	0.05	µg/g
3	Carbon Tetrachloride	<	0.05	0.12	µg/g
4	Chlorobenzene	<	0.05	2.7	µg/g
5	Chloroform	<	0.05	0.18	µg/g
6	Dichlorobenzene, 1,2-	<	0.05	1.7	µg/g
7	Dichlorobenzene, 1,3-	<	0.05	6	µg/g
8	Dichlorobenzene, 1,4-	<	0.05	0.097	µg/g
9	Dichlorodifluoromethane	<	0.05	25	µg/g
10	Dichloroethane, 1,1-	<	0.05	0.6	µg/g
11	Dichloroethane, 1,2-	<	0.05	0.05	µg/g
12	Dichloroethylene, 1,1-	<	0.05	0.05	µg/g
13	Dichloroethylene, 1,2-cis-	<	0.05	2.5	µg/g
14	Dichloroethylene, 1,2-trans-	<	0.05	0.75	µg/g
15	Dichloropropane, 1,2-	<	0.05	0.085	µg/g
16	Dichloropropene, 1,3-	<	0.042	0.081	µg/g
17	Ethylene dibromide	<	0.05	0.05	µg/g
18	Hexane (n)	<	0.05	34	µg/g
19	Methyl Ethyl Ketone	<	0.5	44	µg/g
20	Methyl Isobutyl Ketone	<	0.5	4.3	µg/g
21	Methyl tert-Butyl Ether (MTBE)	<	0.05	1.4	µg/g
22	Methylene Chloride	<	0.05	0.96	µg/g
23	Styrene	<	0.05	2.2	µg/g
24	Tetrachloroethane, 1,1,1,2-	<	0.05	0.05	µg/g
25	Tetrachloroethane, 1,1,2,2-	<	0.05	0.05	µg/g
26	Tetrachloroethylene	<	0.05	2.3	µg/g
27	Trichloroethane, 1,1,1-	<	0.05	3.4	µg/g
28	Trichloroethane, 1,1,2-	<	0.05	0.05	µg/g
29	Trichloroethylene	<	0.01	0.52	µg/g
30	Trichlorofluoromethane	<	0.05	5.8	µg/g
31	Vinyl Chloride	<	0.02	0.022	µg/g
32	Bromodichloromethane	<	0.05	1.9	µg/g
33	Bromoform	<	0.05	0.26	µg/g
34	Dibromochloromethane	<	0.05	2.9	µg/g
35	Petroleum Hydrocarbons F1****	<	5	65	µg/g

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Table 1 – Maximum contaminant concentrations compared to applicable site condition standards

Measured concentration for contaminants in soil

Continued from previous page....

Contaminant name	Maximum concentration		Applicable site condition	Unit of measure
36 Petroleum Hydrocarbons F2		36	150	µg/g
37 Petroleum Hydrocarbons F3		223	1300	µg/g
38 Petroleum Hydrocarbons F4		1,690	5600	µg/g
39 Benzene		0.0389	0.17	µg/g
40 Ethylbenzene		0.042	1.6	µg/g
41 Toluene		0.111	6	µg/g
42 Xylene Mixture		0.211	25	µg/g
43 Barium		82.5	390	µg/g
44 Beryllium		0.76	5	µg/g
45 Boron (total)		11.6	120	µg/g
46 Cadmium	<	0.5	1.2	µg/g
47 Chromium Total		25.5	160	µg/g
48 Cobalt		10.2	22	µg/g
49 Copper		74.4	180	µg/g
50 Lead		85.9	120	µg/g
51 Molybdenum		1.7	6.9	µg/g
52 Nickel		22.1	130	µg/g
53 Silver	<	0.2	25	µg/g
54 Thallium	<	0.5	1	µg/g
55 Uranium	<	1	23	µg/g
56 Vanadium		42.6	86	µg/g
57 Zinc		113	340	µg/g
58 Antimony		5.1	7.5	µg/g
59 Arsenic		11	18	µg/g
60 Selenium	<	1	2.4	µg/g
61 Acenaphthene		0.05	29	µg/g
62 Acenaphthylene		0.055	0.17	µg/g
63 Anthracene		0.095	0.74	µg/g
64 Benz[a]anthracene		0.12	0.63	µg/g
65 Benzo[a]pyrene		0.165	0.3	µg/g
66 Benzo[b]fluoranthene		0.327	0.78	µg/g
67 Benzo[ghi]perylene		0.135	7.8	µg/g
68 Benzo[k]fluoranthene		0.099	0.78	µg/g
69 Chrysene		0.162	7.8	µg/g
70 Dibenz[a h]anthracene	<	0.05	0.1	µg/g

...Continued on next page

Table 1 – Maximum contaminant concentrations compared to applicable site condition standards

Measured concentration for contaminants in soil

Continued from previous page....

Contaminant name		Maximum concentration	Applicable site condition	Unit of measure
71	Fluoranthene	0.501	0.69	µg/g
72	Fluorene	0.064	69	µg/g
73	Indeno[1 2 3-cd]pyrene	0.121	0.48	µg/g
74	Methlynaphthalene, 2-(1-) ***	0.428	3.4	µg/g
75	Naphthalene	0.143	0.75	µg/g
76	Phenanthrene	0.608	7.8	µg/g
77	Pyrene	0.352	78	µg/g

Table 1 – Maximum contaminant concentrations compared to applicable site condition standards (Continued)

Ground water

Contaminant name		Maximum concentration		Applicable site condition	Unit of measure
1	Petroleum Hydrocarbons F1****	<	25	750	µg/L
2	Petroleum Hydrocarbons F2	<	100	150	µg/L
3	Petroleum Hydrocarbons F3	<	250	500	µg/L
4	Petroleum Hydrocarbons F4	<	250	500	µg/L
5	Benzene	<	0.5	5	µg/L
6	Ethylbenzene	<	0.5	2.4	µg/L
7	Toluene	<	0.5	24	µg/L
8	Xylene Mixture	<	0.5	300	µg/L
9	Acetone	<	30	2700	µg/L
10	Bromomethane	<	0.5	0.89	µg/L
11	Carbon Tetrachloride	<	0.2	5	µg/L
12	Chlorobenzene	<	0.5	30	µg/L
13	Chloroform	<	0.5	22	µg/L
14	Dichlorobenzene, 1,2-	<	0.5	3	µg/L
15	Dichlorobenzene, 1,3-	<	0.5	59	µg/L
16	Dichlorobenzene, 1,4-	<	0.5	1	µg/L
17	Dichlorodifluoromethane	<	0.5	590	µg/L
18	Dichloroethane, 1,1-	<	0.5	5	µg/L
19	Dichloroethane, 1,2-	<	0.5	5	µg/L
20	Dichloroethylene, 1,1-	<	0.5	14	µg/L
21	Dichloroethylene, 1,2-cis-	<	0.5	17	µg/L
22	Dichloroethylene, 1,2-trans-	<	0.5	17	µg/L
23	Dichloropropane, 1,2-	<	0.5	5	µg/L
24	Dichloropropene, 1,3-	<	0.5	0.5	µg/L
25	Ethylene dibromide	<	0.2	0.2	µg/L
26	Hexane (n)	<	0.5	520	µg/L
27	Methyl Ethyl Ketone	<	20	1800	µg/L
28	Methyl Isobutyl Ketone	<	20	640	µg/L
29	Methyl tert-Butyl Ether (MTBE)	<	2	15	µg/L
30	Methylene Chloride	<	5	50	µg/L
31	Styrene	<	0.5	5.4	µg/L
32	Tetrachloroethane, 1,1,1,2-	<	0.5	1.1	µg/L
33	Tetrachloroethane, 1,1,1,2,2-	<	0.5	1	µg/L
34	Tetrachloroethylene	<	0.5	17	µg/L
35	Trichloroethane, 1,1,1-	<	0.5	200	µg/L

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Table 1 – Maximum contaminant concentrations compared to applicable site condition standards (Continued)

Ground water

Continued from previous page....

Contaminant name		Maximum concentration		Applicable site condition	Unit of measure
36	Trichloroethane, 1,1,2-	<	0.5	5	µg/L
37	Trichloroethylene	<	0.5	5	µg/L
38	Trichlorofluoromethane	<	5	150	µg/L
39	Vinyl Chloride	<	0.5	1.7	µg/L
40	Bromodichloromethane	<	2	16	µg/L
41	Bromoform	<	5	25	µg/L
42	Dibromochloromethane	<	2	25	µg/L
43	Acenaphthene		0.177	4.1	µg/L
44	Acenaphthylene	<	0.02	1	µg/L
45	Anthracene	<	0.02	2.4	µg/L
46	Benz[a]anthracene	<	0.02	1	µg/L
47	Benzo[a]pyrene	<	0.01	0.01	µg/L
48	Benzo[b]fluoranthene	<	0.02	0.1	µg/L
49	Benzo[ghi]perylene	<	0.02	0.2	µg/L
50	Benzo[k]fluoranthene	<	0.02	0.1	µg/L
51	Chrysene	<	0.02	0.1	µg/L
52	Dibenz[a h]anthracene	<	0.02	0.2	µg/L
53	Fluoranthene		0.063	0.41	µg/L
54	Fluorene		0.128	120	µg/L
55	Indeno[1 2 3-cd]pyrene	<	0.02	0.2	µg/L
56	Methlynaphthalene, 2-(1-) ***		0.114	3.2	µg/L
57	Naphthalene		0.09	11	µg/L
58	Phenanthrene		0.159	1	µg/L
59	Pyrene		0.022	4.1	µg/L
60	Sodium		67,700	490000	µg/L
61	Chromium VI	<	0.5	25	µg/L
62	Barium		245	1000	µg/L
63	Beryllium	<	0.1	4	µg/L
64	Boron (total)		78	5000	µg/L
65	Cadmium		0.036	2.7	µg/L
66	Chromium Total	<	0.5	50	µg/L
67	Cobalt		3.77	3.8	µg/L
68	Copper		2.06	87	µg/L
69	Lead		0.412	10	µg/L
70	Molybdenum		4.37	70	µg/L

...Continued on next page

Table 1 – Maximum contaminant concentrations compared to applicable site condition standards (Continued)

Ground water

Continued from previous page....

Contaminant name		Maximum concentration		Applicable site condition	Unit of measure
71	Nickel		2.92	100	µg/L
72	Silver	<	0.05	1.5	µg/L
73	Thallium		0.048	2	µg/L
74	Uranium		1.58	20	µg/L
75	Vanadium		1.3	6.2	µg/L
76	Zinc		5	1100	µg/L
77	Antimony		0.63	6	µg/L
78	Arsenic		1.17	25	µg/L
79	Selenium		1.47	10	µg/L
80	Aldrin	<	0.008	0.35	µg/L
81	Chlordane	<	0.011	7	µg/L
82	DDD	<	0.0057	10	µg/L
83	DDE	<	0.0057	10	µg/L
84	DDT	<	0.0057	2.8	µg/L
85	Dieldrin	<	0.008	0.35	µg/L
86	Endosulfan	<	0.0099	1.5	µg/L
87	Endrin	<	0.01	0.48	µg/L
88	Heptachlor	<	0.008	1.5	µg/L
89	Heptachlor Epoxide	<	0.008	0.048	µg/L
90	Hexachlorobenzene	<	0.008	1	µg/L
91	Hexachlorobutadiene	<	0.008	0.6	µg/L
92	Hexachlorocyclohexane Gamma-	<	0.008	1.2	µg/L
93	Hexachloroethane	<	0.008	2.1	µg/L
94	Methoxychlor	<	0.008	6.5	µg/L

Remedial action and mitigation

Remediated soils

Estimated quantities of the soil, if any, originating at and remaining on the record of site condition property that have been remediated, at a location either on or off the property, to reduce the concentration of contaminants in the soil. Indicate the remediation process or processes used and the estimated amount of soil remediated by each identified process.

Soil remediation process	Estimated quantity of soil (in ground-volume in cubic metres)
remedial excavations	

Description of remediation

Description of any action taken to reduce the concentration of contaminants (including soil removals) on, in or under the record of site condition property.

Soil or sediment removed and not returned

Estimated quantities of soil or sediment, if any, removed from and not returned to the record of site condition property.

Estimated quantity of soil (in ground-volume in cubic metres)	620.0
Estimated quantity of sediment (in ground-volume in cubic metres)	

Soil brought to the property

Estimated quantity of the soil, if any, being brought from another property to and deposited at the record of site condition property, not including any soil that may have originated at but been remediated off the record of site condition property and that is identified in section 28 of Schedule A.

Estimated quantity of soil brought to the property (in ground-volume in cubic metres)	0.0
---	-----

Ground water control or treatment measures

Ground water control or treatment measures that were required for the record of site condition property prior to the certification date for the purpose of submitting the record of site condition for filing.

Ground water control or treatment measures that are required for the record of site condition property after the certification date.

Estimated volume of ground water, if any, removed from and not returned to the record of site condition property.

Estimated volume of ground water (in litres)

Other activities including risk management measures

Constructed works that prior to the certification date for the purpose of submitting the record of site condition for filing, were required to control or otherwise mitigate the release or movement of known existing contaminants at the record of site condition property.

Constructed works that after the certification date, are required to control or otherwise mitigate the release or movement of known existing contaminants at the record of site condition property.

Monitoring or Maintenance

Soil Management Measures

Soil monitoring requirements or any requirements for care, maintenance or replacement or any monitoring or control works for known existing contaminants, if any, on the record of site condition property, after the certification date.

Ground water management measures

Ground water monitoring requirements or requirements for care, maintenance or replacement of any monitoring or control works or known existing contaminants, if any, on the record of site condition property, after the certification date.

Remediated or removed soil, sediment or ground water from near property boundary

Has any soil, sediment or ground water at the record of site condition property that is or was located within 3 metres of the record of site condition property boundary been remediated or removed for the purpose of remediation?

Yes

C Qualified person's statements and certifications

As the qualified person, I certify that:

☒ A phase one environmental site assessment of the record of site condition property, which includes the evaluation of the information gathered from a records review, site reconnaissance, interviews, a report and any updates required, has been conducted in accordance with the regulation by or under the supervision of a qualified person as required by the regulation.

☒ A phase two environmental site assessment of the record of site condition property, which includes the evaluation of the information gathered from planning and conducting a site investigation, a report, and any updates required, has been conducted in accordance with the regulation by or under the supervision of a qualified person as required by the regulation.

☒ The information represents the site conditions at the sampling points at the time of sampling only and the conditions between and beyond the sampling points may vary.

As of 2021/05/06, in my opinion, based on the phase one environmental site assessment and the phase two environmental site assessment, and any confirmatory sampling, there is no evidence of any ☒ contaminants in the soil, ground water or sediment on, in or under the record of site condition property that would interfere with the type of property use to which the record of site condition property will be put, as specified in the record of site condition.

☒ Ground water sampling has been conducted in accordance with the regulation by or under the supervision of a qualified person as required by the regulation.

As of 2021/05/06, in my opinion, based on the phase one and phase two environmental site assessments and any confirmatory sampling, the record of site condition property meets the applicable full depth ☒ generic site condition standards prescribed by section 36 of the regulation for all contaminants prescribed by the regulation in relation to the type of property use for which this record of site condition is filed, except for those contaminants (if any) specified in this record of site condition at Table 2, Maximum contaminant concentrations compared to standards specified in a risk assessment.

As of 2021/05/06, the maximum known concentration of each contaminant in soil, sediment ☒ and ground water at the record of site condition property for which sampling and analysis has been performed is specified in this record of site condition at Table 1, maximum contaminant concentrations compared to applicable full depth generic site condition standards.

☒ I am a qualified person and have the qualifications required by section 5 of the regulation.

☒ I have in place an insurance policy that satisfies the requirements of section 7 of the regulation.

I acknowledge that the record of site condition will be submitted for filing in the Environmental Site Registry, that records of site condition that are filed in the Registry are available for examination by the public and that the

☒ Registry contains a notice advising users of the Registry who have dealings with any property to consider conducting their own due diligence with respect to the environmental condition of the property, in addition to reviewing information in the Registry.

The opinions expressed in this record of site condition are engineering or scientific opinions made in accordance ☒ with generally accepted principles and practices as recognized by members of the environmental engineering or science profession or discipline practising at the same time and in the same or similar location.

I do not hold and have not held and my employer COLESTAR ENVIRONMENTAL INC.

☒ does not hold and has not held a direct or indirect interest in the record of site condition property or any property which includes the record of site condition property and was the subject of a phase one or environmental site assessment or risk assessment upon which this record of site condition is based.

☒ To the best of my knowledge, the certifications and statements in this part of the record of site condition are true as of 2021/05/06.

☒ By signing this record of site condition, I make no express or implied warranties or guarantees.

By checking the boxes above, and entering my membership/licence number in this submission, I, DARREN COLEMAN, a qualified person as defined in section 5 of O. Reg. 153/04 am, on 2021/07/01:

- a) signing this record of site condition submission as a qualified person; and
- b) making all certifications required as a qualified person for this record of site condition.

☒

☒ I agree

Additional documentation provided by property owner or agent

The following documents have been submitted to the Ministry of the Environment, Conservation and Parks as part of the record of site condition

Certificate of status or equivalent for the owner
Lawyer's letter consisting of a legal description of the property
Copy of any deed(s), transfer(s) or other document(s) by which the record of site condition property was acquired
A Current plan of survey
Area(s) of potential environmental concern
Table of current and past uses of the phase one property
Phase 2 conceptual site model
Owner or agent certification statements

19 North Street, Courtland

Zoning By-law Amendment

Planning Justification Report



Prepared for 2741112 Ontario Inc.
by Arcadis
October 20, 2023

Table of Contents

1	Introduction.....	1
2	Site and Surrounding Context	1
2.1	Site Description & Surrounding Context	1
2.2	Site History	3
2.3	Transportation	3
2.4	Community Facilities and Surrounding Community	3
3	Proposed Development	4
4	Pre-Consultation and Required Studies	5
4.1	Ministry of the Environment D-Series Guidelines Analysis.....	5
4.2	Geotechnical Investigation.....	6
4.3	Functional Servicing and Stormwater Management Report	6
4.4	Traffic Impact Brief	6
5	Land Use Planning Framework.....	7
5.1	The Planning Act.....	7
5.2	Provincial Policy Statement, 2020	9
5.3	Norfolk County Official Plan	12
6	Proposed Amendments	16
6.1	Proposed Zoning By-law Amendment	16
7	Conclusions	18
	Appendix A.....	1
	Appendix B.....	Error! Bookmark not defined.

List of Figures

Figure 2-1: Subject Lands and Surrounding Area (Source: Google Imagery, July 2018).....	2
Figure 2-2: Facilities Located in Proximity to the Subject Lands (Source: Google Maps)	4
Figure 3-1: Site Statistics	4
Figure 3-2: Excerpts of Concept Site Plan.....	5

List of Tables

Table 2-1: Surrounding Uses	2
Table 6-6-1: Zoning Requirements and the Proposed Development	16

1 Introduction

2741112 Ontario Inc (herein referred to as the “owner”) is the owner of a 1.6 hectare parcel of land, municipally referred to as 19 North Street situated on the south side of North Street in the Courtland community within northwest Norfolk County (herein referred to as the “subject lands”). The lands were the site of a grain processing facility, which the owner wishes to rehabilitate and redevelop as a residential use. The subject lands were originally used as a railway station in the 1970s and were then repurposed to grain elevators and a fuel depot in the 1970s. The former fuel depot ceased operations in the 1990s, followed by the grain elevators which ceased operations in early 2002.

The subject lands are located adjacent to a former and currently unused rail line and spur to the south, which was previously owned by Canadian National (CN) Rail. Through the Federal Government’s Abandonment protocol, the existing line was offered to municipalities, agencies, and short line operated. GeoRail (shortline operator) has since obtained a 10-year lease from CN Rail. It is our understanding that the use of the line immediately adjacent to the subject lands will remain unused. In discussions with GeoRail, it was advised that the rail line south of the subject property will not be used, as such, rail infrastructure east of the Community of Courtland have been partially removed.

It is the owner’s intention to redevelop the subject lands into 24 semi-detached dwelling units with frontage on North Street. The subject lands are currently designated as ‘Urban Residential’ by the Norfolk County Official Plan, which permits residential development, and zoned as ‘General Industrial Zone (MG)’ by the Zoning By-law of Norfolk County 1-Z-2014 which does not permit residential development. Through correspondence with County Staff following a request for pre-consultation, it was determined that the proposed development required a Zoning By-law Amendment (“ZBLA”) to permit the proposed use.

Arcadis Inc. was retained by the owner to provide professional planning services with respect to the proposed redevelopment of the subject lands. This scope includes the preparation of this Planning Justification Report (“PJR”), which describes the site location, site context, proposed development, and applicable planning legislation and policy, subsequently providing an overarching independent professional planning opinion.

2 Site and Surrounding Context

This section describes the site and the surrounding context. The subject lands are located in the rural community of Courtland, in an area made of low-density residential, commercial, agricultural uses, and abandoned industrial. The proposed development provides and opportunity to rehabilitate the subject lands, provide additional housing in the neighbourhood, and improve community cohesion.

2.1 Site Description & Surrounding Context

The subject lands are located in the central area of Courtland, a village located in the northwestern portion of Norfolk County. Specifically, the subject lands are located on the south side of North Street, east of Highway 59 and approximately 120 metres west of Talbot Street. The lands are currently vacant, previous agricultural infrastructure have been removed through a previous demolition permit issued by the County and all utilities have been removed.

The subject lands are approximately 1.6 hectares in size, have approximately 572 metres of frontage on North Street, and have a depth of approximately 27 metres. The subject lands comprise a majority of the block between Highway 59 and Talbot Street, with the exception of an antiques market located at the southwest corner of the intersection of Talbot Street and North Street. The subject lands are

municipally known as 19 North Street, and legally described as PT STATION GROUNDS PL 14B PT 1 37R7071; NORFOLK COUNTY. **Figure 2-1** below is an aerial photo of the subject lands and surrounding area.

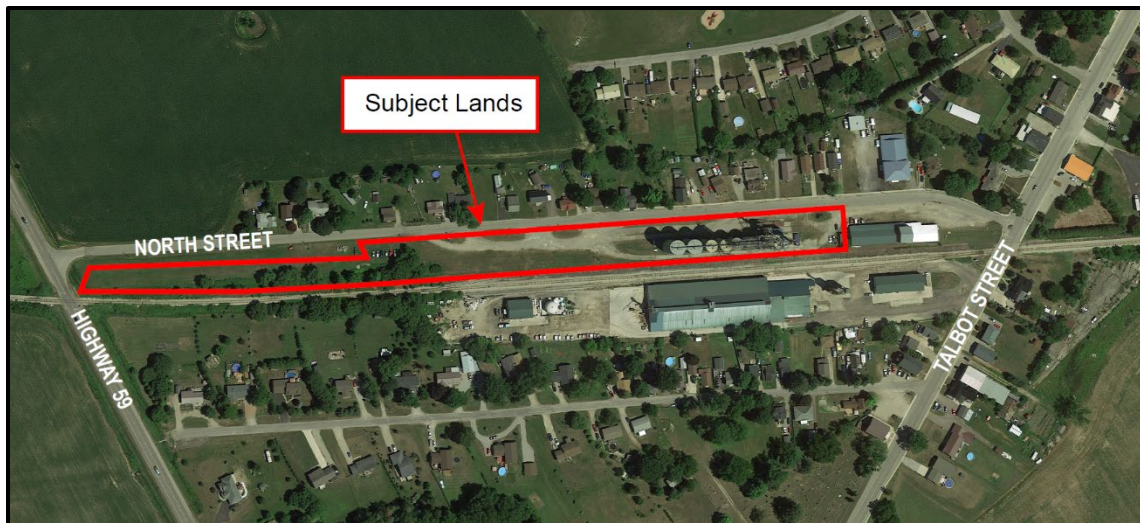


Figure 2-1: Subject Lands and Surrounding Area (Source: Google Imagery, July 2018)

The surrounding area is comprised of a mix of residential, small-scale commercial, and agricultural uses, with a disconnected rail line located south of the subject lands. The subject lands located within close proximity to commercial uses, schools and places of worship which are within a 5-10 (600.0m) minute walking distance. An overview of the surrounding uses is provided in the table below.

NORTH	EAST
<ul style="list-style-type: none"> - Residential Uses - Agricultural Uses - Courtland Vinyl Windows - Courtland Public School - Grace Family Bible Fellowship 	<ul style="list-style-type: none"> - Courtland Collectables Antiques Market - Courtland Variety and Cafe - Residential Uses
SOUTH	WEST
<ul style="list-style-type: none"> - Unused Trillium Railway and Rail Spur (Owned by Shortline Operator GeoRail) - Open Space - Trinity Evangelical Church - Commercial Uses - Courtland United Church - Our Lady of Fatima School - Courtland Old Colony Mennonite Church 	<ul style="list-style-type: none"> - Highway 59 - Agricultural Uses

Table 2-1: Surrounding Uses

As noted earlier a former agri-industrial operation was located on the subject lands. All buildings, infrastructure and services have been removed. The impacts of the former operation have been examined and contaminated soils were discovered and remediated. Further information regarding the previous operation of the lands and associated remediation is provided in the Phase 2 Environmental Site Assessment prepared by COLESTAR Environmental Inc., which is summarized in **Section 4** of this PJR.

2.2 Site History

It is our understanding that the subject lands were historically utilized as a railway station in the 1870s. In the 1960s, the subject lands were repurposed to include a grain elevator and fuel depot. In the 1970s, the railway station building, which was located west of the grain silos, was demolished. The fuel depot was decommissioned in the 1990s and the grain elevators ceased operations in early 2002. The grain silos, elevators and ancillary buildings have been removed in within the past 3 years. The proposed development offers an opportunity to rehabilitate brownfield lands into residential uses which will assist the County in meeting their anticipated growth.

The subject lands are located immediately north of a portion of railway track, known as the Trillium Railway, as well as a spur line that historically serviced the former railway station and grain silos on the subject lands. The Trillium Railway was owned by CN Rail but was later abandoned. Consistent with Federal guidelines, CN Rail first offered the line to municipalities, agencies, and shortline operators prior to going to private sector interests. The Economic Development Group representing Elgin, Brant, Norfolk, and Oxford Counties helped to promote this lease. The shortline operator GeoRail responded and obtained a 10-year lease from CN Rail for the use of the railways. In discussions with GeoRail, it was advised that the rail line south of the subject property will not be used, as such, rail infrastructure east of the Community of Courtland have been partially removed.

2.3 Transportation

The subject lands are well situated for vehicular transportation infrastructure as they are located approximately 750 metres southeast of the intersection of Highway 59 and Highway 3. The nearest major provincial highway is Highway 401, located approximately 32 kilometres north.

There is no public transit available in the village of Courtland. However, there is an inter-community bus service provided by the nearby community of Tillsonburg called Tillsonburg GO or T:GO. The T:GO Route 2 provides service three times a day on Tuesdays and Fridays in a one-way loop with stops in Tillsonburg, Courtland, Langton, and Delhi. The bus stop for this service is located at Talbot Street just south of Highway 3, approximately 600 metres north of the subject lands.

Some active transportation opportunities exist in the surrounding area. There is currently an existing sidewalk along the north side of North Street, and on both sides of Talbot Street. Highway 3, located 650 metres north of the subject lands, includes sidewalks on both sides of the street providing pedestrian access to small-scale commercial uses along Highway 3. Furthermore, a recreational cycling trail called the Talbot Trail runs along Talbot Street approximately 160 metres east of the subject lands. The Talbot Trail is an approximately 60-kilometre loop through the west of Norfolk County.

2.4 Community Facilities and Surrounding Community

The subject lands are located in the Village of Courtland, which is a community of approximately 700 people. According to Norfolk County, Courtland is home to the youngest population within the County. In 2018, there were approximately 277 dwellings in Courtland, comprised of the following dwelling types:

- Single-detached house: 250 (90%);
- Apartment (fewer than five storeys): 13 (5%);
- Semi-detached house: 2 (1%);
- Apartment (over five storeys): 0 (0%); and
- Row house: 6 (2%);
- Duplex: 6 (2%).

As shown above, single detached dwellings are the most common dwelling type by a significant proportion. The provision of semi-detached dwellings will therefore increase the variety of housing options in the area.

There are multiple schools, commercial and retail businesses, and places of worship in the community within proximity to the subject lands (**Figure 2-2**). Commercial and retail uses are located along Talbot

Street and Highway 3, which is also known as Main Street. Additionally, there is a Community Centre located approximately one (1) kilometre from the subject lands on Highway 3.

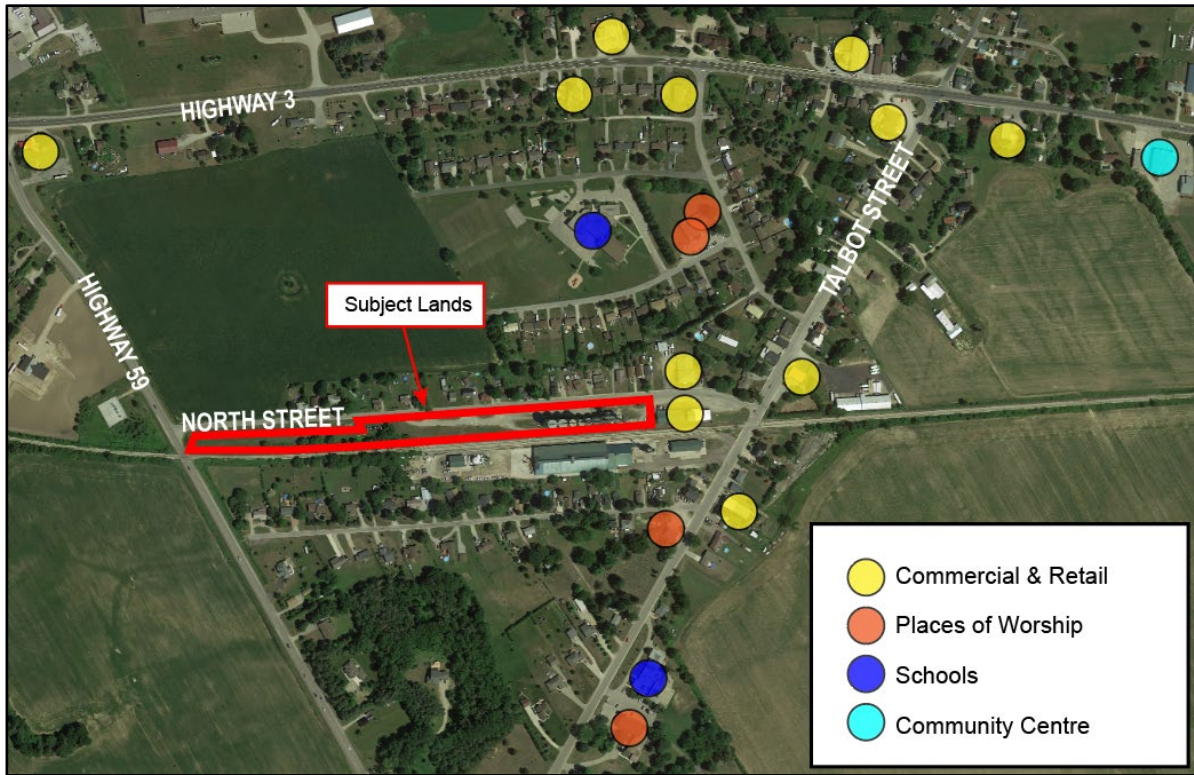


Figure 2-2: Facilities Located in Proximity to the Subject Lands (Source: Google Maps)

3 Proposed Development

The requested Zoning By-law Amendment is required to permit the redevelopment of the subject lands with 24 semi-detached dwelling units along North Street. Each unit will include a driveway providing access onto North Street and an attached garage unit, both of which will meet the requirement for the provision of two (2) parking spaces per unit. The proposed units will be two storeys in height and are proposed to have a gross floor area of 142.2 square metres per unit. The lot area will include a landscaped front yard and a rear yard.

The proposed units are anticipated to be connected to municipal water services that are currently available for the subject lands. The proposed development would be partially serviced as each lot would have an on-site septic tank to provide private waste and wastewater services.

The excerpts below of the proposed Site Plan demonstrate the proposed development and the site statistics. A full-sized copy of the Plan has been appended to this report.

UNIT STATISTICS																										
	ZONING REQUIREMENT (62 ZONES)	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT 11	UNIT 12	UNIT 13	UNIT 14	UNIT 15	UNIT 16	UNIT 17	UNIT 18	UNIT 19	UNIT 20	UNIT 21	UNIT 22	UNIT 23	UNIT 24	
LOT AREA (sq.m.)	255.0/UNIT MIN.	583.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	536.7	
LOT FRONTAGE (m)	8.50 MIN.	20.62	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	18.00	
FRONT YARD (m)	6.00 MIN.	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	
EXTERIOR SIDE YARD (m)	6.00 MIN.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
INTERIOR SIDE YARD (m)	1.20 MIN.	4.42	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	4.25	
REAR YARD (m)	7.50 MIN.	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	
BUILDING HEIGHT (m)	11.00 MAX.	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	
GROUND FLOOR AREA (sq.m.)	N/A	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	
GROSS FLOOR AREA (sq.m.)	N/A	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	
LANDSCAPED FRONT YARD	50% MIN.	78.9%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	74.7%	
PARKING SPACES (3.0x5.0m)	2/UNIT MIN.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
* INDICATES REZONING OF ITEM REQUIRED.																										

* INDICATES REZONING OF ITEM REQUIRED

Figure 3-1: Site Statistics

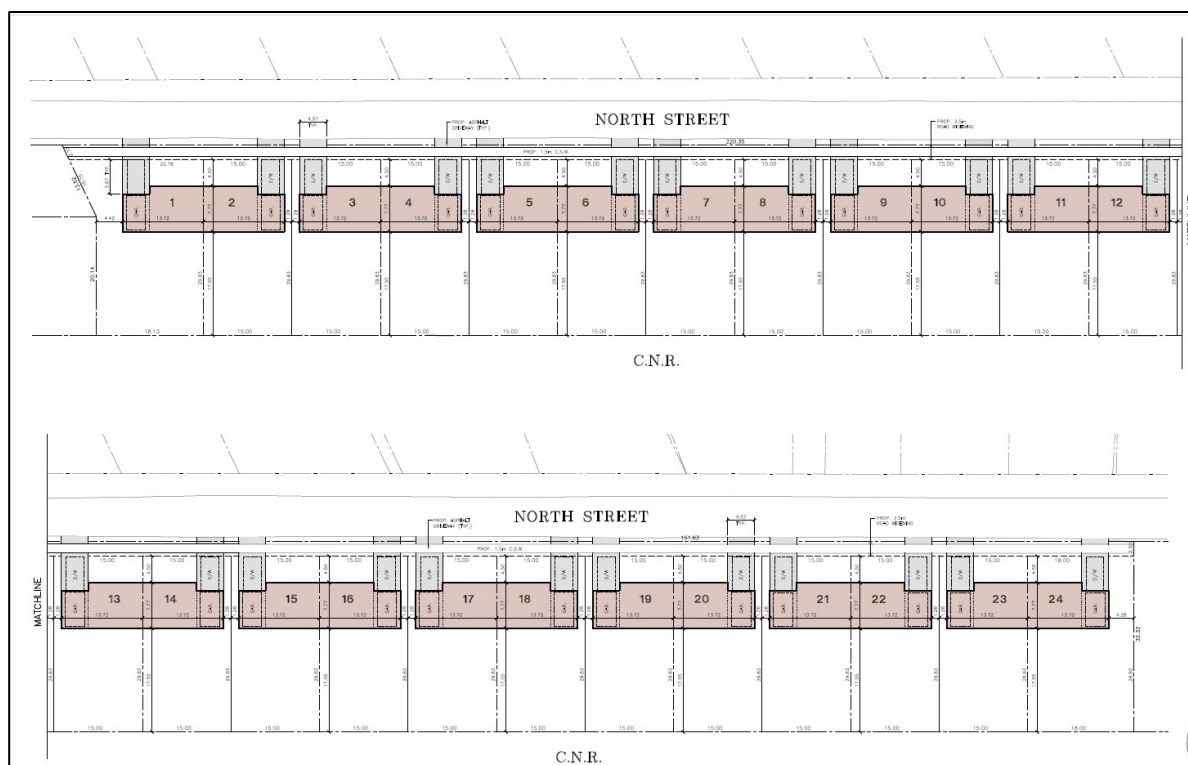


Figure 3-2: Excerpts of Concept Site Plan

4 Pre-Consultation and Required Studies

An initial review of the proposed development was conducted at a Pre-Consultation Meeting with Norfolk County in September 2020. Norfolk County identified the need for Zoning By-law Amendment, Draft Plan of Subdivision, and Part Lot Control applications to permit the proposed development and establish the proposed lots. In later conversations with staff, it was determined that the Record of Pre-Consultation would remain valid until the time of the current submission. Staff identified the following reports, studies, and plans as being required in support of the subject planning applications.

4.1 Ministry of the Environment D-Series Guidelines Analysis

At the Pre-Consultation meeting with County staff in September 2020, a D-Series Guidelines Analysis was included as part of the list of requirements for a complete submission. This requirement pertained to the minimum separation distances required to prevent or minimize adverse effects from incompatible land uses when an industrial facility exists in proximity to a sensitive use. It is our understanding that the industrial facilities in question were identified as the former grain silos located on the subject lands, as well as the unused GeoRail spur line located in proximity to the subject lands. It should be noted that in the years since the Pre-Consultation meeting in 2020, a demolition permit was applied for and received in order to demolish the existing built structures associated with the former grain silos, and these structures no longer exist on the subject lands. Furthermore, it is our understanding that the use of the rail line immediately adjacent to the subject lands will remain unused. In discussions with GeoRail, it was advised that the rail line south of the subject property will not be used, as such, rail infrastructure east of the Community of Courtland have been partially removed.

Due to the circumstances outlined above, it is our professional opinion that a D-Series Guidelines Analysis is no longer required. The subject lands, and all the lands immediately surrounding it, have

been designated for Urban Residential uses in the Official Plan as discussed in the following sections. We anticipate that these lands will evolve into primarily residential uses, and therefore do not anticipate any issues regarding land use compatibility to arise that would warrant the provision of a D-Series Guidelines Analysis.

4.2 Geotechnical Investigation

A Geotechnical Investigation was conducted by Englobe Corp. (Englobe), and subsequent report was prepared dated January 2022. The purpose of the investigation was to determine the subsurface conditions at the site and based on that information, provide geotechnical design parameters and geotechnical recommendations for the proposed development. The investigation determined shallow foundations and floor slabs are considered technically feasible for the proposed house construction. The report provided recommendations with respect to the following:

- Foundation Design;
- Slab-on-Grade Construction;
- Seismic Design;
- Frost Protection;
- Foundation Recommendations;
- Excavation and Dewatering;
- Pipe Bedding;
- Trench Backfill; and
- Construction Inspection and Testing.

Please refer to the final report for complete details and comments pertaining to the design and construction of the proposed development.

4.3 Functional Servicing and Stormwater Management Report

The Functional Servicing Report and Stormwater Management Report was prepared by J.H. Cohoon Engineering Ltd. Dated October 19, 2023. These reports were prepared to demonstrate the servicing scheme for the proposed residential development, as well as the stormwater management controls on the property.

This subject lands are proposed to be constructed on partial services with municipal water services and septic systems being proposed on this site. The proposed lots are to be developed with individual septic systems designed in accordance with the requirements of the Ontario Building Code.

The subject lands are intended to be serviced through the municipal drain located adjacent to the site. The stormwater management controls on the property will reduce the impact of the site on the existing drainage system. The overflow from this site will be directed into the Podolak Drain that is located west of the property. Infiltration techniques are being proposed on the subject lands, and each lot will be equipped with a soak away pit.

4.4 Traffic Impact Brief

A Traffic Impact Brief was prepared by Paradigm Transportation Solutions Limited dated September 26, 2023. The Brief was prepared at the direction of County staff during the pre-consultation study and Paradigm staff had confirmed the proposed scope of the study with staff prior to commencement. The purpose of this study is to assess the transportation related impacts of the development, if any.

The Brief includes an overview of the Existing Conditions of the site, the proposed development concept, a calculation of the estimated trip generation and a sight distance assessment. Based on the foregoing, the Brief provides the following recommendations and conclusions:

- The estimated trip generation activity is considered negligible and represents approximately one trip every eight minutes in the AM peak hour, and every six minutes in the PM peak hour
- Development of the site is forecast to have a negligible impact on the surrounding road network
- The redevelopment is recommended to be considered for approval with no requirements for off-site transportation network improvements
- Independent of the redevelopment proposal, it is recommended that Norfolk County improve sight distance visibility at Highway 59 and North Street by managing the extent of foliage growth on the east side of Highway 59.

Please refer to the final report for complete details and comments pertaining to the anticipated impacts on traffic as a result of the proposed development.

5 Land Use Planning Framework

The proposed development is subject to the following legislation and planning documents: the Planning Act, R.S.O. 1990, c. P.13 (the "Planning Act"), the Provincial Policy Statement (2020), the Norfolk County Official Plan, and the Zoning By-law of Norfolk County 1-Z-2014.

5.1 The Planning Act

The Planning Act is the overarching land use policy document that establishes the principles for land use planning in Ontario. The Act promotes the sustainable economic development in a healthy natural environment and sets the framework for Provincial Policy. It is the role of the Province through the Planning Act to promote provincial interests, to provide for adequate housing and employment opportunities, protect farmland, natural resources, and the environment and, promote the orderly development of safe, accessible and healthy communities in appropriate locations for growth and development.

Section 2 of the Planning Act requires that the municipality have regard for the following matters of provincial interest during their review of a planning application made. The table below provides an analysis of the applicable matters of provincial interest and the consistency with the proposed development:

MATTERS OF PROVINCIAL INTEREST	DISCUSSION OF CONSISTENCY
(d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest;	d) The proposed development would not impact any features of significant architectural, cultural, historical, archaeological or scientific interest
(e) the supply, efficient use and conservation of energy and water;	e) The proposed development will utilize existing partial water services on the property as well as appropriate on-site septic systems for waste management.
(f) the adequate provision and efficient use of communication, transportation, sewage and	f) The proposed development contemplates the adequate provision of services and would be

<p>water services and waste management systems;</p> <p>(g) the minimization of waste;</p> <p>(h) the orderly development of safe and healthy communities;</p> <p>(h.1) the accessibility for persons with disabilities to all facilities, services and matters to which this Act applies;</p> <p>(i) the adequate provision and distribution of educational, health, social, cultural and recreational facilities;</p> <p>(j) the adequate provision of a full range of housing, including affordable housing;</p> <p>(l) the protection of the financial and economic well-being of the Province and its municipalities;</p> <p>(m) the co-ordination of planning activities of public bodies;</p> <p>(n) the resolution of planning conflicts involving public and private interests;</p> <p>(o) the protection of public health and safety;</p> <p>(p) the appropriate location of growth and development;</p> <p>(q) the promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians;</p> <p>(r) the promotion of built form that,</p> <p>(i) is well-designed,</p>	<p>connected to a number of existing transportation and water services.</p> <p>g) The proposed development contemplates the minimization of waste.</p> <p>h) The proposed development is within the urban settlement boundary and would represent orderly development.</p> <p>h.1) The proposed development would comply with the applicable accessibility standards of the O.B.C</p> <p>i) The proposed development would be within proximity to a number of existing educational, health, social, cultural and recreational facilities</p> <p>j) The proposed development of semi-detached units in an area with predominantly detached dwellings would add additional variety to the type of housing options available in Courtland.</p> <p>l) The proposed development is anticipated to have an on-going positive impact on the local economy by increase consumer demand for local products and services</p> <p>m) The subject applications for the proposed ZBLA and Draft Plan of Subdivision will involve coordination with multiple municipal departments at the County of Norfolk.</p> <p>n) The ZBLA process is intended to identify and address any planning conflicts that may arise from the proposed development</p> <p>o) The proposed development is not anticipated to have a negative impact on public health and safety as demonstrated by the technical studies submitted.</p> <p>p) The proposed development is located within the County's settlement boundary and is surrounded by existing residential uses to the north, south, and east. While the subject lands abut a railway line, the rail is not currently in use. The proposed residential dwellings will be pedestrian oriented, with appropriate massing and heights particularly in comparison to the existing grain silos. The location of the proposed development is therefore appropriate and will enhance the existing residential community by removing the existing abandoned industrial use.</p>
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<p>(ii) encourages a sense of place, and</p> <p>(iii) provides for public spaces that are of high quality, safe, accessible, attractive and vibrant;</p> <p>(s) the mitigation of greenhouse gas emissions and adaptation to a changing climate. 1994, c. 23, s. 5; 1996, c. 4, s. 2; 2001, c. 32, s. 31 (1); 2006, c. 23, s. 3; 2011, c. 6, Sched. 2, s. 1; 2015, c. 26, s. 12; 2017, c. 10, Sched. 4, s. 11 (1); 2017, c. 23, Sched. 5, s. 80.</p>	<p>q) The proposed development will include the enhancement of North Street, including the addition of a sidewalk on the south side. This will help promote active transportation for residents, particularly given the proximity of small-scale commercial uses on North Street and on Highway 3. Furthermore, the Talbot Trail Cycling trail located only 160 metres from the subject lands provide access to approximately 60 kilometres of recreational cycling. Finally, a bus stop located approximately 600 metres from the subject lands provides access to the inter regional bus service Tillsonburg GO. As such, the proposed development will help support active transportation and potential transit use.</p> <p>r) As noted, the subject lands historically operated as a train station and grain storage operation, which has since been abandoned. The proposed residential uses will provide a much stronger sense of place for both the existing and future residents of the neighbourhood. The proposed dwellings will be designed to be consistent with the existing area. The provision of pedestrian-scaled residential dwellings and the additional sidewalk along North Street will create a much more cohesive neighbourhood with a more attractive and vibrant streetscape.</p> <p>s) The proposed development would represent a compact and appropriate built form that would have regard for the mitigation of greenhouse gas emissions and adaptation to a changing climate.</p>
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For the reasons outlined in the table above, it is our professional planning opinion that the proposed development would have regard for Matters of Provincial Interest as outlined in Section 2 of the Planning Act and would be consistent with the policies of the Act.

5.2 Provincial Policy Statement, 2020

The Provincial Policy Statement 2020 (PPS) provides policy direction on matters of provincial interest relating to land use planning and development. The PPS sets the policy framework for settlement areas within the Province and includes the following policies regarding housing and land use compatibility as discussed below.

The subject lands are within the settlement area urban boundary of the Village of Courtland, and as such, the following policies of the PPS pertaining to development within settlement areas and housing would apply to the development of the subject property:

Policy No.	Policy	Discussion of Consistency
1.1.3 SETTLEMENT AREAS		

1.1.3.1	Settlement areas shall be the focus of growth and development.	The proposed development would contribute to the residential development of the settlement area
1.1.3.2	<p>Land use patterns within settlement areas shall be based on densities and a mix of land uses which:</p> <ul style="list-style-type: none"> a. efficiently use land and resources; b. are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion; c. minimize negative impacts to air quality and climate change, and promote energy efficiency; d. prepare for the impacts of a changing climate; e. support active transportation; f. are transit-supportive, where transit is planned, exists or may be developed; and g. are freight-supportive. 	<ul style="list-style-type: none"> a. The proposed residential development would be a more appropriate and efficient use of the subject property given its current vacant state. b. It is anticipated that the proposed development will make use of existing municipal services and will not require their unjustified expansion as on-site septic systems are currently proposed for waste management. c. Various energy saving, and environmental design elements will be incorporated into the project, which will be confirmed through the site plan approvals process. d. Various energy saving, and environmental design elements will be incorporated into the project, which will be confirmed through the site plan approvals process. e. The proposed development encourages pedestrian and cycling connections to adjacent greenspace and other destinations. f. The proposed residential development is in proximity to the inter-regional GO bus transit services. g. Not applicable for the proposed residential development.
1.1.3.3	Planning authorities shall identify appropriate locations and promote opportunities for transit-supportive development, accommodating a significant supply and range of housing	The proposed development represents appropriate residential intensification, would increase and diversify housing mix, and would

	options through intensification and redevelopment where this can be accommodated taking into account existing building stock or areas, including brownfield sites, and the availability of suitable existing or planned infrastructure and public service facilities required to accommodate projected needs.	be partially connected to existing municipal services.
1.1.3.4	Appropriate development standards should be promoted which facilitate intensification, redevelopment and compact form, while avoiding or mitigating risks to public health and safety.	The proposed development represents appropriate residential intensification and does not increase risks to public health and safety.
Policy No.	Policy	Discussion of Consistency
1.2.6 LAND USE COMPATIBILITY		
1.2.6.1	Major facilities and sensitive land uses shall be planned and developed to avoid, or if avoidance is not possible, minimize and mitigate any potential adverse effects from odour, noise and other contaminants, minimize risk to public health and safety, and to ensure the long-term operational and economic viability of major facilities in accordance with provincial guidelines, standards and procedures.	The proposed development would not be considered a risk to public health and safety and would not affect the viability of any major facilities as demonstrated through the prepared technical studies.
1.2.6.2	Where avoidance is not possible in accordance with policy 1.2.6.1, planning authorities shall protect the long-term viability of existing or planned industrial, manufacturing or other uses that are vulnerable to encroachment by ensuring that the planning and development of proposed adjacent sensitive land uses are only permitted if the following are demonstrated in accordance with provincial guidelines, standards and procedures: a) there is an identified need for the proposed use; b) alternative locations for the proposed use have been evaluated and there are no reasonable alternative locations;	It should be noted that the subject lands are located wholly within lands that are designated for residential uses and are not in proximity to an existing or planned industrial uses, given that the lands currently designated as industrial are anticipated to be redeveloped with residential uses as is the intent of this Official Plan. The proposed development would not affect the viability of any major facilities as demonstrated through the prepared technical studies. a. The County Official Plan identifies the need for more affordable and attainable housing in the settlement area. The proposed development would increase the available attainable housing stock. b. The subject lands represent the most suitable location for

	<p>c) adverse effects to the proposed sensitive land use are minimized and mitigated; and</p> <p>d) potential impacts to industrial, manufacturing or other uses are minimized and mitigated.</p>	<p>the proposed development within the urban settlement area.</p> <p>c. No adverse effects to proposed sensitive land uses are anticipated.</p> <p>d. No potential impacts to industrial or manufacturing uses are anticipated.</p>
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1.4 HOUSING		
1.4.1	<p>To provide for an appropriate range and mix of housing options and densities required to meet projected requirements of current and future residents of the regional market area, planning authorities shall:</p> <p>b. maintain at all times the ability to accommodate residential growth for a minimum of 15 years through residential intensification and redevelopment and, if necessary, lands which are designated and available for residential development; and</p> <p>c. maintain at all times where new development is to occur, land with servicing capacity sufficient to provide at least a three-year supply of residential units available through lands suitably zoned to facilitate residential intensification and redevelopment, and land in draft approved and registered plans.</p>	<p>a. The proposed development will provide for an opportunity to achieve appropriate residential development with a density that will contribute to the Courtland housing stock.</p> <p>b. The proposed development is located within the urban settlement boundary which is intended for residential and commercial development and will be partially connected to existing municipal services.</p>

Based on a thorough review of the applicable policies of the PPS regarding settlement areas, land use compatibility and housing, it is our professional opinion that the proposed development would be consistent with those policies.

5.3 Norfolk County Official Plan

The Norfolk County Official Plan ("OP") was adopted by County Council on May 9, 2009 and approved by the Ministry of Municipal Affairs and Housing ("MMAH") on December 23, 2008. In January 2018, County Council adopted the five year review of the OP, which was subsequently approved by MMAH in October 2018. The OP Provides an overall policy framework to guide and manage growth and development in Norfolk County to ensure sustainable development that meets community needs up to the year 2036. The most recent consolidation of the OP includes amendments and changes up to January 2023.

The table below provides an overview of the applicable schedules within the OP that apply to the subject lands and the corresponding designations.

OFFICIAL PLAN SCHEDULE	DESIGNATION
Schedule "A-1" – Community Structure	Settlement Areas: Urban Area
Schedule "B-20" – Land Use	Urban Residential
Schedule "C-3" – Natural Heritage	No Natural Heritage Within or Adjacent
Schedule "D-2" – Water Resources	No Water Resources Within or Adjacent
Schedule "E-7" – Transportation	Local Road (North Street)
Schedule "I-7" – Active Transportation	Adjacent On-Road Cycling Route (Talbot Street)
Schedule "J-3" – Natural Resources	No Natural Resources Within or Adjacent

The County OP outlines the importance of housing and states that the provision of affordable housing and housing that is accessible to low and moderate income household shall be a priority. It is our professional opinion that the proposed development represents appropriate residential intensification and would be considered housing that is accessible to low and moderate income households. Section 5.3 of the OP regarding Housing includes the following policies:

POLICY 5.3 (C)	
<p>[...]The County shall encourage the provision of affordable housing through:</p> <ul style="list-style-type: none"> i) supporting increased residential densities in appropriate locations and a full range of housing types, adequate land supply, redevelopment and residential intensification, where practical; ii) the timely provision of infrastructure in the Urban Areas; iii) supporting the reduction of housing costs by streamlining the development approvals process; iv) negotiating agreements with the public and private sectors to address the provision of affordably priced housing through the draft plan of subdivision and condominium approval process; v) considering innovative and alternative residential development standards that facilitate affordable housing and more compact development form; and vi) possibly developing a Municipal Housing Strategy with annual housing targets, mixes of housing types, affordability thresholds and related data. 	<ul style="list-style-type: none"> i) The subject lands would be considered an appropriate location for residential intensification that is context-sensitive and would increase the range of housing types available in Courtland. ii) The subject lands which are within an Urban Area are partially serviced. iii) The approval of the proposed ZBA application would support the reduction of housing costs. iv) The forthcoming Plan of Subdivision application is intended to provide an increase in the housing stock that is accessible to low to moderate income households. v) The proposed development is compact in form and would be considered accessible to a range of household types and incomes. vi) The proposed development includes semi-detached homes that would increase the housing stock and the variety of housing types available. It would also be considered accessible to a range of household types and incomes.

Section 5.3.1 of the Official Plan lays out the applicable policies for urban residential development within the limits of Urban Areas. The following table provides an analysis on the conformity of the proposed development to these policies:

SECTION N 5.3.1	POLICY	DISCUSSION OF CONFORMITY
a)	<p>Housing shall, in part, be provided through urban residential intensification, which may include any of the following:</p> <p>ii) infill development and residential development of vacant land or underutilized land in existing neighbourhoods; and/or</p> <p>iii) redevelopment which includes either the replacement of existing residential uses with compatible new residential developments at a high density or the replacement of non-residential uses with compatible residential or mixed use development with a residential component.</p>	<p>ii) The subject lands are currently underutilized and would represent an appropriate location for residential development.</p> <p>iii) The proposed development would result in the creation of a residential use on lands that were previously designated for non-residential uses and would remain compatible with the surrounding uses.</p>
b)	<p>The County shall target that a minimum 25 percent of its annual residential growth be accommodated through infill, intensification and redevelopment within the existing built-up areas in the Urban Areas with full municipal services. The boundary of the Built-Up areas of Simcoe, Port Dover, Delhi, Waterford and Port Rowan are indicated on Schedule "B" to this Plan and delineates the extent of existing development at the time of the approval of the Official Plan Amendment implementing the Five-Year Review of the Official Plan. Development within the Built-Up Area boundary will be considered as infill development and development situated between the Built-Up Area boundary and the boundary of the Urban Area will be considered as greenfield development.</p>	<p>The subject lands are currently partially serviced and within the Urban Area boundary in Courtland. The proposed development would be considered as infill development and would be considered appropriate residential intensification.</p>
c)	<p>Infilling and redevelopment are encouraged within the Courtland Urban Area and in the Hamlet Areas subject to the ability to provide adequate water and waste water services.</p>	<p>The proposed development would represent the appropriate redevelopment of lands that are currently underutilized within the Courtland Urban Area. As demonstrated through the prepared technical studies, the proposed development can be accommodated through the existing municipal</p>

		water services, with waste water being accommodated on private services on the subject lands.
f)	<p>The County shall consider applications for infill development, intensification and redevelopment of sites and buildings through intensification based on the following criteria:</p> <p>i) the development proposal is within an Urban Area, and is appropriately located in the context of the residential intensification study;</p> <p>ii) the existing water and sanitary sewer services can accommodate the additional development;</p> <p>iii) the road network can accommodate the traffic generated;</p> <p>iv) the proposed development is compatible with the existing development and physical character of the adjacent properties and surrounding neighbourhood; and</p> <p>v) the proposed development is consistent with the policies of the appropriate Land Use Designation associated with the land.</p>	<p>i) The proposed development is within an Urban Area and is appropriately located for residential intensification.</p> <p>ii) The proposed development can be accommodated on the existing public water services and would be partially serviced with the addition of private septic tanks.</p> <p>iii) The road network can accommodate the generated traffic, which is anticipated to be minimal as outlined in the TIB.</p> <p>iv) The proposed residential development would be compatible with the surrounding uses.</p> <p>v) The proposed residential development is consistent with the Residential and Urban Area land use designations of the Official Plan.</p>
g)	<p>The County shall monitor intensification activity and, through the development approvals and building permitting process, ensure that such proposals can be satisfactorily integrated with the physical characteristics of residential and commercial areas and proper health and safety standards are maintained. Land use compatibility and urban design assessments may be required as a component of the planning rationale report accompanying development applications, as outlined under Section 9.6.1 (Official Plan Amendments) of this Plan.</p>	<p>The proposed development would be satisfactorily integrated with the physical characteristics of residential and commercial areas. No land use compatibility issues are anticipated and the submitted Report and associated materials address this requirement.</p>

Based on the foregoing analysis of the above policies, it is our professional opinion that the proposed development would be entirely in line with the Housing policies of the Official Plan.

The County's Official Plan further provides guidance on planning within the Urban Residential land use designation in Section 7.7 of the Plan. The permitted uses for this designation include semi-detached units as contemplated for the proposed development. The extracted policy below is applicable to the proposed development:

7.7.2 Land Use Policies

The following policies apply to land designated Urban Residential.

- a) *Single, semi-detached and duplex housing forms shall generally have an average net density of 15 units per hectare (uph), save and except for land designated Urban Residential in the Courtland Urban Area, where private servicing limitations shall determine the density of development.*

The proposed development would result in a net density of approximately 15 units per hectare. The foregoing policy does not specify a maximum density for the Courtland Urban Area but requires that any proposed development have regard for the limitations of private servicing. It is our professional opinion that the proposed density is appropriate for the subject lands given that the lands would be on partial servicing rather than fully private servicing. Furthermore, the prepared Functional Servicing Report demonstrates how the proposed development can appropriately accommodate the necessary private services on the site.

Therefore, it is our professional opinion that the proposed development is generally consistent with the applicable policies of the County Official Plan and would represent appropriate residential intensification as is the intent of this Plan.

6 Proposed Amendments

As noted, amendments to the County's ZBL are required to permit the proposed development. The following subsections provide an overview of the proposed amendments and their conformity with local, and provincial planning policy as required under the Planning Act.

6.1 Proposed Zoning By-law Amendment

The subject lands are zoned 'General Industrial (MG)' by the Norfolk County Zoning By-law 1-Z-2014. The 'General Industrial (MG)' zone does not permit any residential dwellings. As such, the subject lands will be re-zoned as 'Urban Residential Type 2 (R2)'.

In addition to the above change in zoning, relief is required from requirements of the 'Urban Residential Type 2 (R2)' zoning provisions. The following table summarizes the required relief from the ZBL. The following table summarizes the required relief from the ZBL 'Urban Residential Type 2 (R2)' to permit the proposed semi-detached dwellings.

Table -6-1: Zoning Requirements and the Proposed Development

Zoning Standard	Required / Permitted	Proposed
Permitted Uses	Semi-detached dwellings	Semi-detached dwellings
Min. Lot Area Per Semi-Detached Unit	Interior lot: 255 m ² Corner lot: 345 m ²	447.4 m ²
Min. Lot Frontage	Interior lot: 8.5 m Corner lot: 11.5 m	Interior lots: 15 m Corner lots: 18.0 m and 22.78 m
Min. Front Yard	6 m	4.5 m to the face of the dwelling 5.8 m to the garage face
Min. Rear Yard	7.5 m	17.5 m
Min. Interior Side Yard*	3 m / 0 m between attached semi-detached dwellings	1.28m / 0.0m between attached semi-detached dwellings
Min Exterior Side Yard	6 m	N/A
Max. Building Height	11 m	11m

Mutual Side Lot Line for Semi-Detached Dwellings	On the mutual side lot line separating two (2) attached semi-detached dwelling units, no interior side yard is required where the walls are joined; where the walls are not joined, a 1.2 metre side yard shall be required	0.0 metres
Projection of an Attached Garage	The wall of an attached garage facing the street in an R2 Zone shall project no more than 3.5 metres from the front wall of the dwelling. This projection shall be measured from the wall of the garage facing the front lot line to the nearest structural element of the front wall of the dwelling facing the front lot line, including any covered porch which extends along the entire front wall of the dwelling, but excluding eaves, stairs or gutters.	N/A
Access to a Street	Each <i>parking space</i> shall have direct access to a <i>street</i>	Driveway access to North Street
Prepared Surface	a suitably level and graded hard surface.	Level asphalt
Parking Space Dimensions	3 m width by 5.8 m (one) /6.0 m (2 tandem)	3 m width by 5.8 m
Total Required Parking Spaces	2	2
Parking and Landscape Area	a) A minimum of 50 percent of the front yard shall be maintained as landscape area.	69.5%

**Note: As per provision 5.2.4, no interior side yard is required between two semi-detached dwelling units.*

As noted in the foregoing table the proposed Zoning By-law Amendment is generally consistent with the regulations of the R2 zone requested. The proposed semi-detached units are listed as a permitted use for this zone, and the proposed lots and parking spaces are in line with the provisions of the zone. A Site-Specific Amendment will be required to address the minimum front yard deficiency as outlined in the attached draft Zoning By-law Amendment to permit the proposed development.

Given that the current zoning of the site as an MG zone is no longer in conformity with the land use designations for the subject lands as outlined in the Official Plan, it is our professional opinion that the requested Zoning By-law Amendment would bring the subject lands into conformity with the Official Plan. The subject lands are located within the Urban Boundary of the Courtland community and are designated for Residential land uses. As outlined in the sections above, the proposed residential development would be in line with the Provincial and County planning policies applicable to the subject lands. The proposed zone change is required to permit the appropriate residential redevelopment of the

subject lands which would represent the highest and most appropriate use of the lands within the Urban Boundary that are currently underutilized.

7 Conclusions

Our client is proposing to redevelop the subject lands as a residential use consisting of 24 semi-detached dwelling units on the lands municipally known at 19 North Street within the community of Courtland. This Report provides an overview of the lands themselves, the proposed development, and the technical studies undertaken to determine the suitability of the proposed development on the subject lands.

This Report further provides a detailed analysis of the applicable planning policy framework for the lands. Based on a thorough review of the Provincial and County planning policies, it is our professional opinion that the requested Zoning By-law Amendment is has consideration for the Matters of Provincial Interest, as outlined in the Planning Act, is consistent with the PPS 2020, and would be in conformity with the County's Official Plan.

Based on our analysis of the subject applications, surrounding uses, supporting studies, and the applicable planning policy framework, the proposed amendments facilitate an appropriate form of land development, constitute good land use planning and are in the public interest.

Sincerely,

ARCADIS PROFESSIONAL SERVICES (CANADA) INC.



Ritika Nair
Planner



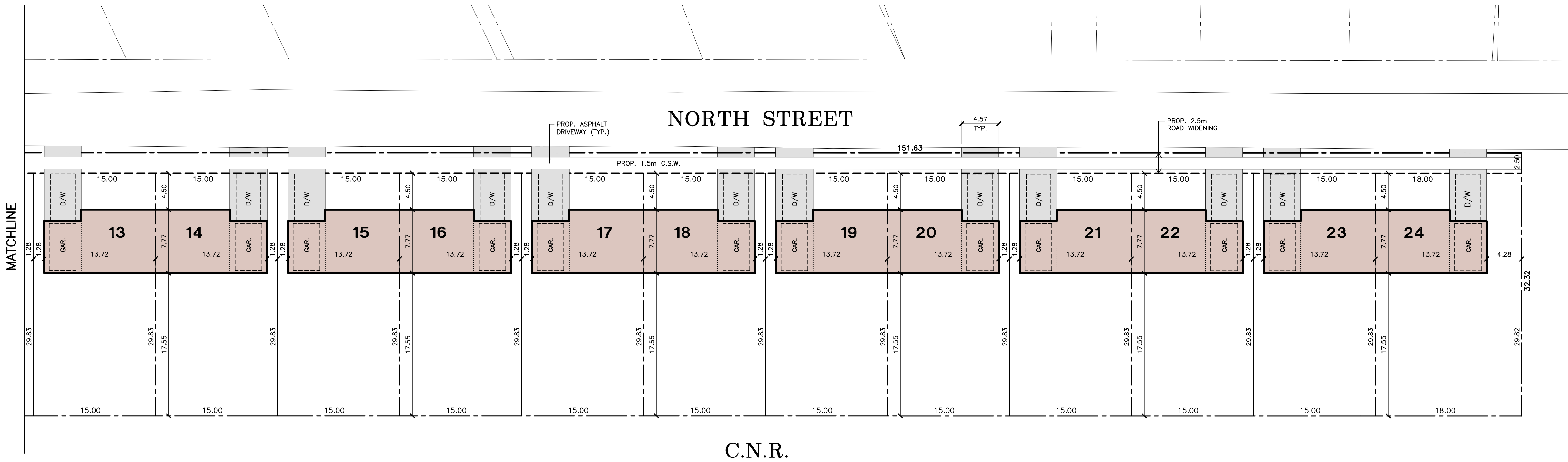
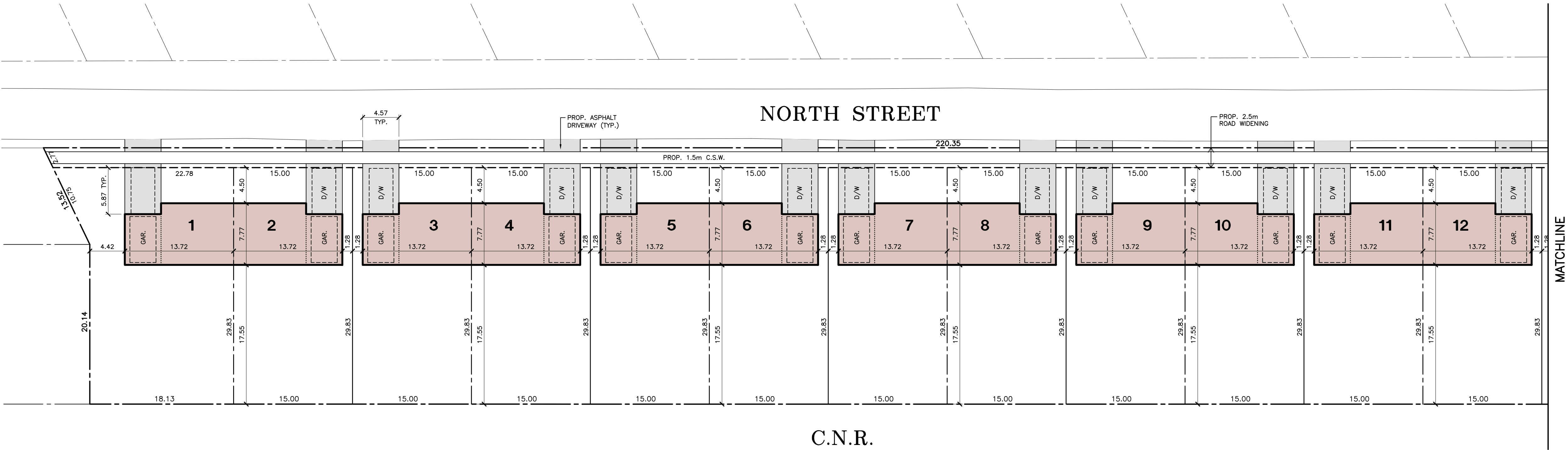
Carmen Jandu, MCIP RPP
Associate – Senior Planner

Appendix A

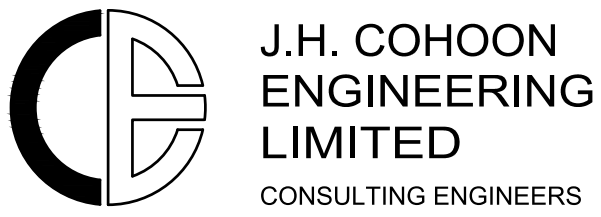
Site Plan

UNIT STATISTICS																									
	ZONING REQUIREMENT (R2 ZONE)	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT 11	UNIT 12	UNIT 13	UNIT 14	UNIT 15	UNIT 16	UNIT 17	UNIT 18	UNIT 19	UNIT 20	UNIT 21	UNIT 22	UNIT 23	UNIT 24
LOT AREA (s.m.)	255.0/UNIT MIN.	563.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	447.4	536.7
LOT FRONTAGE (m)	8.50 MIN.	20.62	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	18.00
FRONT YARD (m)	6.00 MIN.	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *	4.50 *
EXTERIOR SIDE YARD (m)	6.00 MIN.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
INTERIOR SIDE YARD (m)	1.20 MIN.	4.42	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	4.28
REAR YARD (m)	7.50 MIN.	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55	17.55
BUILDING HEIGHT (m)	11.00 MAX.	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00	<11.00
GROUND FLOOR AREA (s.m.)	N/A	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1	71.1
GROSS FLOOR AREA (s.m.)	N/A	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2
LANDSCAPED FRONT YARD	50% MIN.	78.9%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	69.5%	74.7%
PARKING SPACES (3.0x5.8m)	2/UNIT MIN.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

* INDICATES REZONING OF ITEM REQUIRED



NO.	REVISION	DATE (MM/DD/YY)	BY



440 HARDY ROAD, UNIT #1, BRANTFORD - ONTARIO, N3T 5L8
TEL. (519) 753-2656 FAX. (519) 753-4263 www.cohooneng.com

PROJECT:
**PROPOSED
RESIDENTIAL DEVELOPMENT
NORTH STREET
(VILLAGE OF COURTLAND)
NORFOLK COUNTY**

CLIENT:
KRIS CARSON

SITE PLAN

DESIGN:	R.W.P.	SCALE:	1:300
DRAWN:	K.P.B.	JOB No:	13471
CHECKED:	R.W.P.		
SHEET:	1 of 1	DWG. No:	13471-SP1
DATE:	OCT. 18/23		



LEGEND:

	EXISTING ELEVATIONS
	PROPOSED ELEVATIONS
	PROPOSED SWALE ELEVATIONS
	PROPOSED SWALE
	GENERAL DRAINAGE

NOTES:

- ALL ELEVATIONS SHOWN ARE METRIC.
- BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (i.e. SIDEYARDS, SETBACKS, REARYARDS ETC.)

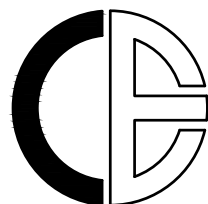
T.B.M. No. 3 ELEV. = 237.78m (GEO)
TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN.

T.B.M. No. 4 ELEV. = 239.69m (GEO)
TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF NORTH STREET AS SHOWN.

T.B.M. No. 5 ELEV. = 239.70m (GEO)
TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF NORTH STREET AS SHOWN.

T.B.M. No. 6 ELEV. = 239.22m (GEO)
TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF NORTH STREET AS SHOWN.

NO.	REVISION	DATE (MM/DD/YY)	BY
2	UPDATED BUILDING FOOTPRINTS	10/10/23	K.P.B.
1	FOR SUBMISSION	09/12/23	K.P.B.

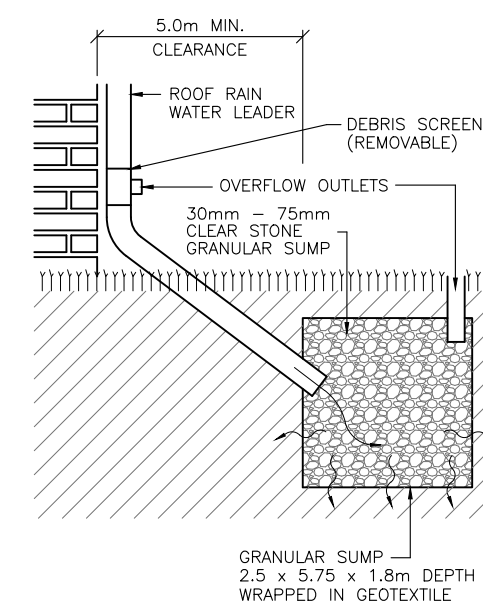
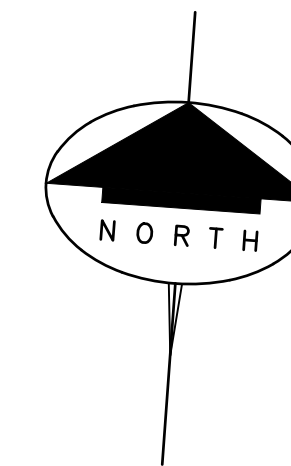
**J.H. COHOON
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LIMITED**
CONSULTING ENGINEERS
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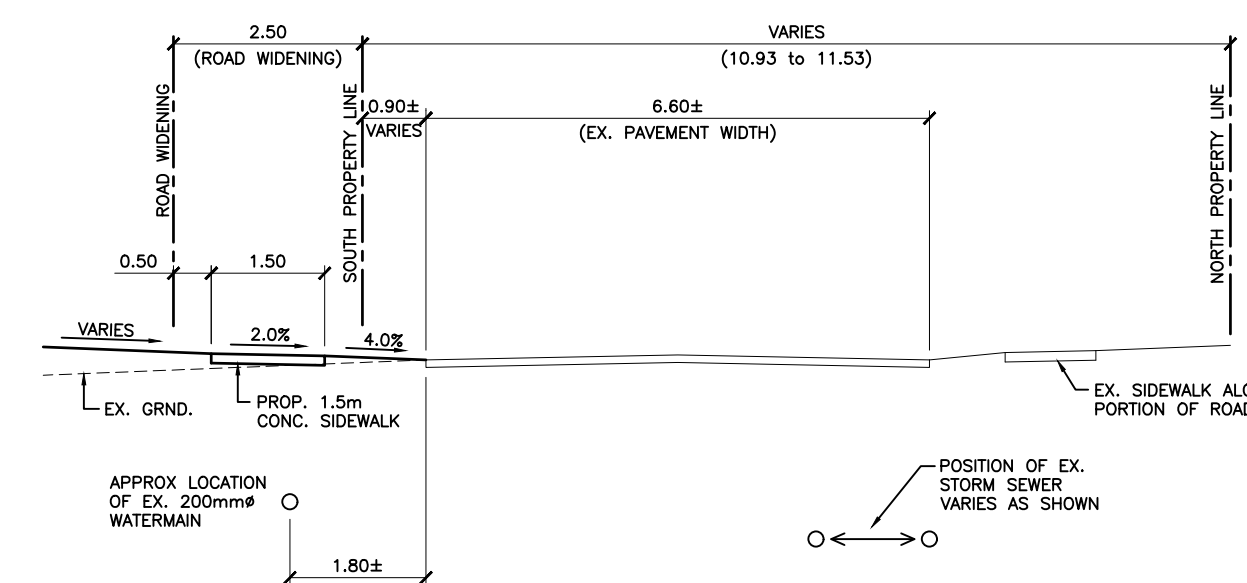
**SITE DEVELOPMENT
PLAN**

DESIGN:	R.W.P.	SCALE:	1:400
DRAWN:	K.P.B.	JOB No:	13471
CHECKED:	R.W.P.		
SHEET:	2 of 2	DWG. No:	13471-1B
DATE:	OCT. 7/22		



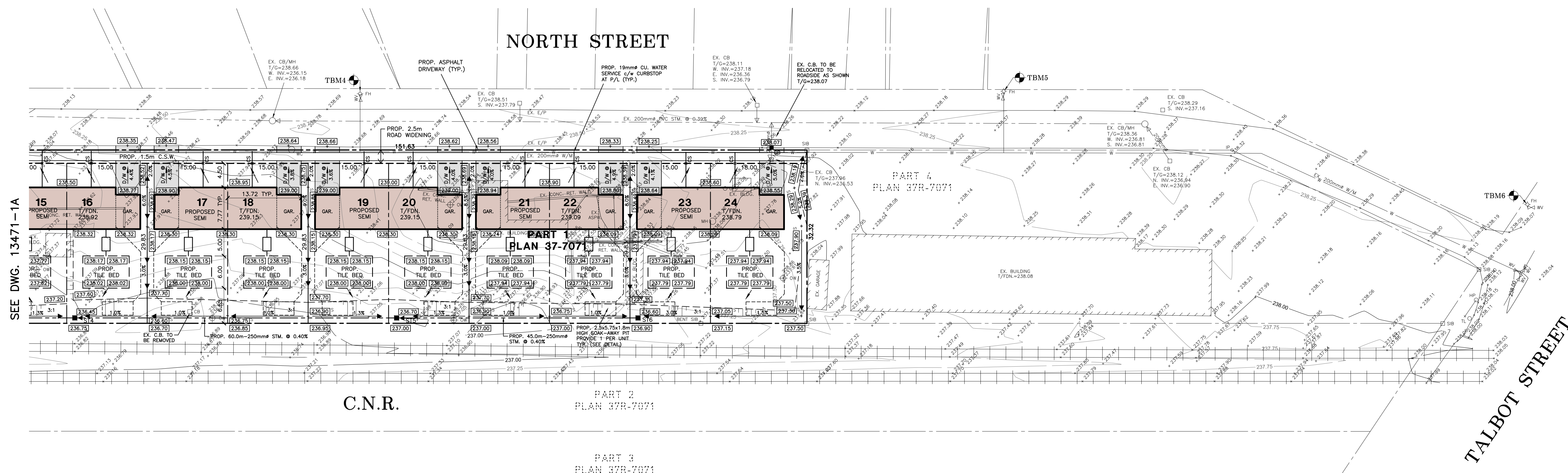
**TYPICAL SOAK-AWAY
PIT DETAIL**

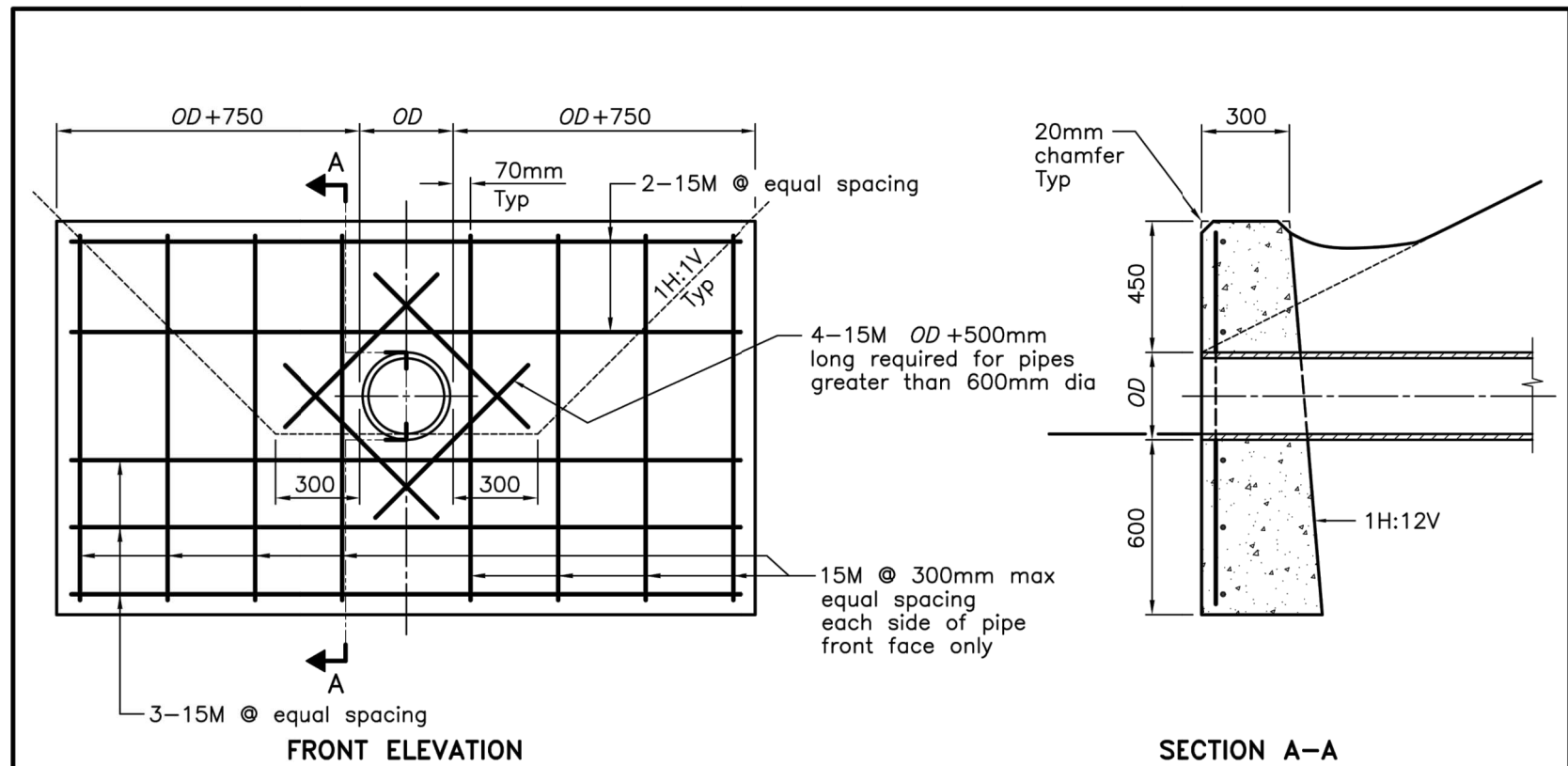
REPRODUCED FROM M.O.E.E. 2003 S.W.M. GUIDELINES



NORTH STREET X-SECTION

SCALE: HORIZ: 1:100
VERT: 1:100

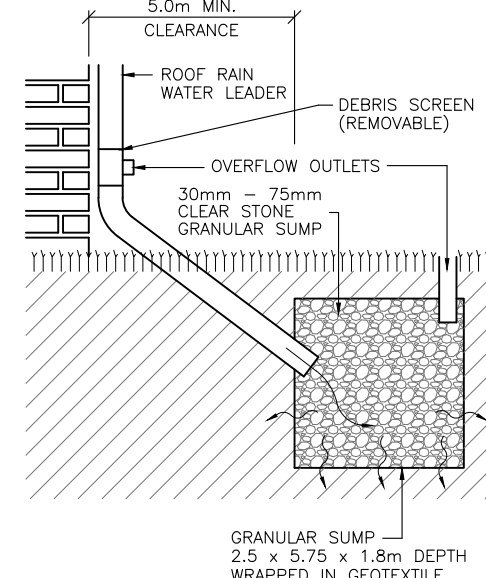




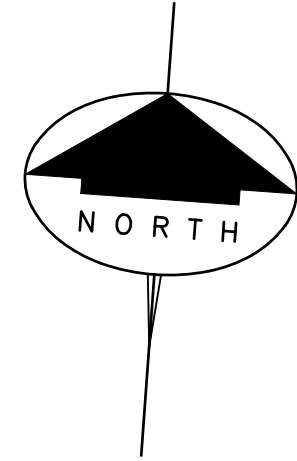
LEGEND:
OD - Outside diameter of pipe

NOTES:
A This OPSD to be read in conjunction with OPSD 3940.150.
B If a steel grate is required, refer to OPSD 804.05.
C Class of concrete: 30MPa.
D Cover to reinforcing bars 75mm ± 20mm.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1	
CONCRETE HEADWALL FOR PIPE LESS THAN 900mm DIAMETER			
OPSD 804.030			



**TYPICAL SOAK-AWAY
PIT DETAIL**
REPRODUCED FROM M.O.E.E. 2003 S.W.M. GUIDELINES



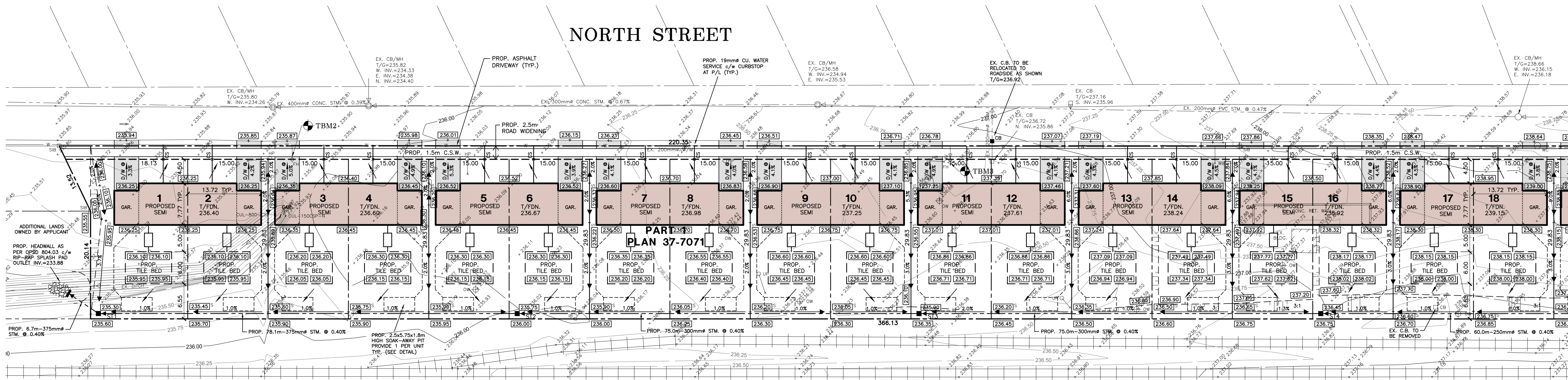
STORM SYSTEM				
MH No.	DESCRIPTION	T/G	INVERTS	
ST1	0.6x0.6x1.52m P/C CB	235.30	W 233.91	E 233.93
ST2	0.6x0.6x1.67m P/C CB	235.75	W 234.24	E 234.26
ST3	0.6x0.6x1.52m P/C CB	235.90	W 234.56	E 234.58
ST4	0.6x0.6x1.67m P/C CB	236.45	W 234.88	E 234.90
ST5	0.6x0.6x1.67m P/C CB	236.70	W 235.14	E 235.16
ST6	0.6x0.6x1.52m P/C CB	236.60	W 235.34	

LEGEND:

- EXISTING ELEVATIONS
- PROPOSED ELEVATIONS
- PROPOSED SWALE ELEVATIONS
- PROPOSED SWALE
- GENERAL DRAINAGE

NOTES:

- ALL ELEVATIONS SHOWN ARE METRIC.
- BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)



NORTH STREET

PART 2
PLAN 37R-7071

PART 3
PLAN 37R-7071

SEE DWG. 13471-1B

T.B.M. No. 1 ELEV. = 235.90m (GEO)
TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN.

T.B.M. No. 2 ELEV. = 236.75m (GEO)
TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN.

T.B.M. No. 3 ELEV. = 237.78m (GEO)
TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN.

2 UPDATED BUILDING FOOTPRINTS 10/10/23 K.P.B.

1 FOR SUBMISSION 09/12/23 K.P.B.

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SHEET:	1 of 2		
DATE:	OCT. 7/22		





The Corporation of Norfolk County

By-Law __-Z-2023

Being a By-Law to Amend Zoning By-Law 1-Z-2014, as amended, for property described as PT STATION GROUNDS PL 14B PT 1 37R7071; NORFOLK COUNTY.

WHEREAS Norfolk Council is empowered to enact this By-Law, by virtue of the provisions of Section 34 of the *Planning Act, R.S.O. 1990, CHAPTER P.13*, as amended;

AND WHEREAS this By-Law conforms to the Norfolk County Official Plan.

NOW THEREFORE the Council of The Corporation of Norfolk County hereby enacts as follows:

1. That Schedule A of By-Law 1-Z-2014, as amended, is hereby further amended by changing the zoning of the subject lands identified on Map A (attached to and forming part of this By-Law) from General Industrial Zone (MG) to Urban Residential Type 2 Zone (R2) with a special provision.
2. That Subsection 14 Special Provisions is hereby further amended by adding a section in 14.XXX that states as follows:

14.XXX In lieu of the corresponding provisions in the R2 Zone, the following shall apply:

c) minimum *front yard*: 4.5 metres; [XX-Z-2023]

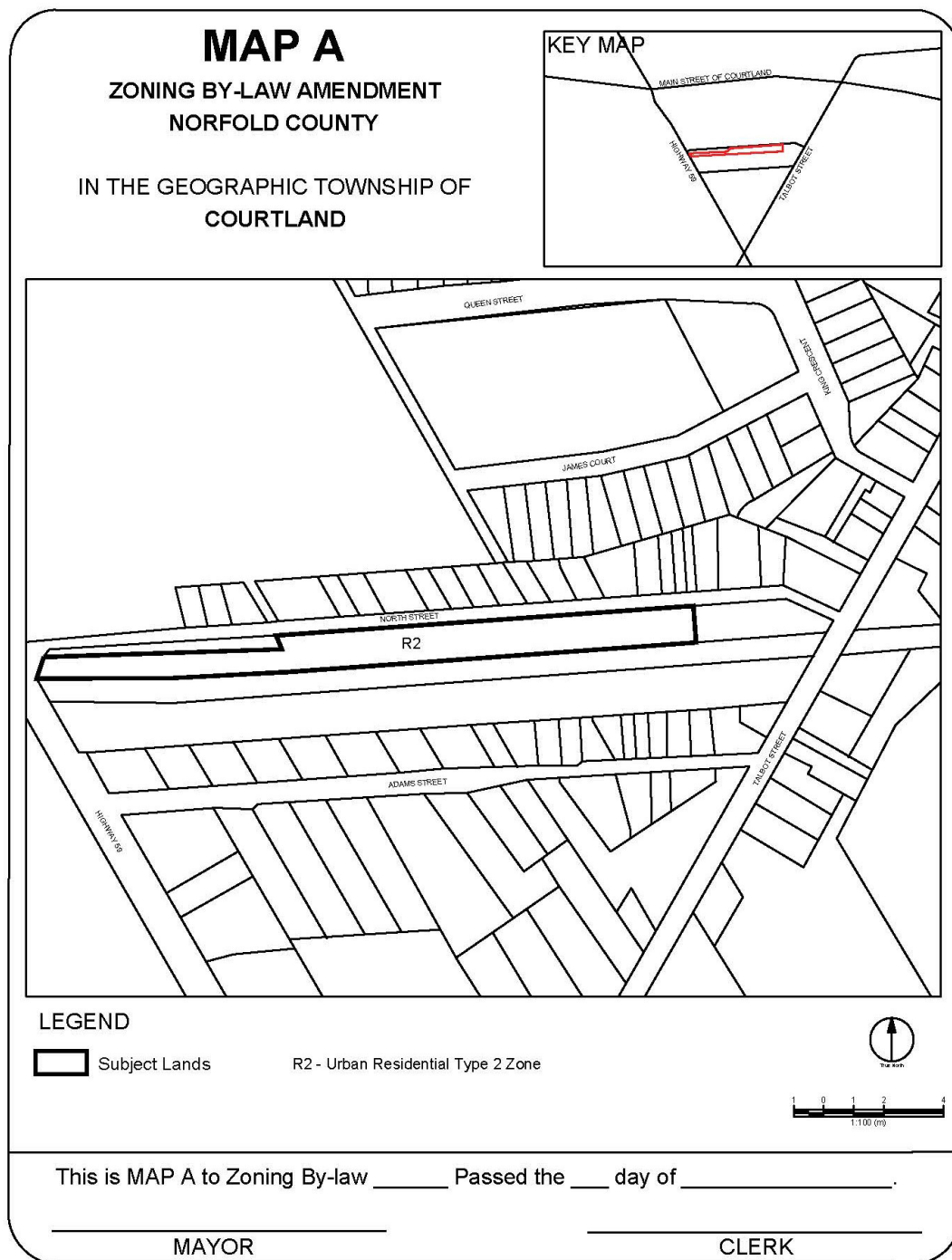
e) minimum *interior side yard*: 1.28 metres/ 0.0 metres between attached semi-detached dwellings [XX-Z-2023].

3. That the effective date of this By-Law shall be the date of passage thereof.

ENACTED AND PASSED this XX day of October, 2023.

Mayor

County Clerk



**Explanation of the Purpose and Effect of
By-Law __-Z-2023**

This By-Law affects a parcel of land described as PT STATION GROUNDS PL 14B PT 1 37R7071; NORFOLK COUNTY, located at 19 North Street.

The purpose of this By-Law is to rezone the subject lands from an MG zone to an R2 zone and to add a site specific special provision 14.XXX on the subject lands. The change would have the effect of permitting the proposed residential use on the subject lands while permitting a minimum front yard setback of 4.5 metres and an interior side yard of 1.28 metres,

214 Carson Co. Inc.

GEOTECHNICAL INVESTIGATION REPORT

**North Street Subdivision
Courtland, Ontario**

04-02110318.0100-GS-R-0001-00

January 2022

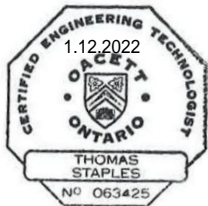
FINAL REPORT



Prepared by:

A handwritten signature in black ink, appearing to read "M. Samms".

Michael Samms, P.Eng.
Geotechnical Engineer



Reviewed by:

A handwritten signature in black ink, appearing to read "Thom Staples".

Thom Staples, C.E.T.
Senior Project Manager



Approved by:

A handwritten signature in blue ink, appearing to read "R. Khamis".

Raid Khamis, P.Eng.
Team Leader- Senior Geotechnical Engineer

Production Team

Client

214 Carson Co. Inc.

Mr. Dave Difrancesco

Englobe Corp

Geotechnical Engineer

Michael Samms, P.Eng.

Senior Project Manager / Geotechnical
Engineering Technologist

Thom Staples, C.E.T.

Team Leader - Senior Geotechnical
Engineer / Project Manager

Raid Khamis, M.Sc. P.Eng.

Revision and Publication Register		
Revision N°	Date	Modification and/or Publication Details
00	2022-01-12	Report Issued to Client

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If tests have been carried out, the results of these tests are valid only for the sample described in this report.

Englobe's subcontractors who have carried out on-site or laboratory work are duly assessed according to the purchase procedure of our quality system. For further information, please contact your project manager.”

Table of Contents

1	INTRODUCTION	1
2	INVESTIGATION PROCEDURE	1
2.1	Field Program	1
2.2	Laboratory Testing.....	2
3	SUBSURFACE CONDITIONS.....	3
3.1	Topsoil.....	3
3.2	Fill.....	3
3.3	Silty Clay	3
3.4	Sandy Silt to Silty Sand.....	4
3.5	Native Silt Till.....	4
3.6	Groundwater.....	5
4	DISCUSSION AND RECOMMENDATIONS.....	6
4.1	Foundation Design.....	6
4.2	Slab-on-Grade Construction	7
4.3	Seismic Design.....	8
4.4	Frost Protection	8
4.5	Foundation Recommendations	8
4.6	Excavations and Dewatering	9
4.7	Pipe Bedding	10
4.8	Trench Backfill	11
4.9	Construction Inspection and Testing.....	11
5	STATEMENT OF LIMITATIONS	12

Tables

Table 1	Summary of Boreholes	1
Table 2	List of laboratory tests conducted as per ASTM Standards	2
Table 3	Particle Size Distribution Analyses.....	4
Table 4	Particle Size Distribution Analyses.....	4
Table 5	Atterberg Limit Test Results	5
Table 6	Water Level Measurements – Oct. 12, 2021	5
Table 7	Depth to Competent Bearing Surface	6
Table 8	Soil Classification for Excavations	9
Table 9	Safe Excavation Slope Based on Soil Type (Ontario Regulation 213/91 Occupational Health and Safety Act (OHSA))	9

Appendices

- Appendix A: Drawings
- Appendix B: Borehole Logs
- Appendix C: Geotechnical Lab Results

1 Introduction

Englobe Corp. (Englobe) was retained by 214 Carson Co. Inc. (hereinafter referred to as the “Client”) to perform a geotechnical investigation South of North Street located in Courtland, Ontario, as shown on the Location Plan, Drawing 1 in Appendix A. The geotechnical investigation is for a proposed residential development comprising twelve semi-detached residential buildings (twenty four units). This work was authorized for this project on October 7, 2021.

The purpose of the geotechnical investigation was to determine the subsurface conditions at the site and based on that information, provide geotechnical design parameters and geotechnical recommendations for the proposed development.

2 Investigation Procedure

2.1 Field Program

The fieldwork for this investigation was performed on October 12, 2021 and involved drilling seven boreholes. The locations of the boreholes are shown on Drawing No. 2 in Appendix A, are provided in the following Table 1, and the boreholes are listed on the Borehole Logs in Appendix B.

Table 1 Summary of Boreholes

Borehole ID	Ground Surface Elevation	Depth of Borehole / Test Pit (m)
BH 01-21	235.65	5.03
BH 02-21	235.91	5.03
BH 03-21	236.21	5.03
BH 04-21	236.37	5.03
BH 05-21	235.99	5.03
BH 06-21	237.39	5.03
BH 07-21	237.05	5.03

The field investigation was carried out in general conformance with the professional standards set out in the Canadian Foundation Engineering Manual (CFEM 2006, 4th Edition), applicable Ontario Regulations and ASTM International. The following is a summary of field investigation tasks:

- Utility locates and drilling coordination was carried out by Englobe prior to mobilization to site.

- ▶ The boreholes were advanced using a Diedrich D-50 T drill rig equipped with solid stem augers supplied and operated by Direct Environmental Drilling under the supervision of an Englobe drilling supervisor. The boreholes were logged by our geotechnical supervisor.
- ▶ Soil samples were recovered from the boreholes at regular depth intervals using a 50 mm outside diameter split spoon sampler in accordance with ASTM D1586 Standard Penetration Test (SPT).
- ▶ The borehole locations and ground surface elevations were surveyed by Englobe. The boreholes were located relative to existing site features and property lines. The ground surface elevations are referred to the following temporary benchmark (TBM) provided by J.H. Cohoon Engineering Limited:

TBM4: Top nut of fire hydrant\

Elevation 239.69 m

- ▶ Collection of representative soil samples for and visual inspection and laboratory testing.
- ▶ Groundwater observations were made and measurements were carried out in the open boreholes during and upon completion of drilling and noted on borehole logs.
- ▶ The boreholes were backfilled with soil cuttings and bentonite in accordance with Ontario Regulation 903 as amended, under the Ontario Water Resources Act.

2.2 Laboratory Testing

All soil samples recovered during this investigation were returned to our laboratory for visual examination and moisture content testing. The moisture content values are shown on the appended borehole logs. Selected soil samples were submitted for particle size and Atterberg limits analyses.

Table 1 List of laboratory tests conducted as per ASTM Standards

Test	Standard	Number of Samples
Natural Moisture Content	ASTM D2216	47
Particle Size Analysis (Sieve and Hydrometer)	ASTM D7298	2
Atterberg Limits Analysis	ASTM D4318	1

Detailed description and the results of the laboratory tests are provided in Appendix C and Section 3 of this report.

It is important to note that as per the standard policy of Englobe, the soil samples will be stored for a period of three months from the date of sampling. These soil samples will be discarded after the three-month period unless prior arrangements have been made for longer storage.

3 Subsurface Conditions

Detailed descriptions of the subsurface conditions revealed at the boreholes are shown on the enclosed Record of Borehole Logs in Appendix B. The following is a brief description of revealed subsurface conditions at this site.

The boreholes revealed surface topsoil, over fill, over native clay, or sandy silt to silty sand subsoil over silt till subsoil.

Geological conditions are innately variable. Information about the subsurface stratigraphy is only available at discrete borehole locations at the time of report preparation. To develop recommendations from the available information, it is necessary to make some assumptions concerning conditions at locations between boreholes. Adequate inspection should be provided during construction to check that these assumptions are reasonable.

Descriptions for the subsurface conditions are detailed in the following sections:

3.1 Topsoil

A surface layer of topsoil was encountered at ground surface in BH-01-21 to BH-03-21. The topsoil thickness ranged between 50 and 305 mm.

3.2 Fill

A fill structure was encountered beneath the topsoil in BH-01-21 to BH-03-21 and at ground surface in BH-04-21 to BH-07-21. The granular fill material consisted of silty sand, some gravel to sand and gravel, some silt. The thickness of the fill material ranged between 0.61 m and 1.93 m. Sandy silt to silty clay fill was encountered in Boreholes BH-01-21 and BH-02-21. Topsoil was encountered in the fill at select borehole locations.

3.3 Silty Clay

Beneath the fill in BH-01-21, BH-06-21 and BH-07-21 and beneath the sandy silt to silty sand layer in BH-05-21, a layer of silty clay was encountered. The thickness of this native layer ranged between 0.21 m and 1.00 m.

Shear strength results measured by the penetrometer test recorded in the native material ranged between 25 to 75 kPa, indicating a mainly firm consistency. The moisture content of this native layer material ranged between 17.9% and 19.2% indicating wet to saturated conditions.

3.4 Sandy Silt to Silty Sand

Beneath the fill in BH-03-21 to BH-05-21, a native layer of silty sand, some clay to sandy silt, some clay was encountered. The thickness of this native layer ranged between 0.37 m and 1.30 m.

Standard Penetration Test results (N Values) recorded in the native material ranged between 13 and 17 (average Value of 14) blows per 305 mm of penetration, indicating a mainly compact compactness condition. The moisture content of this native layer material ranged between 17% and 18.2% indicating wet to saturated conditions.

One gradation analysis was carried out on a sample of this native material and the results are summarized in Table 3 and provided in Appendix C.

Table 2 Particle Size Distribution Analyses

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH-03-21 SS-2	1.52 – 1.98	Sandy SILT, some Clay	-	29.9	58.1	12.0

3.5 Native Silt Till

Beneath the fill in BH-02-21 and BH-07-21, beneath the clay layer in BH-01-21, BH-05-21 and BH-06-21 and beneath the silty sand to sandy silt layer in BH-03-21 and BH-04-21, a native layer of clayey silt, some sand, trace gravel to clayey silt, trace sand and gravel (Silt Till) was encountered. The thickness of this native layer ranged between 2.90 m and 3.96 m. All boreholes were terminated in this layer.

Standard Penetration Test results (N Values) recorded in the native material ranged between 12 and 37 (average Value of 23) blows per 305 mm of penetration, indicating a mainly very stiff consistency to compact compactness condition. The moisture content of this native layer material ranged between 12.6% and 19.7% indicating very moist to saturated conditions.

One gradation analysis was carried out on a sample of this native material and the results are summarized in Table 4 and provided in Appendix C.

Table 3 Particle Size Distribution Analyses

Borehole and Sample Number	Sample Depth (m)	Soil Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH-06-21 SS-3	2.29 – 2.75	Clayey SILT, trace Gravel and Sand	0.7	5.4	63.3	30.6

The Atterberg Limits Test is summarized in Table 5 and results are indicated in Appendix C. The Atterberg Limits Test indicate that the soil sample tested from Borehole BH-06-21 has low to medium plasticity.

Table 4 Atterberg Limit Test Results

Borehole and Sample Number	Sample Depth (m)	Liquid Limit	Plastic Limit	Plasticity Index	Classification
BH-06-21 SS-3	2.29 – 2.75	25	15	10	CL

3.6 Groundwater

Groundwater observations and measurements carried out in the open boreholes and are presented on the appended borehole logs and summarized in Table 6.

Table 6 Water Level Measurements – Oct. 12, 2021

Borehole No.	Ground Surface Elevation (m)	Groundwater Depth (m)	Groundwater Elevation (m)
BH 01-21	235.65	1.83	233.82
BH 02-21	235.91	-	-
BH 03-21	236.21	0.91	235.3
BH 04-21	236.37	0.79	235.58
BH 05-21	235.99	0.76	235.23
BH 06-21	237.39	0.85	236.54
BH 07-21	237.05	0.46	236.59

Perched groundwater may occur above relatively less permeable layers of the soils at the site, particularly following heavy rainfall or snow melts. These conditions could be expected within the fill and silty sand/sandy silt soils.

It is important to note that the groundwater conditions described in this report refer only to those observed at the place and time of observation noted in the report. These elevations and conditions may vary locally due to seasonal fluctuations, groundwater regimes encountered at the site or as a consequence of construction activities on the site or adjacent sites.

4 Discussion and Recommendations

The boreholes revealed surface topsoil, over fill, over native clay, or sandy silt to silty sand subsoil over silt till subsoil.

Shallow foundations and grade supported floor slabs are considered technically feasible for the proposed house construction. Several factors exist within the study area that could impact construction of the proposed development, including:

- Presence of surficial organic soils and varying thickness of fill material; and,
- Shallow groundwater conditions.

4.1 Foundation Design

All organic material, pre existing fill and loose/soft native soil must be removed from all new foundation areas. Footings founded on the approved Clayey SILT, trace Gravel and Sand (Silt Till) throughout the site at the depths shown in Table 7 may be designed for soil bearing resistance **Serviceability Limit State (S.L.S.) of 150 kPa**, and a factored geotechnical resistance at **Ultimate Limit State (U.L.S.) of 225 kPa**, where a geotechnical resistance factor of 0.5 has been applied.

Table 7 Depth to Competent Bearing Surface

Borehole No.	Ground Surface Elevation (m)	Depth to Bearing Stratum (mbgs)	Elevation of Bearing Strata (m)
BH 01-21	235.65	2.50	233.15
BH 02-21	235.91	2.50	233.41
BH 03-21	236.21	2.00	234.21
BH 04-21	236.37	2.00	234.37
BH 05-21	235.99	2.00	233.99
BH 06-21	237.39	1.80	235.59
BH 07-21	237.05	1.80	235.25

Properly constructed footings less than 1.5 m in width founded within the native mineral soils or engineered fill subjected to the maximum Serviceability Limit State pressures above are expected to undergo total settlements of less than 25 mm and differential settlements of less than 19 mm.

The footing areas must be checked by a geotechnical engineer from Englobe to ensure that the soil conditions encountered at the time of construction are suitable to support the design pressure. Any disturbed soil identified during the inspection should be removed from the footing areas and replaced with concrete.

4.2 Slab-on-Grade Construction

All topsoil, soft fill layers, wet, frozen, and otherwise deleterious materials must be removed from the ground surface. The subgrade shall be proof rolled with a minimum 1.2 m diameter vibratory roller. Spongy zones revealed during the proof roll shall be sub-excavated. The sub-excavated zones, low-lying areas, and interior foundation trench excavations shall be backfilled with approved OPSS 1010 Granular Type “A” or “B” compacted throughout to a minimum of 98% Standard Proctor Maximum Dry Density (SPMDD).

It is recommended that concrete floor slabs be constructed on a 200 mm thickness of well graded clear crushed stone with a maximum aggregate size of 19 mm or Granular ‘A’ material compacted to 100% SPMDD. To minimize shrinkage cracking and curling of the slab, the top of the floor slab must be kept moist as the concrete cures.

A modulus of subgrade reaction (k) of 30 MPa/m may be used for the design of the floor slabs on granular structural fill. The slab-on-grade floor should be independent of all load-bearing walls and columns.

No special underfloor drains are required provided the exterior grades are at least 300 mm lower than the finished floor slab and positively sloped away from the building.

To prevent the migration of moisture vapour into the building from beneath ground floor slabs, particularly where moisture sensitive floor coverings are placed, a vapour retarder shall be placed directly beneath the floor slab that meets the requirements of the designer and flooring manufacturer. Prior to installing moisture sensitive floor coverings, the moisture content of the concrete slab must be determined at operational conditions by internal relative humidity testing to ensure an acceptable slab moisture level. It should be noted that it typically takes more than 90 days at operational conditions to lower the slab’s internal relative humidity to 85%. Different flooring systems have different responses to slab moisture (i.e. some systems can tolerate more moisture than others). The flooring contractor must assess the floor moisture levels with respect to their flooring components.

Concrete slabs exposed to freezing temperatures should be provided with 50 mm thick rigid Styrofoam insulation below the slab in order to prevent differential settlements from frost heave and thaw settlement. All weather exposed concrete shall have 5 to 8% air entrainment or as otherwise specified in Tables 2 and 4 of CSA A23.1.

To achieve a reasonable level of performance from a grade-supported floor slab, it is essential to have a relatively uniform subgrade. Cracking, differential movements, and poor performance of floor slabs may be related to variations in the subgrade support. Uniformity in material, moisture content and density are required. This level of uniformity would require the same type of material throughout the entire subgrade, placed at a similar moisture content and density.

Do to the high groundwater levels measured at the site basement are not recommended.

4.3 Seismic Design

A Site Classification 'D' should be used for earthquake load and effects in accordance with Table 4.1.8.4.A of the Ontario Building Code (2012).

4.4 Frost Protection

To provide sufficient protection against heave due to frost action, all exterior footings must incorporate a minimum depth of soil cover of 1.2 m between the footing subgrade and the finished ground surface. Where a minimum soil cover of 1.2 m is not practical, insulation can be used as an alternative to offset penetration depths. The insulation manufacturer recommendations shall be referenced for equivalent frost penetration depths and shall be confirmed by the geotechnical engineer during design and construction.

4.5 Foundation Recommendations

The following recommendations are given based on results of the geotechnical investigation:

- ▶ Prior to construction of the foundations, any unsuitable material including surficial vegetation, topsoil, soft or firm fill, and loose soils shall be excavated from within the building footprint. The subgrade should be inspected and approved by an experienced geotechnical engineer/technician upon excavation.
- ▶ Fill material within the building must be placed on approved subgrades as structural fill under full-time geotechnical supervision. The structural fill should comprise selected and approved subgrade soil placed and compacted within 2% of its optimum moisture content, placed in 200 mm thick lifts and compacted to a minimum 98% SPMDD under the full time supervision and inspection by Englobe during its placement.
- ▶ Full time compaction testing by experienced geotechnical personnel should be carried out to examine and approve structural fill materials, and to verify that the specified degree of compaction has been achieved.
- ▶ The footing areas must be inspected by a qualified geotechnical engineer/technician at the time of construction to confirm soil conditions encountered and recommended bearing capacity.
- ▶ Structural fill shall extend at least 1.0 m beyond the outer edges of the building where it may be sloped downward to the approved native subgrade level at a gradient not steeper than 1 horizontal to 1 vertical if embedded and at a slope of 3 horizontal to 1 vertical if exposed.
- ▶ All exterior footings and those exposed to freezing should be provided with minimum of 1.2 m of soil cover to provide protection from freezing. If construction extends into the winter months, all founding soil must be protected from freezing during construction.
- ▶ The materials excavated from the foundation trench areas may be suitable for reuse as exterior foundation wall backfill following approval by a geotechnical engineer/technician. The backfill should be placed in 200 mm thick lifts and compacted to 95% SPMDD on the exterior

of the building and 98% SPMDD on the interior of the building. Where applicable, the backfill should be placed evenly on both sides of walls that are not designed to resist lateral earth pressure. Over-compaction must be avoided since this could cause excessive lateral earth pressure.

4.6 Excavations and Dewatering

The most common and cost-effective construction method is normally an open-cut excavation based on the borehole information. Groundwater seepage may be expected within the excavation depth. Temporary excavations to conventional depths for installation of underground pipes at this site must comply with the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.

The boreholes show that the excavations for the construction are expected to extend through revealed surface topsoil, over fill, over native clay, or sandy silt to silty sand subsoil over silt till subsoil. As per the OHSA, the soil at this site may be classified as shown in the Table 8 below.

Table 8 Soil Classification for Excavations

Soil Type	Above Groundwater level	Below Groundwater Level
Fill	Type 3	Type 4
Silty Clay	Type 2	Type 3
Sandy Silt to Silty Sand	Type 3	Type 4
Silt Till	Type 3	Type 4

Where workmen must enter a trench or excavation the soil must be suitably sloped and/or braced in accordance with the regulation requirements. The regulation stipulates safe excavation slopes by soil type as Table 9.

Table 9 Safe Excavation Slope Based on Soil Type (Ontario Regulation 213/91 Occupational Health and Safety Act (OHSA))

Soil Type	Base of Slope	Steepest Slope Inclination
1	Within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
2	Within 1.2 metres of bottom of trench	1 horizontal to 1 vertical
3	From bottom of trench	1 horizontal to 1 vertical
4	From bottom of trench	3 horizontal to 1 vertical

Depending on the construction feasibility and where space limitations (from utility poles, existing underground services, or buildings) do not permit overburden cut slopes at inclinations specified above, a steeper cut slope can be employed and the excavation walls can be supported by temporary shoring systems. During excavations, adjacent existing structures, if present, must be protected by proper shoring or sloping. Some ground movement adjacent to the trench is to be expected. Every prefabricated hydraulic or engineered support system shall

be designed by a professional engineer and shall be constructed, installed, used and maintained in accordance with its design drawings and specifications (O.Reg. 213/91, s. 236).

The trench side slopes should be regularly inspected for evidence of instability following periods of heavy rainfall, following periods of thawing, or when the trench has been left open for an extended period of time. Appropriate remedial action should be taken to ensure the continued stability of the slopes.

The groundwater was measured in six of the open holes at Boreholes BH-01-21 and BH-03-21 to BH-07-21 locations and ranged from 0.46 to 1.83 m below existing grades. Based on this estimation and encountered groundwater conditions at the time of fieldwork, it is anticipated that excavations will extend into stabilised groundwater.

Significant groundwater inflow would be expected for excavations extending more than 0.5 m below the stabilized groundwater table and a positive dewatering system installed by a dewatering specialist will most likely be required to lower the groundwater level prior to excavation in order to maintain a safe and adequately dry excavation. An Environmental Activity and Sector Registry (EASR) or Permit to Take Water (PTTW) is required by the Ministry of Environment and Climate Change in the event that the daily taking of groundwater exceeds 50,000 L or 400,000 L per day, respectively. This was beyond the scope of works for the geotechnical investigation. However, a site-specific hydrogeological study will be needed to address the requirement of Environmental Activity and Sector Registry (EASR) or Permit to Take Water (PTTW). Upon request, Englobe can provide a separate proposal regarding hydrogeological study.

4.7 Pipe Bedding

The subgrade soils beneath the service pipes should comprise native or recompacted soils. Prior to installation of the services, the subgrade should be inspected by an experienced geotechnical engineer/technician. If any, very loose or soft areas are encountered during inspection they should be excavated and replaced with compacted granular material such as OPSS.MUNI 1010 Granular A.

The pipe bedding for the services should be conventional Class B pipe bedding comprising a minimum 150 mm thick layer of OPSS.MUNI 1010 Granular A aggregate below the pipe invert. The bedding course may be thickened if portions of the subgrade become wet during excavation. OPSS.MUNI 1010 Granular A type aggregate should be provided around the pipe to at least 300 mm above the top, and the bedding should be compacted to 100% SPMDD. Service lines installed outside of heated areas should be provided with a minimum 1.2 m of soil cover or equivalent insulation for frost protection.

4.8 Trench Backfill

The trenches above the specified pipe bedding should be backfilled with inorganic soils that are not excessively wet placed in 200 mm thick lifts and compacted to at least 98% SPMDD. Where the service trenches enter the building, the trench backfill must be compacted as structural fill to a minimum of 100% SPMDD. Based on the results of insitu moisture content tests carried out on the native overburden deposits, the material is not suitable for reuse as trench backfill as it is overly wet with due to the high water table in this area. The overly wet material will require drying prior to reusing as backfill. If the material cannot be dried then imported trench backfill will be required. Organic material (topsoil) is not considered suitable for reuse as trench backfill and if encountered, shall be separated.

To minimize potential problems, backfilling operations should follow closely after excavation so that only a minimal length of trench is exposed. Care should be taken to direct surface runoff away from the excavations. Should construction extend into the winter season then backfilling operations should be planned to ensure that backfill material is kept to a minimum and ensured that frozen material is not used as backfill.

4.9 Construction Inspection and Testing

During construction of the new building, testing should be carried out for quality assurance. Soils testing for the project would include engineering site visits to confirm bearing capacity for footings for the new building. Compaction testing shall be carried out on structural fill beneath buildings, foundation wall backfill, sub-slab granular fill, service pipe bedding and trench backfill, and granular materials beneath the paved areas.

During the placement of concrete at the construction site, testing should be performed to determine the slump and air content of the concrete, and concrete cylinders should be cast for compressive strength testing in accordance with the requirements of CSA A23.1 and A23.2. Field sampling and testing of concrete shall be according to OPSS 904. Preparation of the test cylinders, curing, and testing should be carried out by Englobe.

Englobe maintains CSA/CCIL certified concrete laboratories in Kitchener and London and can provide concrete sampling and testing services for the project as required. Englobe staff also provide quality testing services for building envelope, structural steel, reinforcing steel, and roofing.

5 Statement of Limitations

The geotechnical recommendations provided in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report. Since all details of the design may not be known at the time of report preparation, we recommend that we be retained during the final design stage to verify that the geotechnical recommendations have been correctly interpreted in the design. Also, if any further clarification and/or elaboration are needed concerning the geotechnical aspects of the project, Englobe should be contacted.

We recommend that we be retained during construction to confirm that the subsurface conditions do not deviate materially from those encountered in the test holes and to ensure that our recommendations are properly understood. Quality assurance testing and inspection services during construction are a necessary part of the evaluation of the subsurface conditions.

The geotechnical recommendations provided in this report are intended for the use of the Client or its agent and may not be used by a Third Party without the expressed written consent of Englobe and the Client. They are not intended as specifications or instructions to contractors. Any use which a contractor makes of this report, or decisions made based on it, are the responsibility of the contractor. The contractor must also accept the responsibility for means and methods of construction, seek additional information if required, and draw their own conclusions as to how the subsurface conditions may affect their work. Englobe accepts no responsibility and denies any liability whatsoever for any damages arising from improper or unauthorized use of the report or parts thereof.

It should be noted that the soil boundaries indicated on the borehole logs are inferred from noncontinuous sampling and observations during drilling and should not be interpreted as exact planes of geological change. These boundaries are intended to reflect approximate transition zones for the purpose of geotechnical design. Also, the subsoil and groundwater conditions have been determined at the borehole locations only.

It is further noted that, depending on the time of year the field work was completed, water levels should be expected to vary, perhaps significantly from those observed at the time of this investigation.

It is important to note that the geotechnical assessment involves a limited sampling of the site gathered at specific test hole locations and the conclusions in this report are based on this information gathered and in accordance with normally accepted practices. The subsurface geotechnical, hydrogeological, environmental and geologic conditions between and beyond the test holes will differ from those encountered at the test holes. Also such conditions are not uniform and can vary over time. Should subsurface conditions be encountered which differ materially from those indicated at the test holes, we request that we be notified in order to assess the additional information and determine whether or not changes should be made as a result of the conditions.

Englobe will not be responsible to any party for damages incurred as a result of failing to notify Englobe that differing site or subsurface conditions are present upon becoming aware of such conditions.

The professional services provided for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise stated specifically in the report. The recommendations and opinions given in this report are based on our professional judgment and are for the guidance of the Client or its Agent in the design of the specific project. No other warranties or guarantees, expressed or implied, are made.

The Englobe recommendations are contingent upon provision of a consistently competent, stable subgrade, which is properly drained and free of soft spots and objectionable materials such as organics.

All construction works should only be completed during periods of favourable weather. The need for continuous construction supervision by a qualified, experienced technician, and quality control testing during construction projects cannot be over-emphasized. All materials and construction services required should be in accordance with Ontario Provincial Standard Specifications.

Appendix A: Drawings

Drawing 1: Site Location Plan
Drawing 2: Borehole Location Plan

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**NOTES :**

1-REFERENCES : © OpenStreetMap contributors (2021).

0 100 200 300 400 500 m



SCALE 1:15000

Project

North Street Subdivision

North Street, Courtland, Ontario

Title

LOCATION PLAN**Englobe**440, Hardy Road, Unit 3
Brantford (Ontario) N3T 5L8
Telephone : 519.720.0078
Fax : 519.720.0976Prepared **E.Ciochon**Drawn **E.Ciochon**Checked **T.Staples**Discipline **GEOTECHNICAL**Scale **1 : 15000**Date **2021-10-18**

Project manager

T.Staples

Sequence no.

01 of 02

M. dept.

04

Project

02110318.000

Disc.

GE

Dwg no.

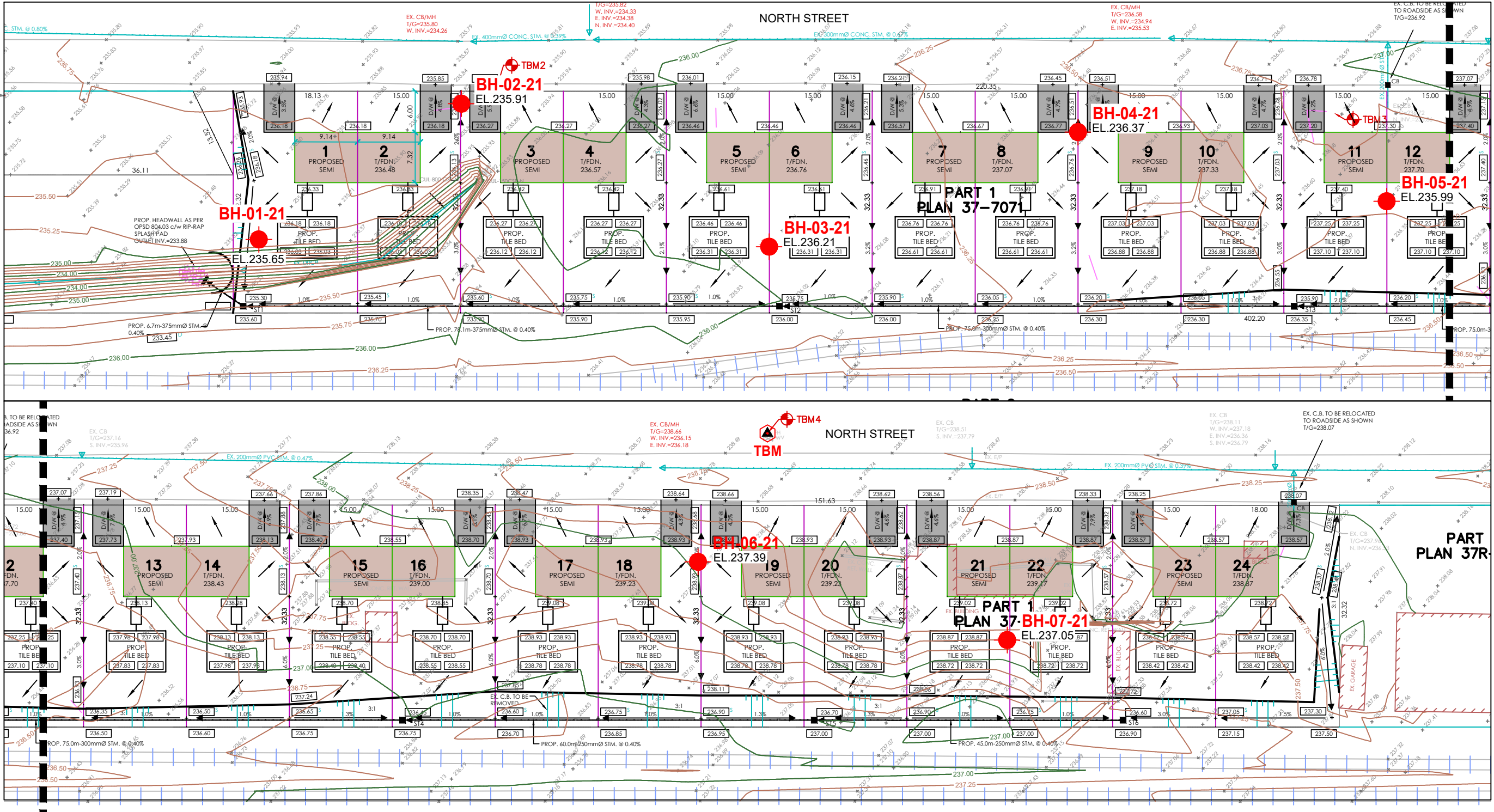
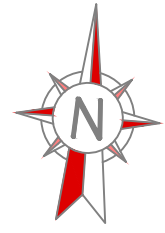
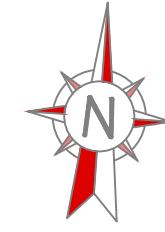
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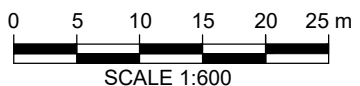
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LEGEND :

- BOREHOLE LOCATION
- EL.234.10 GROUND SURFACE ELEVATION (m)
- TEMPORARY BENCHMARK



NOTES :

- 1-REFERENCES : J.H.COHOON ENGINEERING LTD., Job No.13471, Drawing No.13471-1B, September 9, 2021.
- 2-TEMPORARY BENCHMARK : Top nut of fire hydrant on the north side of North Street, Elevation 239.69 m (geodetic).
- 3-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

Project

North Street Subdivision

North Street, Courtland, Ontario

Title

BOREHOLE LOCATION PLAN

440, Hardy Road, Unit 3
Brantford (Ontario) N3T 5L8
Telephone : 519.720.0078
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Prepared	E.Ciochon	Discipline	GEOTECHNICAL	Project manager	T.Staples
Drawn	A.Stewart	Scale	1 : 600	Sequence no.	02 of 02
Checked	T.Staples	Date	2021-10-18		
M. dept.	Project			Disc.	Dwg no.
04			02110318.000	GE	002 00

Appendix B: Borehole Logs

List of Abbreviations
Boreholes BH-01-21 to BH-07-21

LIST OF ABBREVIATIONS

The abbreviations commonly employed on the borehole logs, on the figures, and in the text of the report, are as follows:

Sample Types		Soil Tests and Properties	
AS	Auger Sample	SPT	Standard Penetration Test
CS	Core Sample	UC	Unconfined Compression
RC	Rock Core	FV	Field Vane Test
SS	Split Spoon	ϕ	Angle of internal friction
TW	Thinwall, Open	γ	Unit weight
WS	Wash Sample	w_p	Plastic limit
BS	Bulk Sample	w	Water content
GS	Grab Sample	w_L	Liquid limit
WC	Water Content Sample	I_L	Liquidity index
TP	Thinwall, Piston	I_p	Plasticity index
		PP	Pocket penetrometer

Penetration Resistances	
Dynamic Penetration Resistance	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) diameter 60° cone a distance 300 mm (12 in.). The cone is attached to 'A' size drill rods and casing is not used.
Standard Penetration Resistance, N (ASTM D1586)	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a standard split spoon sampler 300 mm (12 in.)
WH	sampler advanced by static weight of hammer
PH	sampler advanced by hydraulic pressure
PM	sampler advanced by manual pressure

Soil Description		
Cohesionless Soils	SPT N-Value	Relative Density (D_r)
Compactness Condition	(blows per 0.3 m)	(%)
Very Loose	0 to 4	0 to 20
Loose	4 to 10	20 to 40
Compact	10 to 30	40 to 60
Dense	30 to 50	60 to 80
Very Dense	over 50	80 to 100
Cohesive Soils	Undrained Shear Strength (C_u)	
Consistency	kPa	psf
Very Soft	less than 12	less than 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very Stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000
DTPL	Drier than plastic limit	Low Plasticity, $W_L < 30$
APL	About plastic limit	Medium Plasticity, $30 < W_L < 50$
WTPL	Wetter than plastic limit	High Plasticity, $W_L > 50$

LOG OF BOREHOLE No. BH-02-21

Englobe

Project No. 02110318.000

DRAWING No. 2

Project: North Street Subdivision

Sheet No. 1 of 1

Location: North Street, Courtland, ON

Date Drilled: 10/12/2021

Drill Type: Solid Stem Auger

Datum: _____

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☒

Dynamic Cone Test ☐

Shelby Tube ☒

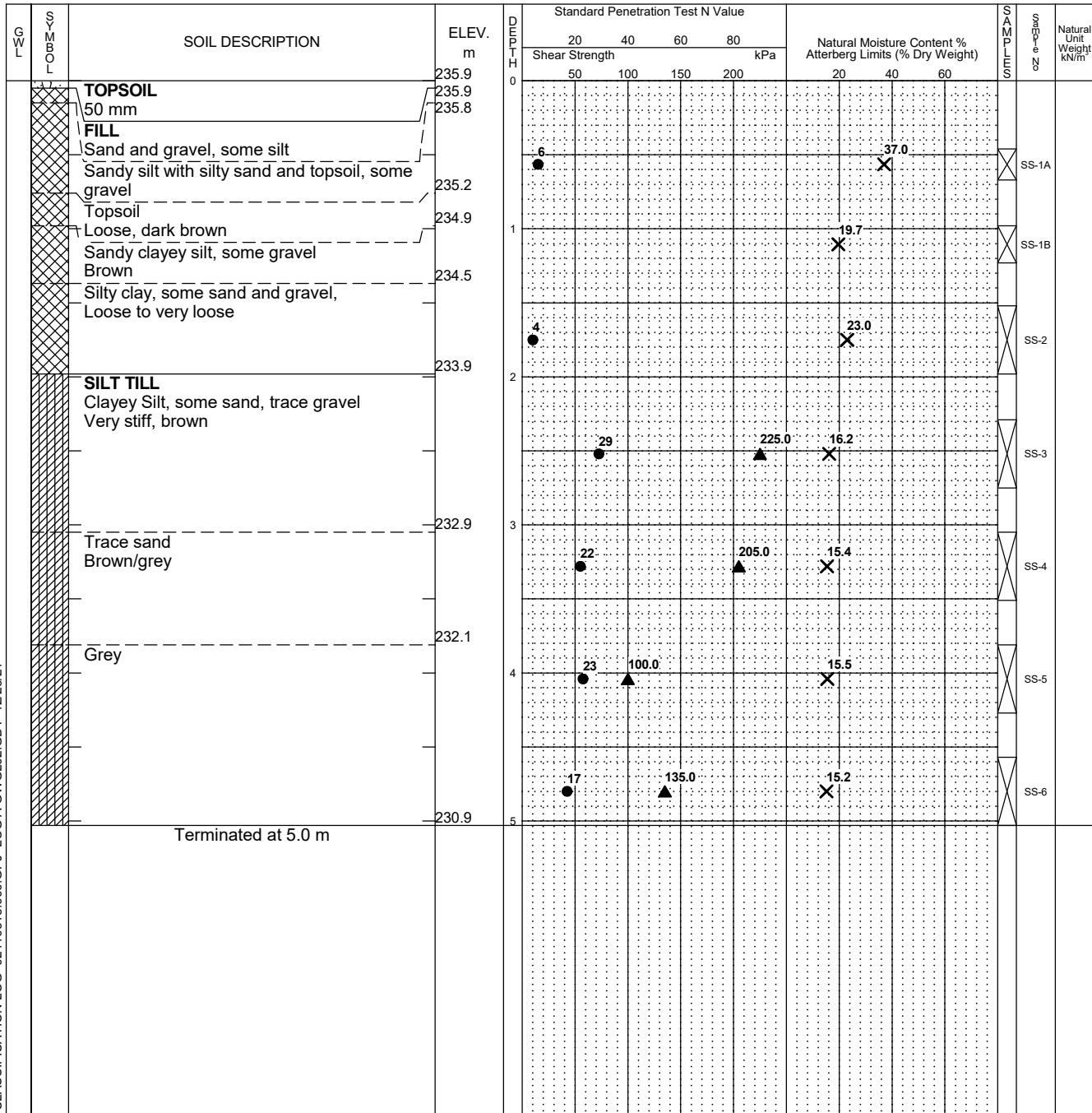
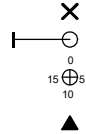
Shear Strength by
Vane Test ☒

Natural Moisture Content ☒

Atterberg Limits ☒

Undrained Triaxial at
% Strain at Failure ☒

Shear Strength by
Penetrometer Test ☒



Time	Water Level (m)	Depth to Cave (m)
Upon Completion	none	none

CLASSIFICATION LOG 02110318.000.GPJ LOG A GWGL02.GDT 12/23/21

LOG OF BOREHOLE No. BH-03-21

Englobe

Project No. 02110318.000

DRAWING No. 3

Project: North Street Subdivision

Sheet No. 1 of 1

Location: North Street, Courtland, ON

Date Drilled: 10/12/2021

Drill Type: Solid Stem Auger

Datum: _____

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☒

Dynamic Cone Test ☐

Shelby Tube ☐

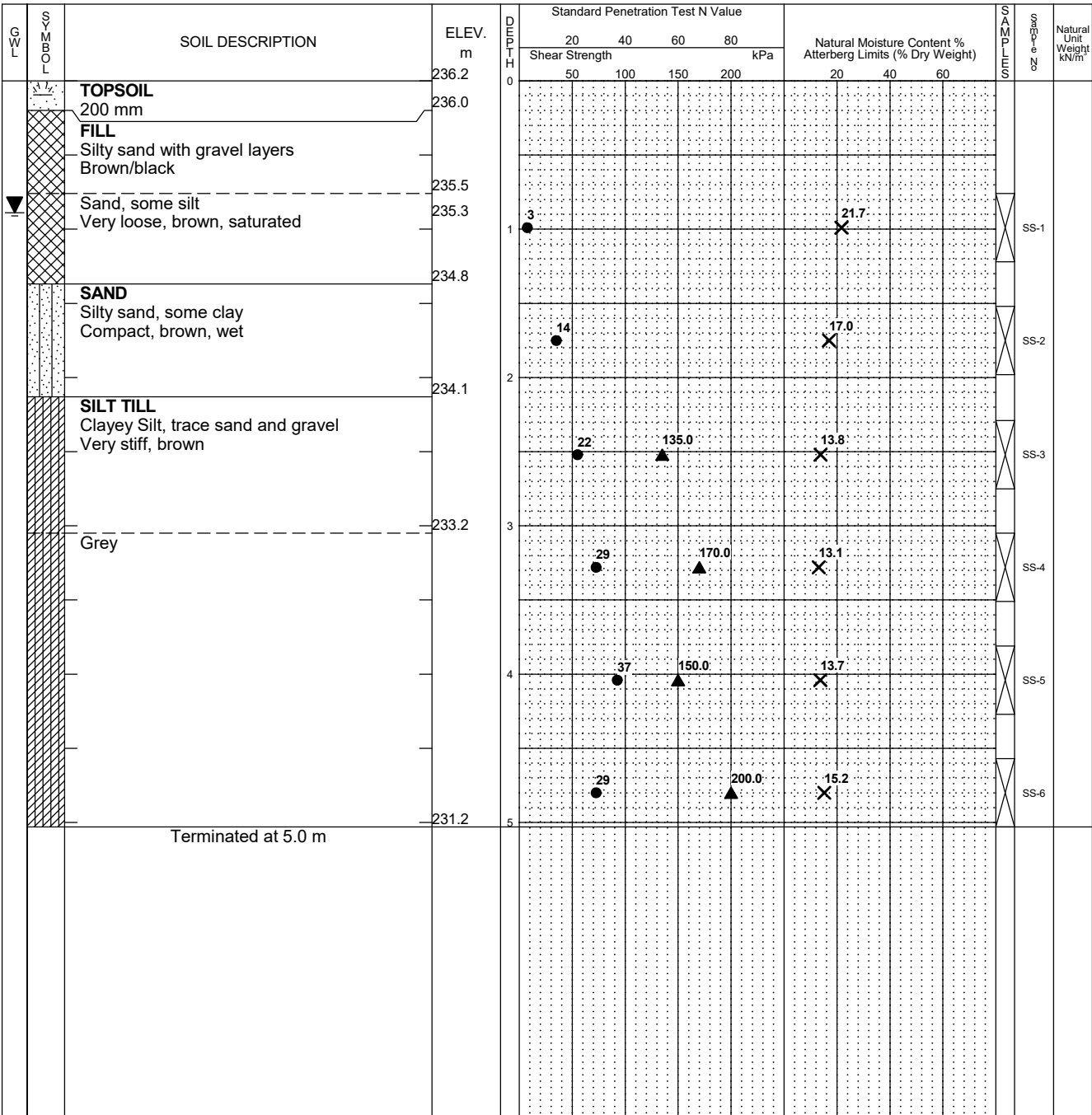
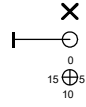
Shear Strength by Vane Test ☒

Natural Moisture Content ☒

Atterberg Limits ☒

Undrained Triaxial at % Strain at Failure ☐

Shear Strength by Penetrometer Test ☒



Time	Water Level (m)	Depth to Cave (m)
Upon Completion	0.9	none

LOG OF BOREHOLE No. BH-04-21

Englobe

Project No. 02110318.000

DRAWING No. 4

Project: North Street Subdivision

Sheet No. 1 of 1

Location: North Street, Courtland, ON

Date Drilled: 10/12/2021

Drill Type: Solid Stem Auger

Datum: _____

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☒

Dynamic Cone Test ☐

Shelby Tube ☒

Shear Strength by ☒ S

Vane Test ☐

Natural Moisture Content ☒

Atterberg Limits ☒

Undrained Triaxial at ☒

% Strain at Failure ☒

Shear Strength by ☒

Penetrometer Test ☒

☒

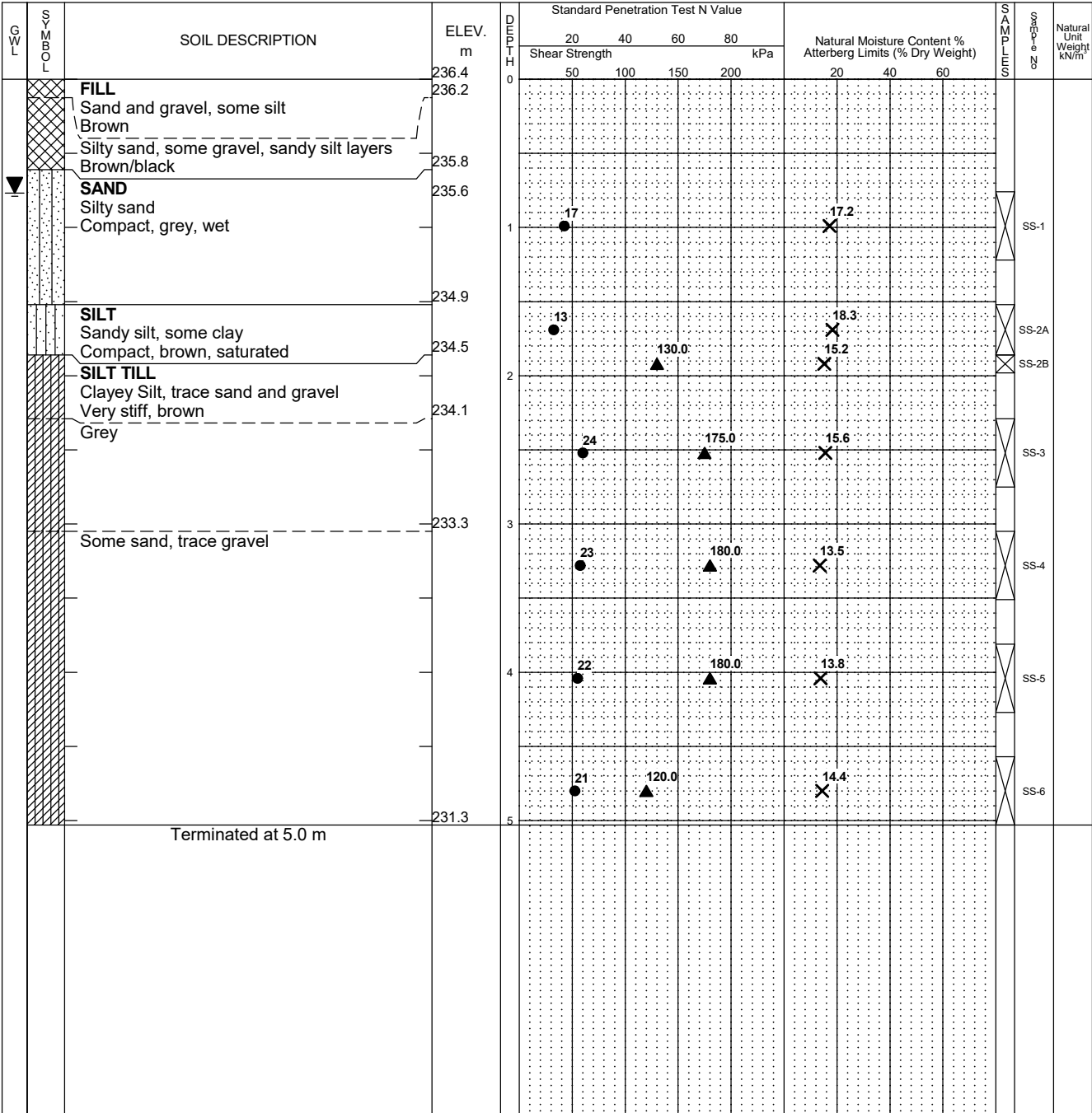
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Time	Water Level (m)	Depth to Cave (m)
Upon Completion	0.8	none

CLASSIFICATION LOG 02110318.000.GPJ LOG A GWGL02.GDT 12/23/21

LOG OF BOREHOLE No. BH-05-21

Englobe

Project No. 02110318.000

DRAWING No. 5

Project: North Street Subdivision

Sheet No. 1 of 1

Location: North Street, Courtland, ON

Date Drilled: 10/12/2021

Drill Type: Solid Stem Auger

Datum: _____

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☐

Dynamic Cone Test ☐

Shelby Tube ☐

Shear Strength by ☐

Vane Test ☐

Natural Moisture Content ☒

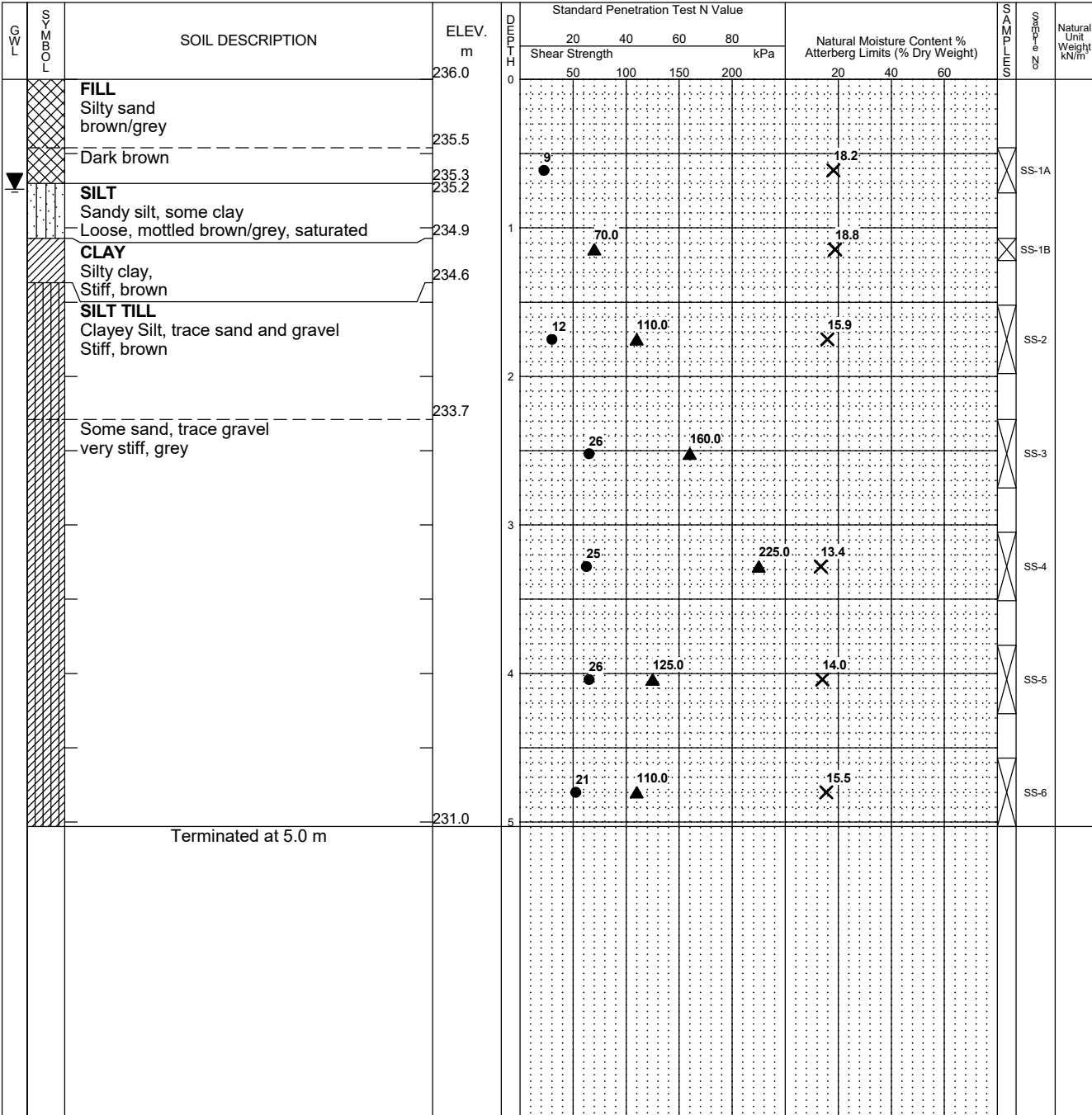
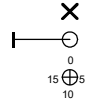
Atterberg Limits ☐

Undrained Triaxial at ☐

% Strain at Failure ☐

Shear Strength by ☐

Penetrometer Test ☐



Time	Water Level (m)	Depth to Cave (m)
Upon Completion	0.8	none

CLASSIFICATION LOG 02110318.000.GPJ LOG A GWGL02.GDT 12/23/21

LOG OF BOREHOLE No. BH-06-21

Englobe

Project No. 02110318.000

DRAWING No. 6

Project: North Street Subdivision

Sheet No. 1 of 1

Location: North Street, Courtland, ON

Date Drilled: 10/12/2021

Drill Type: Solid Stem Auger

Datum: _____

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☒

Dynamic Cone Test ☐

Shelby Tube ☒

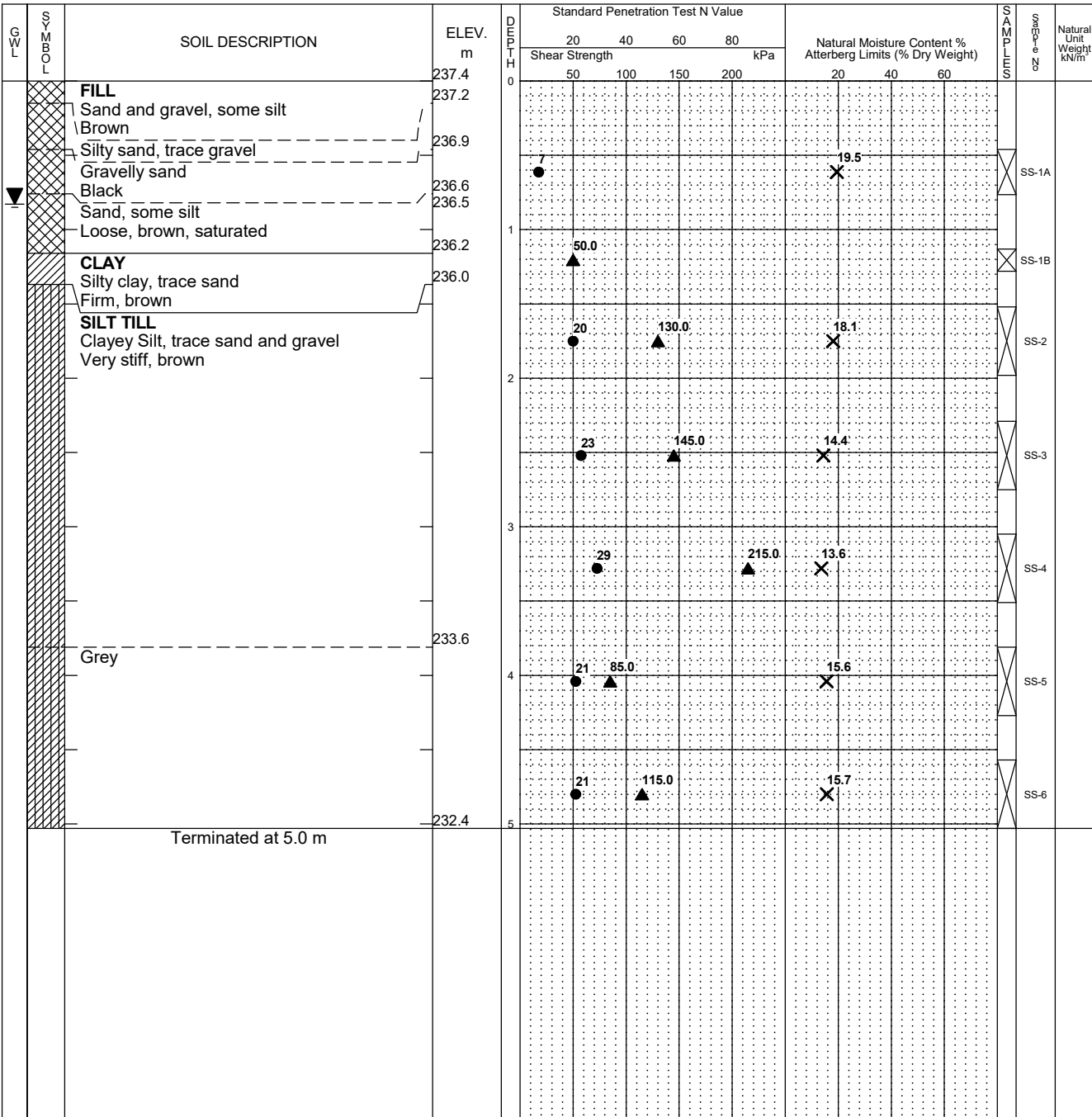
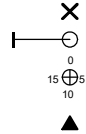
Shear Strength by
Vane Test ☒

Natural Moisture Content ☒

Atterberg Limits ☒

Undrained Triaxial at
% Strain at Failure ☒

Shear Strength by
Penetrometer Test ☒



LOG OF BOREHOLE No. BH-07-21

Englobe

Project No. 02110318.000

DRAWING No. 7

Project: North Street Subdivision

Sheet No. 1 of 1

Location: North Street, Courtland, ON

Date Drilled: 10/12/2021

Drill Type: Solid Stem Auger

Datum: _____

Split Spoon Sample ☒

Auger Sample ☐

SPT (N) Value ☒

Dynamic Cone Test ☐

Shelby Tube ☒

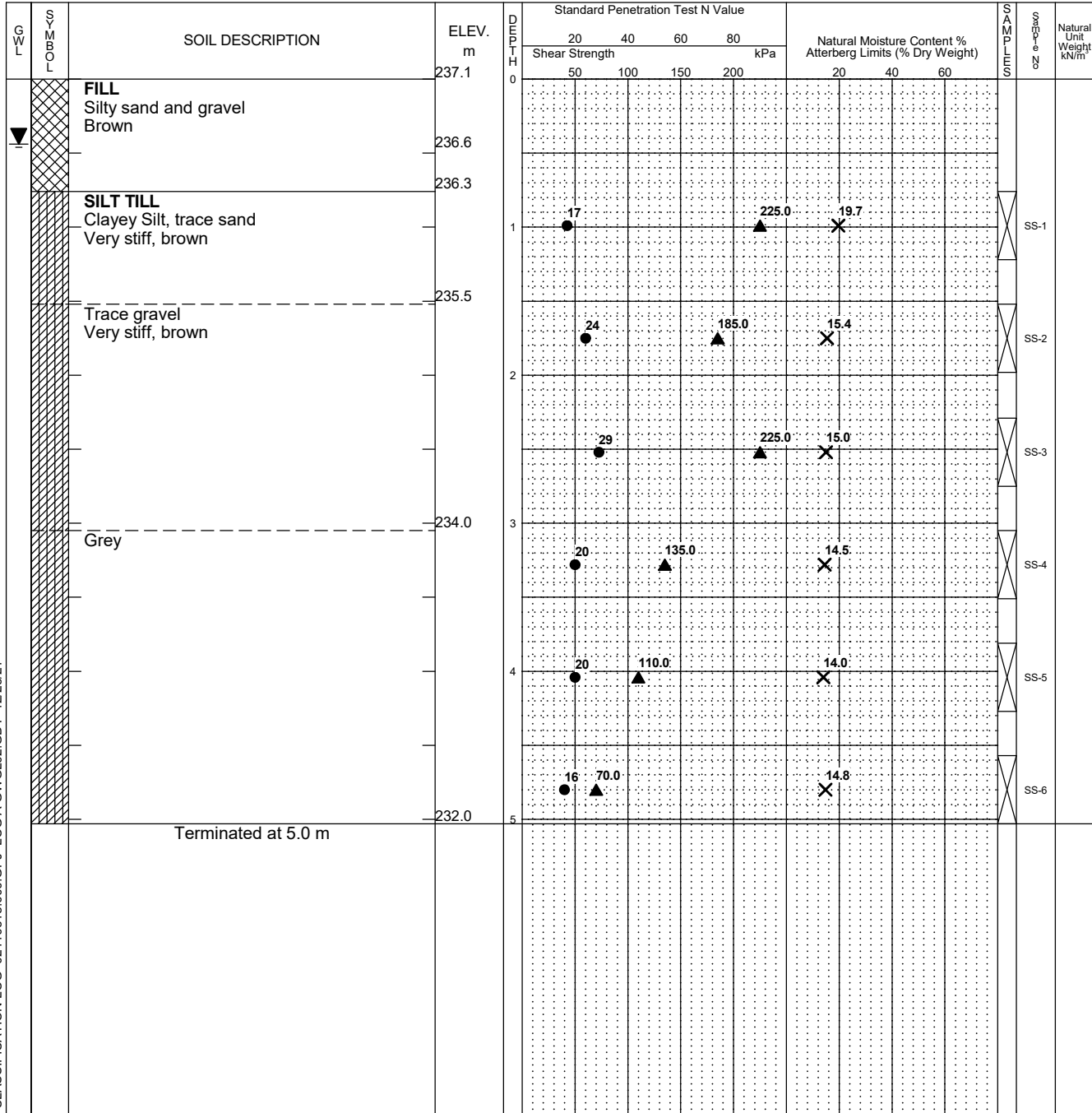
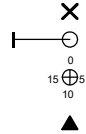
Shear Strength by Vane Test ☒

Natural Moisture Content ☒

Atterberg Limits ☒

Undrained Triaxial at % Strain at Failure ☒

Shear Strength by Penetrometer Test ☒



Time	Water Level (m)	Depth to Cave (m)
Upon Completion	0.5	none

CLASSIFICATION LOG 02110318.000.GPJ LOG A GWGL02.GDT 12/23/21

Appendix C: Geotechnical Lab Results

Figure 1 – Particle Size Analysis BH-06-21 SS-3

Figure 2 – Atterberg Limits Analysis BH-06-21 SS-3

Figure 3 – Particle Size Analysis BH-03-21 SS-2

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER:

04-02110318.000

PROJECT NAME:

North Street Courtland

CLIENT:

214 Carson Co Inc.

LAB NUMBER:

S-941

SAMPLE ID:

Borehole 06-21, Sample 3

SAMPLE DEPTH:

7.5'

SAMPLED BY:

Mike Arthur, C.Tech.

DATE RECEIVED:

October 14, 2021

DATE COMPLETED:

November 2, 2021

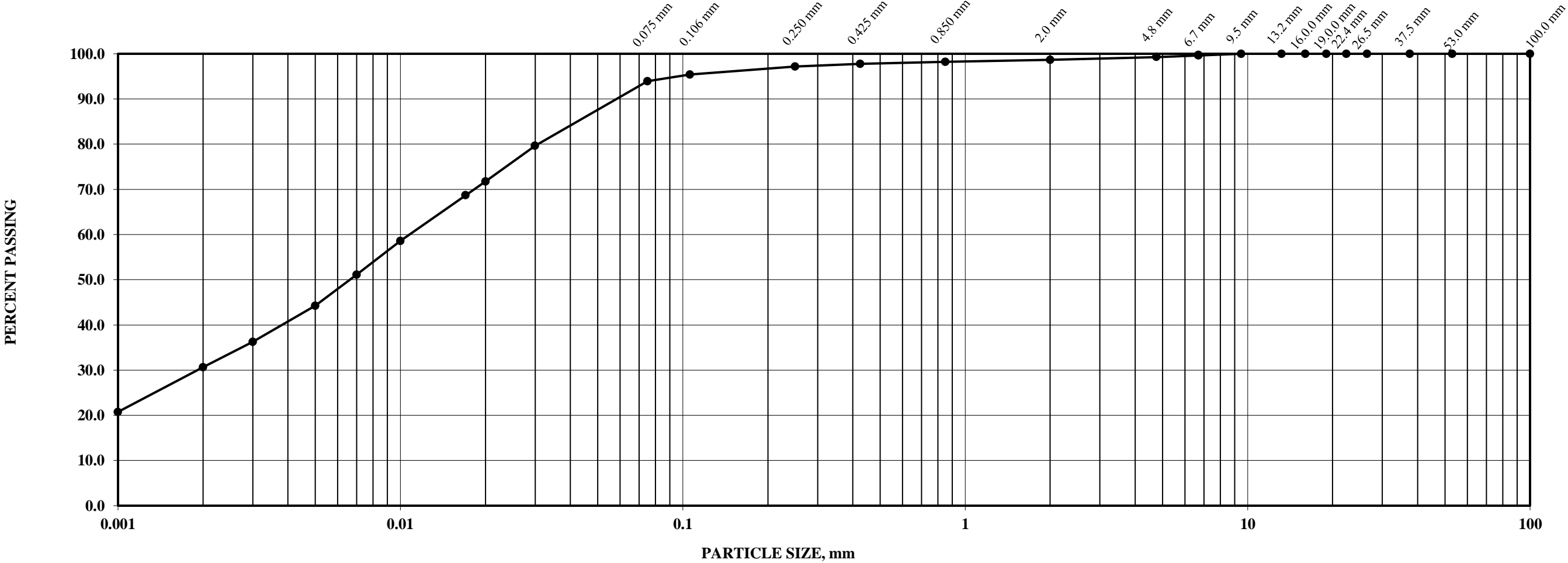
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL
------	------	----------------	-----------	-------------	-------------	-------------	--------

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
---------------------	-----------	-------------	-------------	-------------	---------------



COEFFICIENTS

D60	0.011	D30	0.002	D10		Cc		Cu	
-----	-------	-----	-------	-----	--	----	--	----	--

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	% PASSING	DIAMETER mm	% PASSING
53	100.0	0.030	79.6
37.5	100.0	0.020	71.7
26.5	100.0	0.017	68.7
22.4	100.0	0.010	58.6
19	100.0	0.007	51.1
16	100.0	0.005	44.2
13.2	100.0	0.002	30.6
9.5	100.0	0.001	20.8
6.7	99.6	ATTERBERG LIMITS	
4.75	99.3		
2.00	98.6		
0.850	98.2	Liquid Limit	25
0.425	97.7	Plastic Limit	15
0.250	97.2		
0.106	95.4	Plastic Index	10
0.075	93.9		

GRAIN SIZE PROPORTIONS, %		
% GRAVEL (> 4.75 mm):		0.7
% SAND (75 µm to 4.75 mm):		5.4
% SILT (2 µm to 75 µm):		63.3
% CLAY (<2 µm):		30.6
SOIL DESCRIPTION:	CL	Clayey SILT, traces of Gravel and Sand
REMARKS		

Figure: 1

TESTED BY: Matt Bernard
Junior Technician

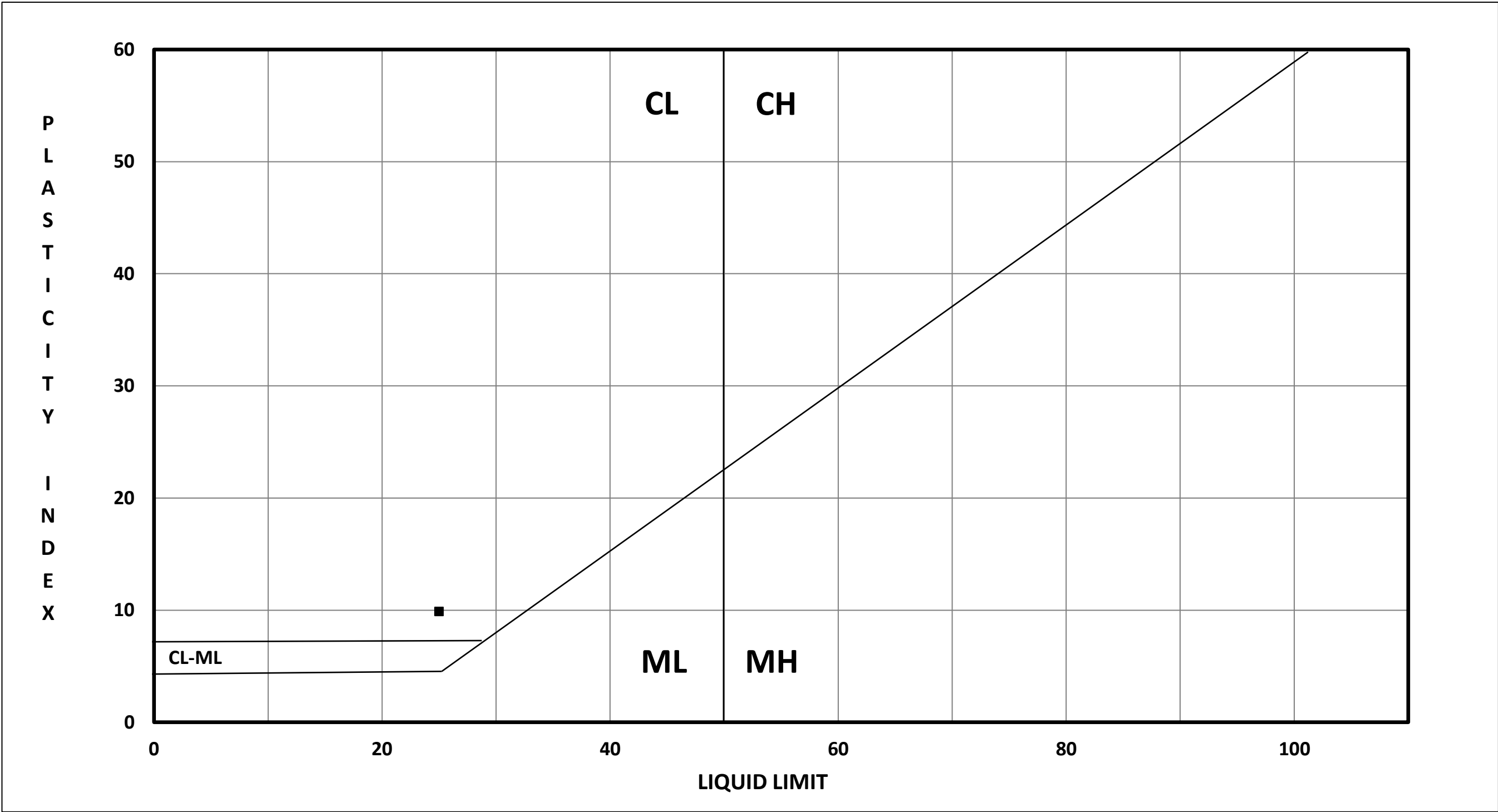
REVIEWED BY David McBay, C.Tech.
Laboratory Supervisor

ATTERBERG LIMITS REPORT
MTO LS-703/704

PROJECT NUMBER: 04-02110318.000 **JOB NAME:** North Street Courtland **CLIENT:** 214 Carson Co Inc.

LAB NUMBER: S-941 **SAMPLE ID:** Borehole 06-21, Sample 3 **SAMPLE DEPTH:** 7.5'

SAMPLED BY: Mike Arthur, C.Tech. **DATE RECEIVED:** October 14, 2021 **DATE COMPLETED:** November 2, 2021

**ATTERBERG LIMIT / GRAINSIZE RESULTS**

SUMMARY OF ATTERBERG AND MOISTURE CONTENT:	
Liquid Limit, LL	25
Plastic Limit, PL	15
Plasticity Index, PI	10
In Situ Moisture Content (ASTM D2216) %	-

GRAINSIZE PROPORTION %	
% GRAVEL (> 4.75 mm):	0.7
% SAND (75 µm to 4.75 mm):	5.4
% SILT (2 µm to 75 µm):	63.3
% CLAY (<2 µm):	30.6

SOIL DESCRIPTION	Clayey SILT, traces of Gravel and Sand
USCS CLASSIFICATION	CL
REMARKS	

Figure: 2Tested By: Matt Bernard
Junior TechnicianReviewed By: David McBay, C.Tech.
Laboratory Supervisor

GRAIN SIZE AND HYDROMETER ANALYSIS REPORT
LS-602, 702 & 703/704

PROJECT NUMBER: 04-02110318.000

PROJECT NAME: North Street Courtland

CLIENT: 214 Carson Co Inc.

LAB NUMBER: S-940

SAMPLE ID: Borehole 03-21, Sample 2

SAMPLE DEPTH: 4.5'

SAMPLED BY: Mike Arthur, C.Tech.

DATE RECEIVED: October 14, 2021

DATE COMPLETED: November 2, 2021

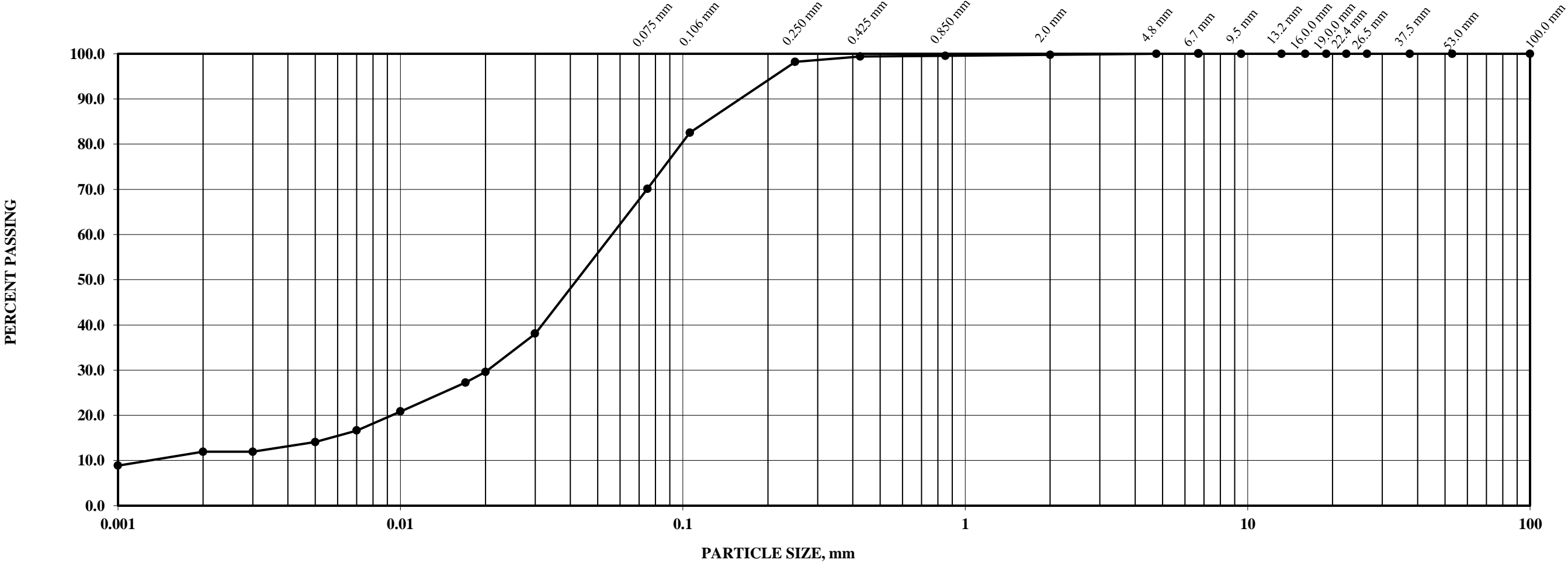
PARTICLE SIZE DISTRIBUTION, MTO LS-702

U.S. BUREAU OF SOILS CLASSIFICATION (AS USED IN MINISTRY OF TRANSPORTATION OF ONTARIO PAVEMENT DESIGNS)

CLAY	SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	GRAVEL
------	------	----------------	-----------	-------------	-------------	-------------	--------

UNIFIED SOILS CLASSIFICATION ASTM D 2487

FINES (SILT & CLAY)	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
---------------------	-----------	-------------	-------------	-------------	---------------



COEFFICIENTS

D60	0.061	D30	0.020	D10	0.001	Cc	5.041	Cu	44.41
-----	-------	-----	-------	-----	-------	----	-------	----	-------

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	% PASSING	DIAMETER mm	% PASSING
53	100.0	0.030	38.1
37.5	100.0	0.020	29.6
26.5	100.0	0.017	27.2
22.4	100.0	0.010	20.8
19	100.0	0.007	16.6
16	100.0	0.005	14.1
13.2	100.0	0.002	12.0
9.5	100.0	0.001	8.9
6.7	100.0	ATTERBERG LIMITS	
4.75	100.0		
2.00	99.7		
0.850	99.5	Liquid Limit	
0.425	99.4		
0.250	98.2	Plastic Limit	
0.106	82.5		
0.075	70.1		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	
% SAND (75 µm to 4.75 mm):	29.9
% SILT (2 µm to 75 µm):	58.1
% CLAY (<2 µm):	12.0
SOIL DESCRIPTION:	Sandy SILT, some Clay
REMARKS	

Figure: 3

TESTED BY: Matt Bernard
Junior Technician

REVIEWED BY: David McBay, C.Tech.
Laboratory Supervisor

**FUNCTIONAL SERVICING REPORT
PROPOSED RESIDENTIAL DEVELOPMENT
COURTLAND, ONTARIO**

Norfolk County

Prepared By:

**J.H. Cohoon Engineering Limited
440 Hardy Road, Unit 1
Brantford, Ontario
N3T 5L8
Phone (519) 753-2656
Fax (519) 753-4263**

Job: 13471

**September 2023
Updated October 2023 (Updated Building Sizes x2)**

INTRODUCTION

The following Functional Servicing Report was prepared by J.H. Cohoon Engineering Limited for 214 Carson Co, in support of future planning applications relating to the site located on North Street in the Village of Courtland, in Norfolk County. This report was prepared to demonstrate the servicing scheme for the proposed residential development that is to occur on the subject lands.

The development approach is to develop the site in a single-phase semi-detached residential development that will consist of 12 residential lots (for a total of 24 units) as illustrated on the draft plan of subdivision included within Appendix 'A' of this report.

The site is located on the south side of North Street in the Village of Courtland just west of the intersection of Talbot Street and North Street, in Norfolk County. The overall subdivision area is 1.187 Ha in size

The objective of this report is to document the servicing strategy to be utilized for the site in a proposed initial development. Partial services will be installed within the development and with connections to the existing municipal system in the existing municipal road allowance as applicable. The owner will assume full responsibility for the installation and maintenance of the services on the property.

PROPOSED DEVELOPMENT CONCEPT

The proposed development is to be constructed on the south side of North Street in Courtland, Ontario. As indicated the parcel of land is some 1.187 hectares in size. A key map illustrating the site location is provided in Figure 1.

The anticipated development is intended to be a series of semi-detached residential units (12 buildings) with a total of 24 units. The development is illustrated on the plans prepared by J H Cohoon Engineering Limited being drawings which have been included within Appendix 'A' of this report



Site Location – Key Plan
Figure No. 1

SANITARY SEWERS & APPURTENANCES

3.1 Design Flows

This site is proposed to be constructed on partial services with municipal water services and septic systems being proposed on this site. The proposed lots are to be developed with individual septic systems designed in accordance with the requirements of the Ontario Building Code.

The proposed septic systems are shown generically on the engineering plans included within Appendix ' B' of this report. The septic systems are proposed to

be constructed in the rear of the proposed residences. The schematic details of the proposed development and the required septic systems have been included within Appendix 'C' of this report.

The design of the system(s) was carried out in accordance with the requirements of the Ontario Building Code including / based upon the following assumptions for the design of the system

Typical Building Residence

Three Bedroom Two Storey Style House with 22 fixture Units

Soils

As per Colestar Environmental Inc. report dated March 6, 2021
(refer to Appendix 'C' of this report).

Septic System

Loading Rate	=	10 l/sq..m./ day
		For T = 1 to 20 min/cm
Adsorption Trench Length	=	$Q \times T / 200$
	=	$2100 \times 16 / 200$
	=	168 m
Filter Medium Base Area	=	$Q \times T / 850$
	=	$2100 \times 16 / 850$
	=	39.5 sq.m.
Loading Rate	=	Q / LR
	=	$2100 / 10$
	=	210 sq.m.

The soils information as provided by Colestar Environmental is included within Appendix 'D'

WATER SERVICING AND FIRE PROTECTION

The provision of water to the proposed residences will be provided through the provision of water services to the subject lands in accordance with the requirements of the Ontario Building Code.

In this case, fire protection will be provided from the Norfolk County Fire department through the use of rural fire-fighting techniques. The Norfolk Fire Department is accredited as being able to provide Superior Tanker Shuttle Service as provided by the Fire Underwriters Survey. (Refer to Appendix 'E' of this report). The site is located within approximately 1.5km of the Courtland Fire Station located at MN 272 Main Street in Courtland, Ontario.

Oct 2023 (Updated)

We note that the site is also serviced with on site municipal water and local fire hydrants.

The domestic demand for this site would be as follows:

Residential Component

24 Units (Proposed)

2.75 persons per unit (average)

The average daily flow the average daily flow is based upon 450 litres per person per day

$450 \times 24 \times 2.75 = 29,700$ litres per day

$= 0.344$ litres per second

Total Average Design Flow $= 0.344$ litres per second.

Summary of Demands

24 Unit Development	Average Daily Flow Rate (Litres per second)	Peak Daily Flow Rate (Litres per second)
	0.344	0.774

As noted in the Norfolk County design criteria, a peaking factor of 2.25 was used for the calculation of the peak flow rate.

The proposed fire protection to this development will be handled by the existing fire hydrants to be located on the property.

Utilizing the requirements of the Fire Underwriters Survey 2020, the following outlines the water demand for the overall building area of the subject building.

The analysis was carried out on a typical building on this site to determine the maximum fire demand for each of the buildings on the site.

This largest fire compartment would be in the order of 71.1 sq.m. (2 story) being a semi-detached unit within the plan within the development. In accordance with the Fire Underwriters Survey 2020 consideration of the floor above results in the building area being increased to 142.2 sq.m. Therefore, in this case, a building area of 142.2 sq.m. is being considered in the calculations.

Utilizing the Fire Underwriters Survey Document, our estimation of the required fire demand is as follows:

Oct 2023 (Updated)

$$\text{Estimate of Fire Flow Required} = 220 * C * \text{SQRT}(A)$$

$$\begin{aligned} \text{Where } C &= \text{Coefficient related to type of Construction} \\ &= \text{Ordinary Construction} \\ &= 1.5 \end{aligned}$$

$$A = \text{Total Area of the Building (As outlined above) } 142.2 \text{sq. m.}$$

$$\begin{aligned} &= 220 \times 1.5 * \text{SQRT}(142.2) \\ &= 3,935.2 \text{ litres per m} \\ &\text{Rounded} \\ &= 4,000 \text{ litres per min} \end{aligned}$$

Modifications

$$\begin{aligned} \text{Occupancy} &= \text{Normal Hazard Occupancy} \\ &= -15\% \\ &= -600 \text{ litres per min} \end{aligned}$$

$$\text{Net Fire Demand} = 3,400 \text{ litres per min}$$

$$\begin{aligned} \text{Further Modifications} &= \text{Automatic Sprinkler System} \\ &= 0\% \\ &\text{No Reduction} \end{aligned}$$

Spatial Exposure (Estimated)

North Street	+ 0%
East 2.4 m +/-	+ 25%
West 2.4 m +/-	+ 25%
South > 30.0 m	+ 0%
Total	+ 50%
	Increase
	1,700 litres per min

$$\begin{aligned} \text{Total Fire Demand} &= 5,100 \text{ litres per min} \\ &\text{Or } 85 \text{ litres per sec.} \end{aligned}$$

STORM SEWERS & APPURTENANCES

Storm Sewers / Storm water Management

The site is intended to be serviced through the municipal drain located adjacent to the site. The site is intended to provide its own stormwater management controls on the property to reduce the impact of the site on the existing drainage system. The overflow from this site will be directed into the Podolak Drain that is located west of the property. Infiltration techniques are being proposed on this site to reduce the discharge from the property. In this case, each lot will be equipped with a soak away pit to reduce the runoff from each lot and therefore, reduce the overall discharge from the site.

Pre-development Condition

The site presently drains in a south westly direction towards the municipal drain that traverses the property (through Units 1, 2, and 3 of the proposed development). The site is with municipal storm sewers which are to be designed to handle the 5-year storm event. The overall stormwater management system is to be consistent with the current policies of Norfolk County whereas the proposed development is required to reduce the runoff in the post development flows to below the pre-development rates for all storm events up to and including the 100-year event.

The following table outlines the pre-development runoff for a typical lot (447.45 sq.m.) with 0% impervious surfaces

Pre-Development Runoff Results

Design Storm	Pre-Development Runoff Rate (cms)
2-year storm	0.000
5-year storm	0.003
10-year storm	0.005
25-year storm	0.008
50-year storm	0.011
100-year storm	0.015

The flows outlined above were calculated utilizing the MIDUSS Stormwater Simulation Program (Ver 2). The computer results are included within the Appendix 'D' of this report.

Post-Development Condition

With the development of the lots, and the associated driveways, an increase in the runoff will occur on this site. The proposal is to construct residential units on the sites that consist of the following

Lot Size	=	15.0m x 29.83m
	=	447.45 sq.m.
Unit Size	=	9.14m x 7.32m plus garage
	=	71.1 sq.m.
Driveway	=	3.0m x 6.0m
	=	18 sq.m.
Total Impervious Area	=	89.1 sq.m.

Percentage of Impervious Surfaces

=	19.9%
=	20.0% utilized

Post-Development Runoff Results

Design Storm	Pre-Development Runoff Rate (cms)	Post Development Runoff Rate (cms)	
		W/O SWM	W/Swm
2-year storm	0.000	0.002	0.000
5-year storm	0.003	0.004	0.001
10-year storm	0.005	0.007	0.002
25-year storm	0.008	0.010	0.006
50-year storm	0.011	0.013	0.009
100-year storm	0.015	0.016	0.001

These results were achieved with the inclusion of soak-away pits on the sites to infiltrate flows from the roof water. In this case, we are proposing a 4.6m x 4.6m x 1.2m soak-away pit that will reduce the runoff from the individual sites to below the pre-development runoff condition rates for all storm events from the 2yr through to the 100-year storm events. The flows were calculated utilizing the MIDUSS Stormwater Simulation Program (Ver 2). The computer results are included within the Appendix 'D' of this report.

GRADING

Road grades will be established for the proposed development and are illustrated on the plans appended to the report. Minimum (0.50%) and maximum (6.0%) grades have been used in accordance with City of Welland design criteria.

UTILITIES

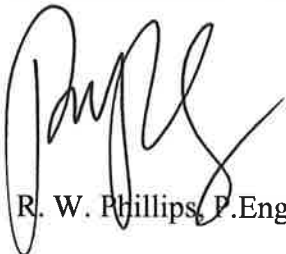
Coordination of these services will be required with Union Gas, the hydro utility, Bell, and the local cable tv provider (if available)

CONCLUSIONS

The preceding sections of this report outline the servicing and grading requirements for the proposed residential development on this site. Based on the work completed to date, it may be concluded that the proposed development may be developed with full municipal services.

Report Prepared By:

J.H. COHOON ENGINEERING LIMITED


R. W. Phillips, P.Eng.

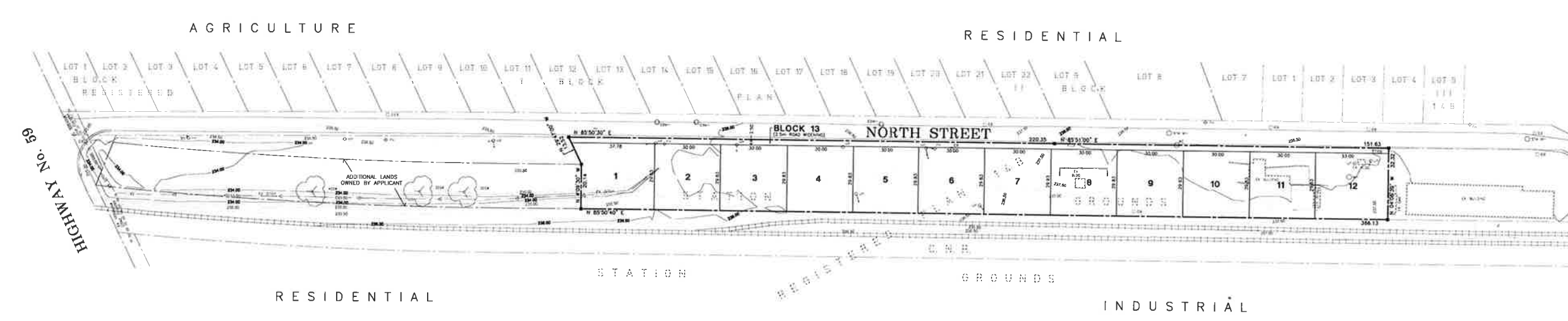


Appendix 'A'
Proposed Draft Plan of Subdivision – Job 13471 – DP1
As prepared by J H Cohoon Engineering Limited



DRAFT PLAN OF SUBDIVISION

PART OF STATION GROUNDS
REGISTERED PLAN 148
(VILLAGE OF COURTLAND)
GEOGRAPHIC TOWNSHIP OF MIDDLETON
MUNICIPALITY OF THE
TOWNSHIP OF NORFOLK
REGIONAL MUNICIPALITY OF
HALDIMAND-NORFOLK



SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: 11/16/22
JIM HUSTON, O.L.S.
JIM HUSTON AND SONS LTD.

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE J.H. COHOON ENGINEERING LTD. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE CORPORATION OF THE CITY OF BRANTFORD FOR APPROVAL.

DATE: 11/16/22
J.H. COHOON LTD.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

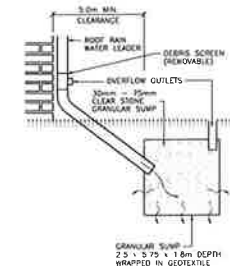
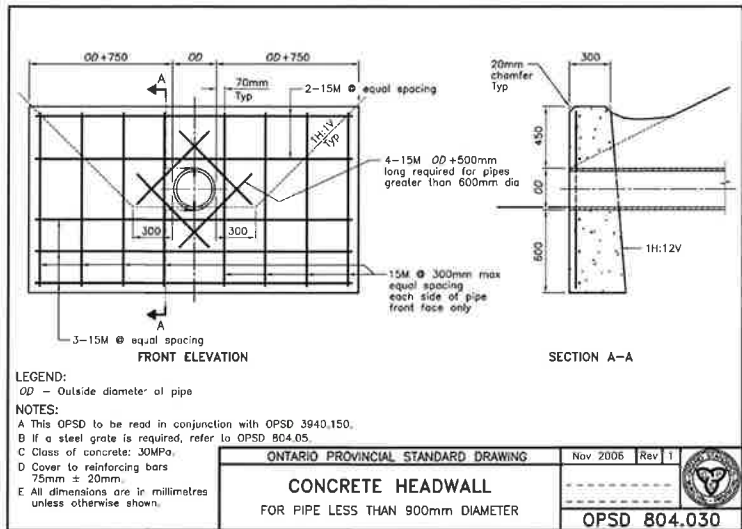
A - SEE PLAN
B - SEE PLAN
C - SEE PLAN
D - SEE PLAN
E - SEE PLAN
F - SEE PLAN
G - SEE PLAN
H - MUNICIPAL WATER
I - SALT SAND
J - SEE PLAN
K - INDIVIDUAL SEPTIC BEDS
L - NONE

AREA SCHEDULE

LOTS (1-12) = 1,084.14
BLOCK 13 (ROAD WIDENING) = 0.093
TOTAL = 1,187.23

	J.H. COHOON ENGINEERING LIMITED CONSULTING ENGINEERS		DESIGN R.W.P.	13471
			DATE: NOV 16/22	DP1

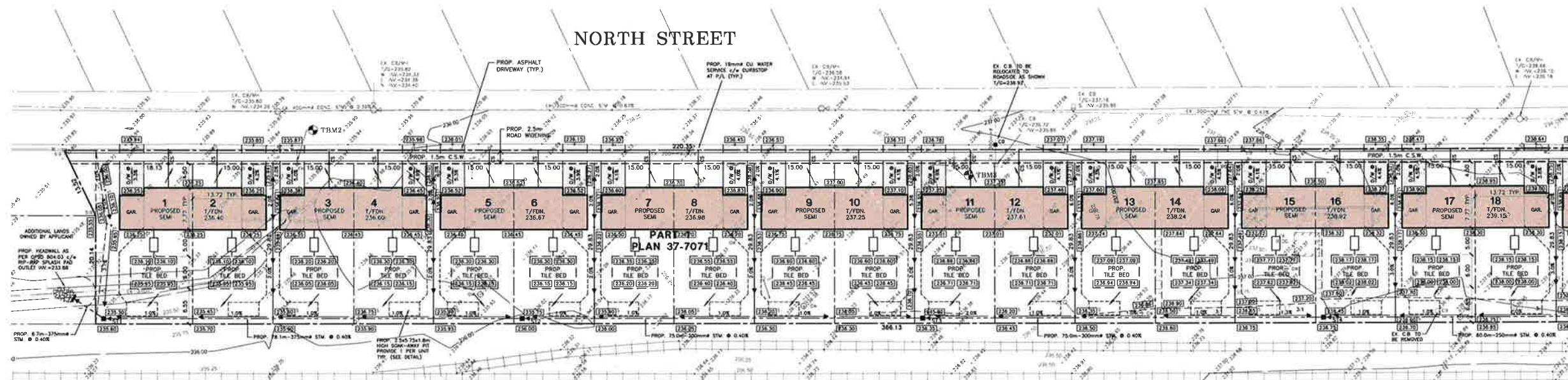
Appendix 'B'
**Proposed Residential Development Engineering Plans as prepared by J H Cohoon
Engineering Limited**



TYPICAL SOAK-AWAY
PIT DETAIL
REPRODUCED FROM M.O.C.E. 2003 S.W.M. GUIDELINES



STORM SYSTEM				
INV. NO.	DESCRIPTION	E/R	INVERTS	
ST1	0.6x0.6x1.52m P/C CB	235.30	W 233.91	E 233.93
ST2	0.6x0.6x1.67m P/C CB	235.75	W 234.24	E 234.26
ST3	0.6x0.6x1.52m P/C CB	235.90	W 234.58	E 234.58
ST4	0.6x0.6x1.67m P/C CB	236.45	W 234.88	E 234.90
ST5	0.6x0.6x1.67m P/C CB	236.70	W 235.14	E 235.16
ST6	0.6x0.6x1.52m P/C CB	236.60	W 235.34	



SEE DWG. 13471-1B

LEGEND:
EXISTING ELEVATIONS
PROPOSED ELEVATIONS
PROPOSED SHALE ELEVATIONS
PROPOSED SHALE
GENERAL DRAINAGE

NOTES:
1. ALL ELEVATIONS SHOWN ARE METRIC.
2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (i.e. SIDEYARDS, SETBACKS, REARYARDS ETC.)

T.B.M. No. 1 ELEV. = 235.90m (GEO)
TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN

T.B.M. No. 2 ELEV. = 236.75m (GEO)
TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN

T.B.M. No. 3 ELEV. = 237.78m (GEO)
TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN

2	UPDATED BUILDING FOOTPRINTS	10/10/23	K.P.B.
1	FOR SUBMISSION	09/12/23	K.P.B.
NO.	REVISED	DATE	BY

J.H. COHOON
ENGINEERING
LIMITED
CONSULTING ENGINEERS
440 HARDY ROAD, UNIT #1, BRANTFORD - ONTARIO, N3T 5L8
TEL (519) 753-2656 FAX (519) 753-4263 www.cohooneng.com

PROJCT:
PROPOSED
RESIDENTIAL DEVELOPMENT
NORTH STREET
(VILLAGE OF COURTLAND)
NORFOLK COUNTY

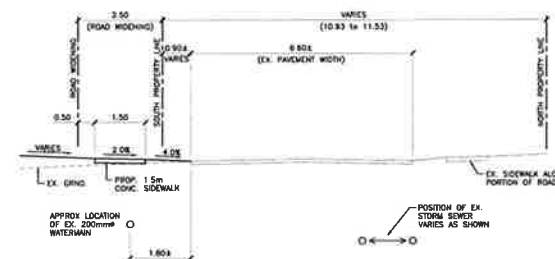
CLIENT:
KRIS CARSON

SITE DEVELOPMENT
PLAN

DESIGN	R.W.P.	SCALE	1:400
DRAWN	K.P.B.	DATE	
CHECKED	R.W.P.		13471
SHEET	1 of 2		
DATE	OCT. 7/22		13471-1A




18/10/23
R.W.P. J.P.B.
PROF. OF ONTARIO


**TYPICAL SOAK-AWAY
PIT DETAIL**
REPRODUCED FROM M.O.E. 2003 SWM GUIDELINES



NORTH STREET X-SECTION



LEGEND:			
  		EXISTING ELEVATIONS PROPOSED ELEVATIONS PROPOSED SWALE ELEVATIONS PROPOSED SWALE GENERAL DRAINAGE	
NOTES: 1. ALL ELEVATIONS SHOWN ARE METRIC. 2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (i.e. SIDEWAYS, SETBACKS, REARYARDS ETC.)			
T.B.M. No. 3 ELEV. = 237.78m (GEO) TOP NUT OF FIRE HYDRANT ON THE SOUTH SIDE OF NORTH STREET AS SHOWN			
T.B.M. No. 4 ELEV. = 239.69m (GEO) TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF NORTH STREET AS SHOWN			
T.B.M. No. 5 ELEV. = 239.70m (GEO) TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF NORTH STREET AS SHOWN			
T.B.M. No. 6 ELEV. = 239.22m (GEO) TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF NORTH STREET AS SHOWN			
NO.	REVISION	DATE (MM/DD/YY)	BY
2	UPDATED BUILDING FOOTPRINTS	10/10/23	K.P.B
1	FOR SUBMISSION	08/12/23	K.P.B



**J.H. COHOON
ENGINEERING
LIMITED**
CONSULTING ENGINEERS

440 HARDY ROAD, UNIT #1, BRANTFORD - ONTARIO, N3T 5L6
TEL. (519) 753-2858 FAX. (519) 753-4263 www.cchooneng.com

**PROPOSED
RESIDENTIAL DEVELOPMENT
NORTH STREET
(VILLAGE OF COURTLAND)
NORFOLK COUNTY**

CLIENT: KRIS CARSON

SITE DEVELOPMENT
PLAN

DESIGN	R.W.P.	SCALE	1:400
DRAWN:	K.P.B	13471	JOB No
CHECKED	R.W.P.		
SHEET:	2 of 2	DWG. No:	
DATE:	OCT. 7/22	13471-1B	

Appendix 'C'
Proposed Geotechnical Investigation
T-time and Infiltration Analysis
As prepared by Colestar Environmental

From: Darren Coleman <dcoleman@colestarenvironmental.com>
Sent: March 6, 2021 4:55 PM
To: Dave DiFrancesco
Cc: Paul Emerson
Subject: Preliminary P2ESA Findings, Septic Bed and Imported Fill - 19 North Street, Courtland, Ontario
Attachments: 0454-02 Figure.pdf

Hello Dave and Paul,

Preliminary P2ESA Findings (site plan attached)

- Soil stratigraphy consists of topsoil/sand and gravel over native silty sand resting atop clay. Silty sand is generally encountered at 0.6 to 2.5 ft bg and clay is present at 4 to 11 ft bg.
- **Groundwater is high**, measured at 0.47 to 0.84 m bg or 1.5 to 2.8 ft bg.
- Fuel impacts were noted in soil at TP11 at 1.5 to 4.5 ft bg. May exceed standards for petroleum constituents (BTEX/PHCs).
- Black fill was present at 0.5 to 2.5 ft bg at TP7. Fill included coal and burnt coal residuals (cinder, clinker, ash). May exceed standards for metals and polycyclic aromatic hydrocarbons (PAHs).
- Black fill was present at 1 to 2.5 ft bg at TP5. Fill included coal and burnt coal residuals (cinder, clinker, ash). May exceed standards for metals and PAHs.
- Will wait for lab test results on soil and groundwater samples to make call on soil and/or groundwater impacts (if any). Results expected near end of March 8 week.
- If impacts are identified will quantify wrt to clean-up costs.

Septic leaching bed sizing (per dwelling, preliminary)

Note:

1. high water table may complicate septic system leaching bed design;
2. high water table coupled with presence of drainage ditch at rear of property may pose a problem (i.e. septic discharge to drainage ditch?)
3. Sizing provided should be considered preliminary
4. System set-backs from property line and edge of dwelling are 10 ft (3 m) and 5 ft (1.5 m), respectively.

Assuming three bedroom dwelling, 2500 ft² in size, and 22 fixtures

Design Flow = $Q = 2100$ Litres/day

In the absence of percolation test data and based on native soil type (silty sand), assume $T = 16$ minutes/cm

Loading Rate = 10 L/m²/day for T = 1 to 20 min/cm

Adsorption Trench Length = $Q \times T / 200 = 2100 \times 16 / 200 = 168$ m (551 ft)

Filter Medium Base Area = $Q \times T / 850 = 2100 \times 16 / 850 = 39.5$ m² (425 ft²)

Loading Rate Area = $Q / LR = 2100 / 10 = 210$ m² (2260 ft²)

Imported Fill

If imported fill is required at site, will need to follow new excess soil management regulation (O.Reg. 406/19) and associated Rules for Soil Management publication. Requires environmental assessment of borrow site, soil sampling/testing and characterization report, soil tracking system between borrow property and site, among other items. Will also need to go through MECP notification process post January 1, 2022 before moving soil from borrow property to site – suspect this process will drive us all crazy with delays imposed by public servants). Cost of environmental is a function of the volume of material required – and can be pricy dependent on the volume of required. We can price this out once imported fill volume is known. You can avoid this regulation, if you use commercially supplied aggregate from a licensed gravel pit that provides a letter validating that the aggregate supplied is exempt from the Regulation. We would strongly suggest; that the aggregate used is not recycled (i.e. derived from concrete crushing, asphalt processing, etc.....) as this type of material can contain contaminants such as metals and PAHs above standards.

Best Regards,

Darren Coleman, P.Eng., QP
President
COLESTAR Environmental Inc.
178 Fincham Avenue
Markham, Ontario
L3P 4B3
Office: 905-554-4156
Cell: 647-938-2653
Fax: 905-554-4157

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Appendix 'D'
MIDUSS Computer Simulation Results
Pre and Post Development Results


```

"          MIDUSS Output ----->"
"          MIDUSS version                      *   Version 2.25  rev. 473"
"          MIDUSS created                      February-07-10"
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"          Output filename:                    pre2.out"
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"          Company                            "
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" 31          TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32          STORM Chicago storm"
"          1 Chicago storm"
"          529.711 Coefficient A"
"          4.501 Constant B"
"          0.745 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity                    69.337    mm/hr"
"          Total depth                          32.583    mm"
"          6 005hyd Hydrograph extension used in this file"
" 33          CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          0.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.045 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.000 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.000 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.045 0.000 0.045 hectare"
"          Time of concentration 45.880 2.790 45.880 minutes"
"          Time to Centroid 103.439 0.000 103.439 minutes"
"          Rainfall depth 32.583 32.583 32.583 mm"
"          Rainfall volume 14.66 0.00 14.66 c.m"
"          Rainfall losses 31.707 32.583 31.707 mm"
"          Runoff depth 0.876 0.000 0.876 mm"
"          Runoff volume 0.39 0.00 0.39 c.m"
"          Runoff coefficient 0.027 0.000 0.027 "

```

"	Maximum flow	0.000	0.000	0.000	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.000 0.000 0.000 0.000"				
" 38	START/RE-START TOTALS 101"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.000	hectare"	
"	Total % impervious		0.000"		
" 19	EXIT"				

```

"          MIDUSS Output ----->"
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"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32      STORM Chicago storm"
"          1 Chicago storm"
"          583.017 Coefficient A"
"          3.007 Constant B"
"          0.703 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity                    92.454 mm/hr"
"          Total depth                          44.904 mm"
"          6 005hyd Hydrograph extension used in this file"
" 33      CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          0.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.045 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.000 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.003 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.045 0.000 0.045 hectare"
"          Time of concentration 18.966 2.487 18.966 minutes"
"          Time to Centroid 88.497 89.474 88.497 minutes"
"          Rainfall depth 44.904 44.904 44.904 mm"
"          Rainfall volume 20.21 0.00 20.21 c.m"
"          Rainfall losses 36.956 2.000 36.956 mm"
"          Runoff depth 7.949 42.904 7.949 mm"
"          Runoff volume 3.58 0.00 3.58 c.m"
"          Runoff coefficient 0.177 0.000 0.177 "

```

"	Maximum flow	0.003	0.000	0.003	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.003 0.003 0.000 0.000"				
" 38	START/RE-START TOTALS 101"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area			0.045	hectare"
"	Total Impervious area			0.000	hectare"
"	Total % impervious			0.000"	
" 19	EXIT"				

```

"          MIDUSS Output ----->"
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"          10.000  Time Step"
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"          1500.000 Max. Hydrograph"
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"          1  Chicago storm"
"          670.324 Coefficient A"
"          3.007  Constant B"
"          0.698  Exponent C"
"          0.400  Fraction R"
"          180.000 Duration"
"          1.000  Time step multiplier"
"          Maximum intensity      107.682  mm/hr"
"          Total depth            52.991  mm"
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"          1  Equal length"
"          2  Horton equation"
"          101 No description"
"          0.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.045 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.000 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.005 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.045 0.000 0.045 hectare"
"          Time of concentration 15.703 2.340 15.703 minutes"
"          Time to Centroid 88.478 89.148 88.478 minutes"
"          Rainfall depth 52.991 52.991 52.991 mm"
"          Rainfall volume 23.85 0.00 23.85 c.m"
"          Rainfall losses 39.591 2.000 39.591 mm"
"          Runoff depth 13.400 50.991 13.401 mm"
"          Runoff volume 6.03 0.00 6.03 c.m"
"          Runoff coefficient 0.253 0.000 0.253 "

```

"	Maximum flow	0.005	0.000	0.005	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.005 0.005	0.000	0.000"		
" 38	START/RE-START TOTALS 101"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.000	hectare"	
"	Total % impervious		0.000"		
" 19	EXIT"				

```

"          MIDUSS Output ----->"
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"          Output filename:                    pre25.out"
"          Licensee name:                      Bob"
"          Company                            "
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" 31      TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32      STORM Chicago storm"
"          1 Chicago storm"
"          721.533 Coefficient A"
"          2.253 Constant B"
"          0.679 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity          127.011 mm/hr"
"          Total depth                63.151 mm"
"          6 005hyd Hydrograph extension used in this file"
" 33      CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          0.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.045 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.000 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.008 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.045 0.000 0.045 hectare"
"          Time of concentration 13.536 2.190 13.536 minutes"
"          Time to Centroid 89.497 88.972 89.497 minutes"
"          Rainfall depth 63.151 63.151 63.151 mm"
"          Rainfall volume 28.42 0.00 28.42 c.m"
"          Rainfall losses 42.588 2.000 42.588 mm"
"          Runoff depth 20.563 61.151 20.563 mm"
"          Runoff volume 9.25 0.00 9.25 c.m"
"          Runoff coefficient 0.326 0.000 0.326 "

```

"	Maximum flow	0.008	0.000	0.008	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.008 0.008 0.000 0.000"				
" 38	START/RE-START TOTALS 101"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area			0.045	hectare"
"	Total Impervious area			0.000	hectare"
"	Total % impervious			0.000"	
" 19	EXIT"				


```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25  rev. 473"
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"          Licensee name:                      Bob"
"          Company                              "
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31          TIME PARAMETERS"
"          10.000  Time Step"
"          180.000  Max. Storm length"
"          1500.000  Max. Hydrograph"
32          STORM Chicago storm"
"          1  Chicago storm"
"          766.038  Coefficient A"
"          1.898  Constant B"
"          0.668  Exponent C"
"          0.400  Fraction R"
"          180.000  Duration"
"          1.000  Time step multiplier"
"          Maximum intensity          141.545  mm/hr"
"          Total depth                71.090  mm"
33          6  005hyd  Hydrograph extension used in this file"
"          CATCHMENT 101"
"          2  Rectangular"
"          1  Equal length"
"          2  Horton equation"
"          101  No description"
"          0.000  % Impervious"
"          0.045  Total Area"
"          29.830  Flow length"
"          1.500  Overland Slope"
"          0.045  Pervious Area"
"          29.830  Pervious length"
"          1.500  Pervious slope"
"          0.000  Impervious Area"
"          29.830  Impervious length"
"          1.500  Impervious slope"
"          0.250  Pervious Manning 'n'"
"          35.000  Pervious Max.infiltration"
"          10.000  Pervious Min.infiltration"
"          0.500  Pervious Lag constant (hours)"
"          7.500  Pervious Depression storage"
"          0.015  Impervious Manning 'n'"
"          0.000  Impervious Max.infiltration"
"          0.000  Impervious Min.infiltration"
"          0.500  Impervious Lag constant (hours)"
"          2.000  Impervious Depression storage"
"          0.011  0.000  0.000  0.000 c.m/sec"
"          Catchment 101  Pervious  Impervious Total Area "
"          Surface Area  0.045  0.000  0.045  hectare"
"          Time of concentration  12.386  2.097  12.386  minutes"
"          Time to Centroid  90.608  88.885  90.608  minutes"
"          Rainfall depth  71.090  71.090  71.090  mm"
"          Rainfall volume  31.99  0.00  31.99  c.m"
"          Rainfall losses  44.299  2.000  44.299  mm"
"          Runoff depth  26.790  69.090  26.790  mm"
"          Runoff volume  12.06  0.00  12.06  c.m"
"          Runoff coefficient  0.377  0.000  0.377  "

```

"	Maximum flow	0.011	0.000	0.011	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.011 0.011 0.000 0.000"				
" 38	START/RE-START TOTALS 101"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area			0.045	hectare"
"	Total Impervious area			0.000	hectare"
"	Total % impervious			0.000"	
" 19	EXIT"				

```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25  rev. 473"
"          MIDUSS created                      February-07-10"
"          10 Units used:                      ie METRIC"
"          Job folder:                        C:\swm\MIDUSS\13471"
"          Output filename:                    pre100.out"
"          Licensee name:                      Bob"
"          Company                            "
"          Date & Time last used:              17/01/2023 at 11:53:43 AM"
" 31          TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32          STORM Chicago storm"
"          1 Chicago storm"
"          801.041 Coefficient A"
"          1.501 Constant B"
"          0.657 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity                    155.782    mm/hr"
"          Total depth                          78.830    mm"
"          6 005hyd Hydrograph extension used in this file"
" 33          CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          0.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.045 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.000 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.015 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.045 0.000 0.045 hectare"
"          Time of concentration 11.497 2.018 11.497 minutes"
"          Time to Centroid 92.027 88.849 92.027 minutes"
"          Rainfall depth 78.830 78.830 78.830 mm"
"          Rainfall volume 35.47 0.00 35.47 c.m"
"          Rainfall losses 45.408 2.000 45.408 mm"
"          Runoff depth 33.422 76.830 33.422 mm"
"          Runoff volume 15.04 0.00 15.04 c.m"
"          Runoff coefficient 0.424 0.000 0.424 "

```

"	Maximum flow	0.015	0.000	0.015	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.015 0.015	0.000	0.000"		
" 38	START/RE-START TOTALS 101"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.000	hectare"	
"	Total % impervious		0.000"		
" 19	EXIT"				

```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25  rev. 473"
"          MIDUSS created                      February-07-10"
"          10  Units used:                      ie METRIC"
"          Job folder:                        C:\swm\MIDUSS\13471"
"          Output filename:                    pst2.out"
"          Licensee name:                      Bob"
"          Company                            "
"          Date & Time last used:              17/01/2023 at 12:06:17 PM"
" 31      TIME PARAMETERS"
"          10.000  Time Step"
"          180.000  Max. Storm length"
"          1500.000  Max. Hydrograph"
" 32      STORM Chicago storm"
"          1  Chicago storm"
"          529.711  Coefficient A"
"          4.501  Constant B"
"          0.745  Exponent C"
"          0.400  Fraction R"
"          180.000  Duration"
"          1.000  Time step multiplier"
"          Maximum intensity                    69.337    mm/hr"
"          Total depth                        32.583    mm"
"          6  005hyd  Hydrograph extension used in this file"
" 33      CATCHMENT 101"
"          2  Rectangular"
"          1  Equal length"
"          2  Horton equation"
"          101  No description"
"          20.000  % Impervious"
"          0.045  Total Area"
"          29.830  Flow length"
"          1.500  Overland Slope"
"          0.036  Pervious Area"
"          29.830  Pervious length"
"          1.500  Pervious slope"
"          0.009  Impervious Area"
"          29.830  Impervious length"
"          1.500  Impervious slope"
"          0.250  Pervious Manning 'n'"
"          35.000  Pervious Max.infiltration"
"          10.000  Pervious Min.infiltration"
"          0.500  Pervious Lag constant (hours)"
"          7.500  Pervious Depression storage"
"          0.015  Impervious Manning 'n'"
"          0.000  Impervious Max.infiltration"
"          0.000  Impervious Min.infiltration"
"          0.500  Impervious Lag constant (hours)"
"          2.000  Impervious Depression storage"
"          0.002    0.000    0.000    0.000 c.m/sec"
"          Catchment 101      Pervious  Impervious Total Area "
"          Surface Area      0.036    0.009    0.045    hectare"
"          Time of concentration  45.880    2.790    7.221    minutes"
"          Time to Centroid    103.439    89.815    91.216    minutes"
"          Rainfall depth     32.583    32.583    32.583    mm"
"          Rainfall volume     11.73    2.93    14.66    c.m"
"          Rainfall losses     31.707    2.000    25.765    mm"
"          Runoff depth        0.876    30.583    6.818    mm"
"          Runoff volume       0.32    2.75    3.07    c.m"
"          Runoff coefficient   0.027    0.939    0.209    "

```

"	Maximum flow	0.000	0.002	0.002	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.002 0.002	0.000	0.000"		
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.002 0.004	0.000	0.000"		
" 56	DIVERSION"				
"	101 Node number"				
"	0.000 Overflow threshold"				
"	1.000 Required diverted fraction"				
"	0 Conduit type; 1=Pipe;2=Channel"				
"	Peak of diverted flow	0.004	c.m/sec"		
"	Volume of diverted flow	6.136	c.m"		
"	DIV00101.005hyd"				
"	Divert to Soakaway Pit 6.136 cu.m. (10.15 cu.m.)"				
"	0.002 0.004	0.000	0.000 c.m/sec"		
" 40	HYDROGRAPH Next link "				
"	5 Next link "				
"	0.002 0.000	0.000	0.000"		
" 38	START/RE-START TOTALS 0"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.009	hectare"	
"	Total % impervious		20.000"		
" 19	EXIT"				

```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25  rev. 473"
"          MIDUSS created                      February-07-10"
"          10 Units used:                      ie METRIC"
"          Job folder:                        C:\swm\MIDUSS\13471"
"          Output filename:                    pst5.out"
"          Licensee name:                      Bob"
"          Company                            "
"          Date & Time last used:              17/01/2023 at 12:04:37 PM"
31          TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
32          STORM Chicago storm"
"          1 Chicago storm"
"          583.017 Coefficient A"
"          3.007 Constant B"
"          0.703 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity                    92.454    mm/hr"
"          Total depth                        44.904    mm"
"          6 005hyd Hydrograph extension used in this file"
33          CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          20.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.036 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.009 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.004 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.036 0.009 0.045 hectare"
"          Time of concentration 18.966 2.487 9.501 minutes"
"          Time to Centroid 88.497 89.474 89.058 minutes"
"          Rainfall depth 44.904 44.904 44.904 mm"
"          Rainfall volume 16.17 4.04 20.21 c.m"
"          Rainfall losses 36.956 2.000 29.965 mm"
"          Runoff depth 7.949 42.904 14.940 mm"
"          Runoff volume 2.86 3.86 6.72 c.m"
"          Runoff coefficient 0.177 0.955 0.333 "

```

"	Maximum flow	0.002	0.002	0.004	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.004 0.004	0.000	0.000"		
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.004 0.009	0.000	0.000"		
" 56	DIVERSION"				
"	101 Node number"				
"	0.001 Overflow threshold"				
"	1.000 Required diverted fraction"				
"	0 Conduit type; 1=Pipe;2=Channel"				
"	Peak of diverted flow	0.008	c.m/sec"		
"	Volume of diverted flow	7.801	c.m"		
"	DIV00101.005hyd"				
"	Divert to Soakaway Pit 7.801 cu.m. (10.15 cu.m.)"				
"	0.004 0.009	0.001	0.000 c.m/sec"		
" 40	HYDROGRAPH Next link "				
"	5 Next link "				
"	0.004 0.001	0.001	0.000"		
" 38	START/RE-START TOTALS 0"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.009	hectare"	
"	Total % impervious		20.000"		
" 19	EXIT"				


```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25 rev. 473"
"          MIDUSS created                      February-07-10"
"          10 Units used:                      ie METRIC"
"          Job folder:                        C:\swm\MIDUSS\13471"
"          Output filename:                    pst10.out"
"          Licensee name:                      Bob"
"          Company                            "
"          Date & Time last used:              17/01/2023 at 12:03:04 PM"
" 31          TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32          STORM Chicago storm"
"          1 Chicago storm"
"          670.324 Coefficient A"
"          3.007 Constant B"
"          0.698 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity          107.682 mm/hr"
"          Total depth          52.991 mm"
"          6 005hyd Hydrograph extension used in this file"
" 33          CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          20.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.036 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.009 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.007 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.036 0.009 0.045 hectare"
"          Time of concentration 15.703 2.340 9.188 minutes"
"          Time to Centroid 88.478 89.148 88.804 minutes"
"          Rainfall depth 52.991 52.991 52.991 mm"
"          Rainfall volume 19.08 4.77 23.85 c.m"
"          Rainfall losses 39.591 2.000 32.073 mm"
"          Runoff depth 13.400 50.991 20.919 mm"
"          Runoff volume 4.82 4.59 9.41 c.m"
"          Runoff coefficient 0.253 0.962 0.395 "

```

"	Maximum flow	0.004	0.003	0.007	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.007 0.007	0.000	0.000"		
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.007 0.013	0.000	0.000"		
" 56	DIVERSION"				
"	101 Node number"				
"	0.002 Overflow threshold"				
"	1.000 Required diverted fraction"				
"	0 Conduit type; 1=Pipe;2=Channel"				
"	Peak of diverted flow	0.011	c.m/sec"		
"	Volume of diverted flow	9.772	c.m"		
"	DIV00101.005hyd"				
"	Divert to Soakaway Pit 9.772 cu.m. (10.15 cu.m.)"				
"	0.007 0.013	0.002	0.000 c.m/sec"		
" 40	HYDROGRAPH Next link "				
"	5 Next link "				
"	0.007 0.002	0.002	0.000"		
" 38	START/RE-START TOTALS 0"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.009	hectare"	
"	Total % impervious		20.000"		
" 19	EXIT"				

```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25  rev. 473"
"          MIDUSS created                      February-07-10"
"          10 Units used:                      ie METRIC"
"          Job folder:                        C:\swm\MIDUSS\13471"
"          Output filename:                    pst25.out"
"          Licensee name:                      Bob"
"          Company                            "
"          Date & Time last used:              17/01/2023 at 12:01:34 PM"
31          TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
32          STORM Chicago storm"
"          1 Chicago storm"
"          721.533 Coefficient A"
"          2.253 Constant B"
"          0.679 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity          127.011    mm/hr"
"          Total depth                63.151    mm"
"          6 005hyd Hydrograph extension used in this file"
33          CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          20.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.036 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.009 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.010    0.000    0.000    0.000 c.m/sec"
"          Catchment 101    Pervious    Impervious    Total Area "
"          Surface Area    0.036    0.009    0.045    hectare"
"          Time of concentration    13.536    2.190    8.698    minutes"
"          Time to Centroid    89.497    88.972    89.273    minutes"
"          Rainfall depth    63.151    63.151    63.151    mm"
"          Rainfall volume    22.73    5.68    28.42    c.m"
"          Rainfall losses    42.588    2.000    34.470    mm"
"          Runoff depth    20.563    61.151    28.681    mm"
"          Runoff volume    7.40    5.50    12.91    c.m"
"          Runoff coefficient    0.326    0.968    0.454    "

```

"	Maximum flow	0.007	0.003	0.010	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.010 0.010	0.000	0.000"		
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.010 0.020	0.000	0.000"		
" 56	DIVERSION"				
"	101 Node number"				
"	0.006 Overflow threshold"				
"	1.000 Required diverted fraction"				
"	0 Conduit type; 1=Pipe;2=Channel"				
"	Peak of diverted flow	0.014	c.m/sec"		
"	Volume of diverted flow	9.420	c.m"		
"	DIV00101.005hyd"				
"	Divert to Soakaway Pit 9.420 cu.m. (10.15 cu.m.)"				
"	0.010 0.020	0.006	0.000 c.m/sec"		
" 40	HYDROGRAPH Next link "				
"	5 Next link "				
"	0.010 0.006	0.006	0.000"		
" 38	START/RE-START TOTALS 0"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.009	hectare"	
"	Total % impervious		20.000"		
" 19	EXIT"				

```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25 rev. 473"
"          MIDUSS created                      February-07-10"
"          10 Units used:                      ie METRIC"
"          Job folder:                        C:\swm\MIDUSS\13471"
"          Output filename:                    pst50.out"
"          Licensee name:                      Bob"
"          Company                            "
"          Date & Time last used:              17/01/2023 at 11:58:46 AM"
31          TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
32          STORM Chicago storm"
"          1 Chicago storm"
"          766.038 Coefficient A"
"          1.898 Constant B"
"          0.668 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity          141.545 mm/hr"
"          Total depth          71.090 mm"
"          6 005hyd Hydrograph extension used in this file"
33          CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          20.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.036 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.009 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.013 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.036 0.009 0.045 hectare"
"          Time of concentration 12.386 2.097 8.353 minutes"
"          Time to Centroid 90.608 88.885 89.932 minutes"
"          Rainfall depth 71.090 71.090 71.090 mm"
"          Rainfall volume 25.59 6.40 31.99 c.m"
"          Rainfall losses 44.299 2.000 35.840 mm"
"          Runoff depth 26.790 69.090 35.250 mm"
"          Runoff volume 9.64 6.22 15.86 c.m"
"          Runoff coefficient 0.377 0.972 0.496 "

```

"		Maximum flow	0.009	0.004	0.013	c.m/sec"
" 40		HYDROGRAPH Add Runoff "				
"	4	Add Runoff "				
"		0.013 0.013	0.000	0.000"		
" 40		HYDROGRAPH Add Runoff "				
"	4	Add Runoff "				
"		0.013 0.025	0.000	0.000"		
" 32		STORM Chicago storm"				
"	1	Chicago storm"				
"	766.040	Coefficient A"				
"	1.898	Constant B"				
"	0.668	Exponent C"				
"	0.400	Fraction R"				
"	180.000	Duration"				
"	1.000	Time step multiplier"				
"		Maximum intensity	141.545	mm/hr"		
"		Total depth	71.090	mm"		
"	6	005hyd Hydrograph extension used in this file"				
" 56		DIVERSION"				
"	101	Node number"				
"	0.009	Overflow threshold"				
"	1.000	Required diverted fraction"				
"	0	Conduit type; 1=Pipe;2=Channel"				
"		Peak of diverted flow	0.016	c.m/sec"		
"		Volume of diverted flow	9.855	c.m"		
"		DIV00101.005hyd"				
"		Divert to Soakaway Pit 9.855 cu.m. (10.15 cu.m.)"				
"		0.013 0.025	0.009	0.000 c.m/sec"		
" 40		HYDROGRAPH Next link "				
"	5	Next link "				
"		0.013 0.009	0.009	0.000"		
" 38		START/RE-START TOTALS 0"				
"	3	Runoff Totals on EXIT"				
"		Total Catchment area		0.045	hectare"	
"		Total Impervious area		0.009	hectare"	
"		Total % impervious		20.000"		
" 19		EXIT"				

```

"          MIDUSS Output ----->"
"          MIDUSS version                      Version 2.25 rev. 473"
"          MIDUSS created                      February-07-10"
"          10 Units used:                      ie METRIC"
"          Job folder:                        C:\swm\MIDUSS\13471"
"          Output filename:                    pst100.out"
"          Licensee name:                      Bob"
"          Company                            "
"          Date & Time last used:              17/01/2023 at 11:55:02 AM"
" 31      TIME PARAMETERS"
"          10.000 Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32      STORM Chicago storm"
"          1 Chicago storm"
"          801.041 Coefficient A"
"          1.501 Constant B"
"          0.657 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity          155.782 mm/hr"
"          Total depth                78.830 mm"
"          6 005hyd Hydrograph extension used in this file"
" 33      CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          20.000 % Impervious"
"          0.045 Total Area"
"          29.830 Flow length"
"          1.500 Overland Slope"
"          0.036 Pervious Area"
"          29.830 Pervious length"
"          1.500 Pervious slope"
"          0.009 Impervious Area"
"          29.830 Impervious length"
"          1.500 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          10.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.016 0.000 0.000 0.000 c.m/sec"
"          Catchment 101 Pervious Impervious Total Area "
"          Surface Area 0.036 0.009 0.045 hectare"
"          Time of concentration 11.497 2.018 8.038 minutes"
"          Time to Centroid 92.027 88.849 90.867 minutes"
"          Rainfall depth 78.830 78.830 78.830 mm"
"          Rainfall volume 28.38 7.09 35.47 c.m"
"          Rainfall losses 45.408 2.000 36.726 mm"
"          Runoff depth 33.422 76.830 42.104 mm"
"          Runoff volume 12.03 6.91 18.95 c.m"
"          Runoff coefficient 0.424 0.975 0.534 "

```

"	Maximum flow	0.012	0.004	0.016	c.m/sec"
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.016 0.016	0.000	0.000"		
" 40	HYDROGRAPH Add Runoff "				
"	4 Add Runoff "				
"	0.016 0.032	0.000	0.000"		
" 56	DIVERSION"				
"	101 Node number"				
"	0.015 Overflow threshold"				
"	1.000 Required diverted fraction"				
"	0 Conduit type; 1=Pipe;2=Channel"				
"	Peak of diverted flow	0.017	c.m/sec"		
"	Volume of diverted flow	9.963	c.m"		
"	DIV00101.005hyd"				
"	Divert to Soakaway Pit 9.963 cu.m. (10.15 cu.m.)"				
"	0.016 0.032	0.015	0.000 c.m/sec"		
" 40	HYDROGRAPH Next link "				
"	5 Next link "				
"	0.016 0.015	0.015	0.000"		
" 38	START/RE-START TOTALS 0"				
"	3 Runoff Totals on EXIT"				
"	Total Catchment area		0.045	hectare"	
"	Total Impervious area		0.009	hectare"	
"	Total % impervious		20.000"		
" 19	EXIT"				

Appendix 'E'
Norfolk County Fire Shuttle Certification



Fire Underwriters Survey

A SERVICE TO INSURERS AND MUNICIPALITIES

c/o Opta Information Intelligence

May 15, 2023

RECOGNITION FOR FIRE INSURANCE GRADING RECEIVED

Norfolk County Fire Department

Superior Tanker Shuttle Service - Accredited

I am pleased to advise you that the above-mentioned fire protection district within the province of Ontario was recently registered in the fire insurance grading index as being accredited for the delivery of Superior Tanker Shuttle Service.

The requirements for this accreditation are stringent and verify that the fire protection district is capable of delivering the minimum accepted fire flows to detached dwellings throughout the fire protection district and within 8 kilometres by road of the responding fire station. This accreditation is an equivalency to the minimum requirements for hydrant protection as set out by the insurance industry and the Fire Underwriters Survey.

Fire Underwriters Survey has provided information on fire protection and risk levels to the insurance industry in Canada since 1883. Fire Underwriters Survey was previously operated under the auspices of the Insurers Advisory Organization, CGI; however, is now operated by Opta Information Intelligence.

Should you have any questions or concerns related to the Fire Underwriters Survey, the Superior Tanker Shuttle Service Accreditation process or any other related area, please contact the offices of Fire Underwriters Survey for further information.

Please note that this accreditation expires on May 13, 2028 and is valid for the following fire station:

- Simcoe - F.S. #1 (95 Culver St, Simcoe, ON N3Y 2V5)
- Port Dover - F.S. #2 (111 Nelson St E, Port Dover, ON N0A 1N0)
- Waterford - F.S. #3 (294 Main St S, Waterford, ON N0E 1Y0)
- Teeterville - F.S. #4 (186 Teeter St, Teeterville, ON N0E 1S0)
- Delhi - F.S. #5 (104 Argyle Ave, Delhi, ON N4B 1J3)
- Courtland - F.S. #6 (272 Main Street of Courtland, Courtland, ON N0J 1E0)
- Langton - F.S. #7 (18 Queen St, Langton, ON N0E 1G0)
- Fairground - F.S. #8 (722 Regional Rd 28, Clear Creek, ON N0E 1C0)
- Port Rowan - F.S. #9 (35 Erie Ave, Port Rowan, ON N0E 1M0)
- St. Williams - F.S. #10 (180 Regional Rd 16, St Williams, ON N0E 1P0)
- Vittoria - F.S. #11 (1375 Vittoria Rd, Vittoria, ON N0E 1W0)

Mark Radejewsky
Fire Protection Specialist
Fire Underwriters Survey



fire
underwriters
survey

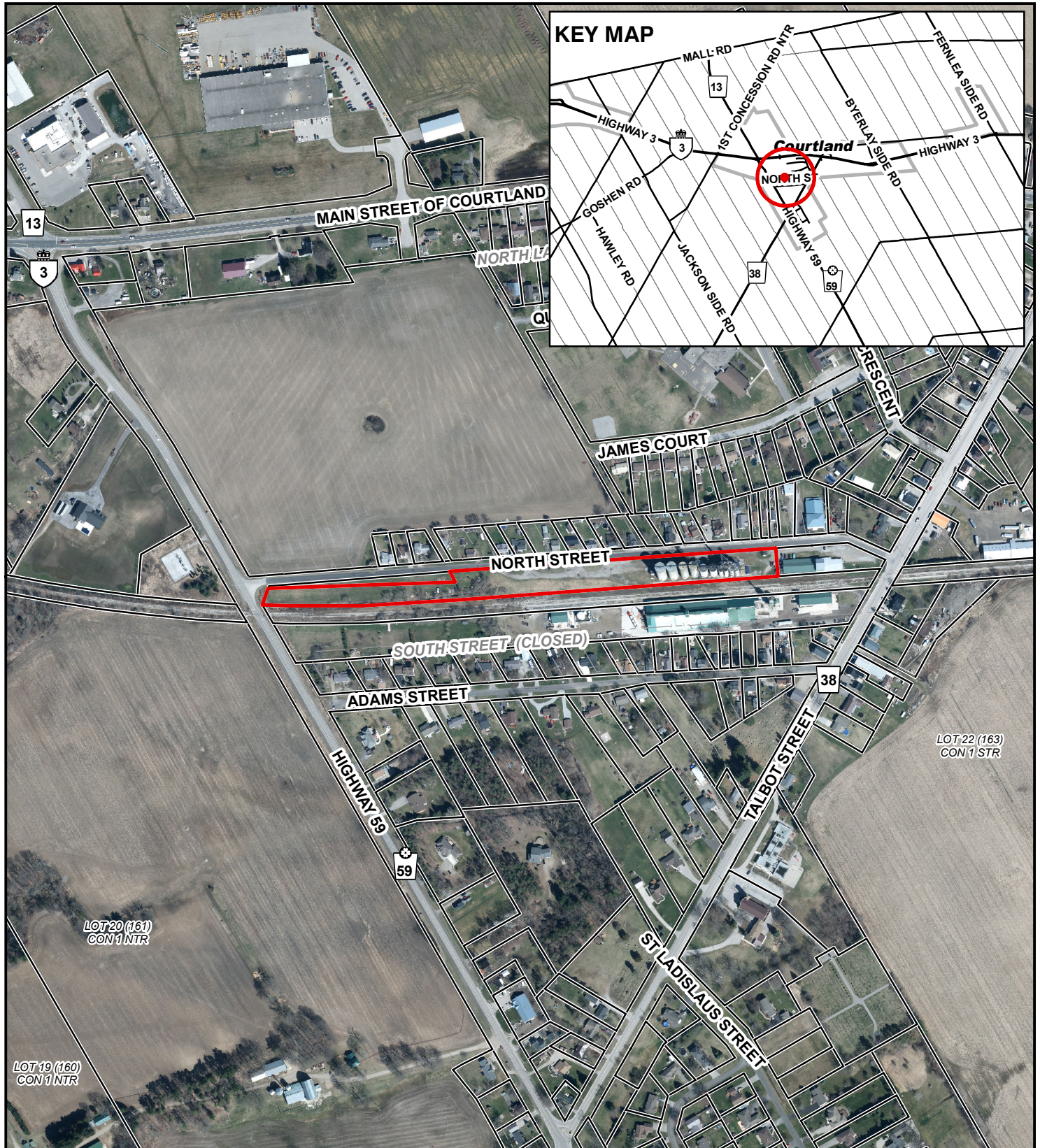
British Columbia:
800 565 5661
Ontario:
877 642 4468

Québec:
877 640 8352
Atlantic Canada:
877 634 8564

POINT GREEN opta
optaintel.ca
fireunderwriters.ca

CONTEXT MAP

Geographic Township of MIDDLETON

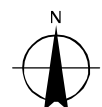


Legend

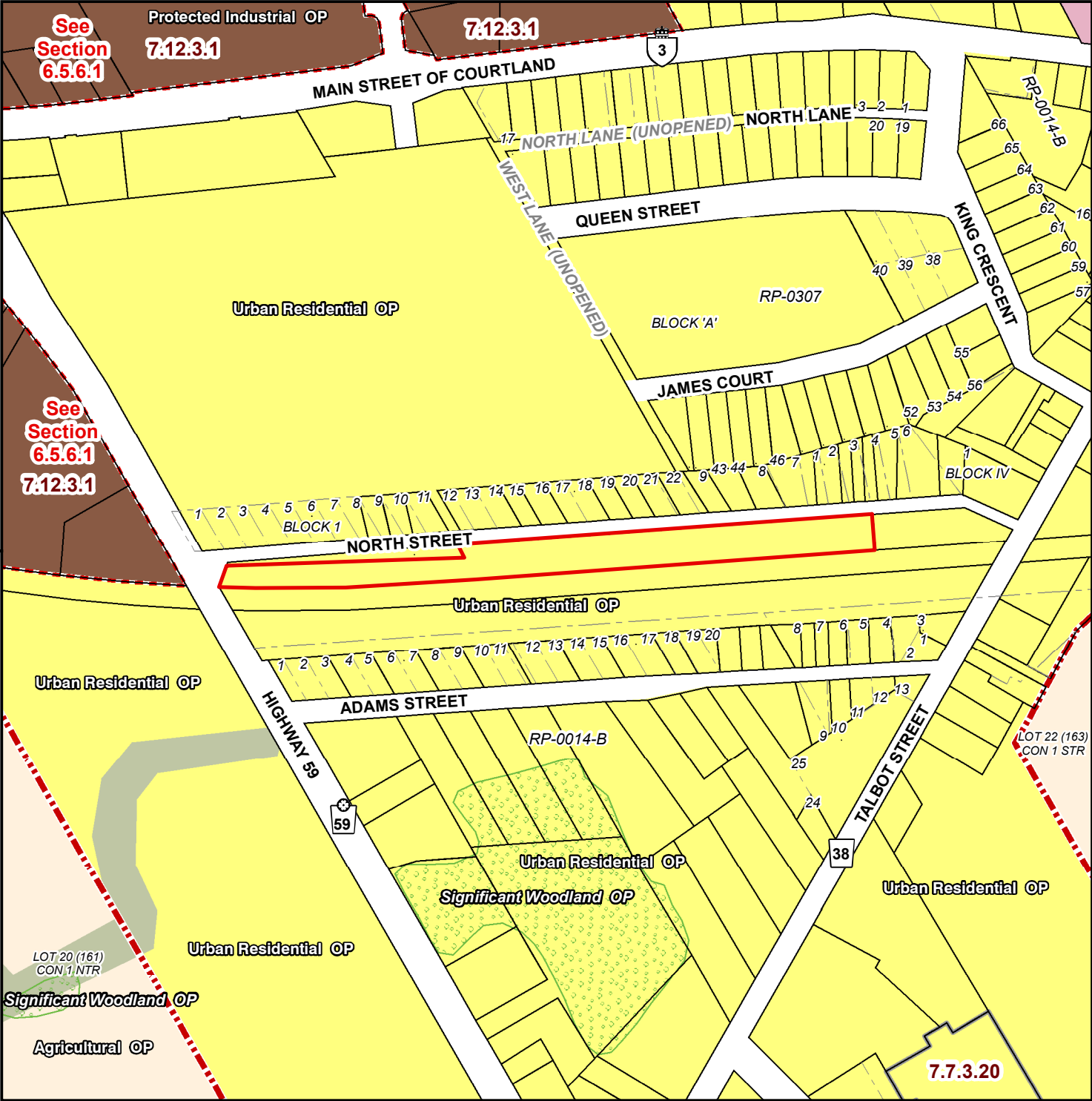
- Subject Lands
- Lands Owned

2020 Air Photo

11/28/2023



50 25 0 50 100 150 200 Meters



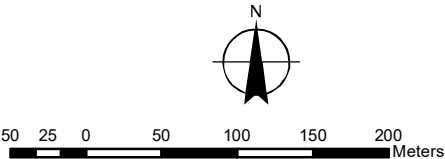
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- Subject Lands
- Lands Owned

Official Plan Designations

- Agricultural
- Hazard Lands
- Urban Residential
- Commercial
- Protected Industrial
- Special Policy Area
- Urban Area Boundary
- Significant Woodland

11/28/2023

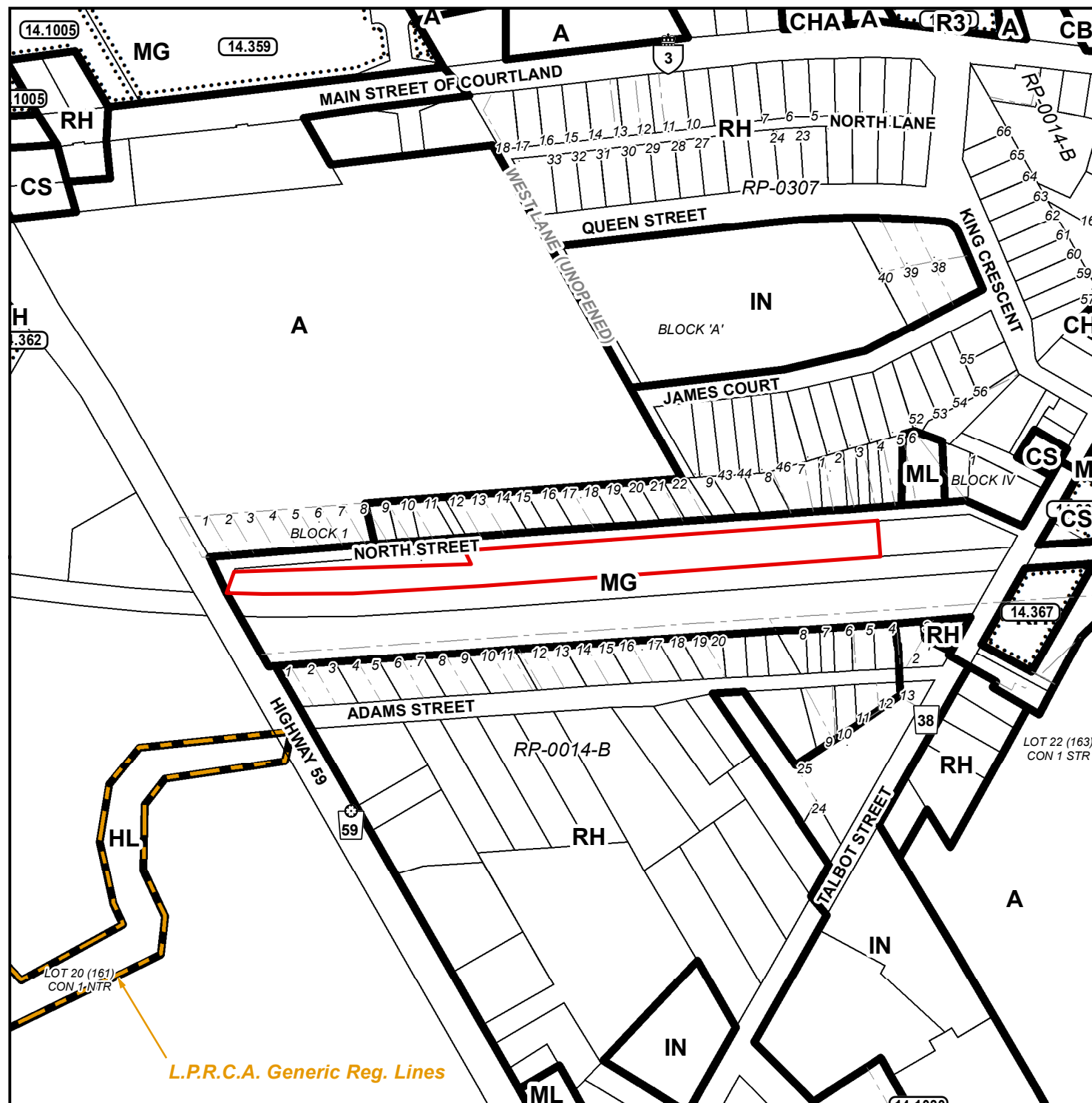


MAP C

ZNPL2023374

PROPOSED ZONING BY-LAW AMENDMENT MAP

Geographic Township of MIDDLETON



LEGEND

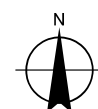
- Subject Lands
- Lands Owned
- LPRCA Generic RegLines

ZONING BY-LAW 1-Z-2014

11/29/2023

- (H) - Holding
- A - Agricultural Zone
- CBD - Central Business District Zone
- CHA - Hamlet Commercial Zone
- CS - Service Commercial Zone
- MG - General Industrial Zone
- RH - Hamlet Residential Zone
- HL - Hazard Land Zone
- ML - Light Industrial Zone
- IN - Neighbourhood Institutional Zone
- R3 - Residential R3 Zone

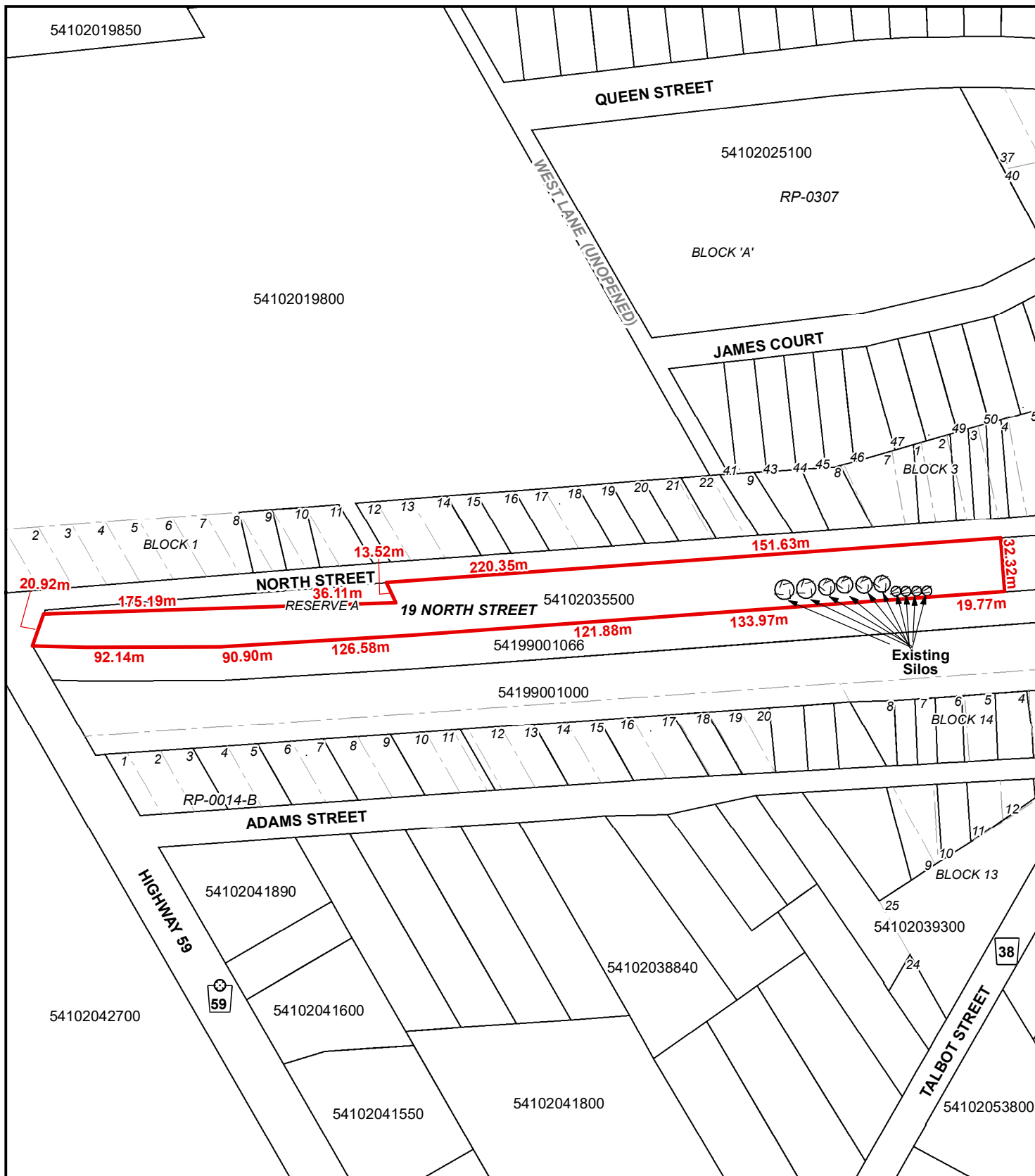
From: MG
To: RH with Special Provision



50 25 0 50 100 150 200 Meters

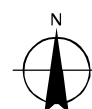
CONCEPTUAL PLAN

Geographic Township of MIDDLETON



Legend

- Subject Lands
- Lands Owned



11/28/2023

25 12.5 0 25 50 75 100 Meters