Planning Department Development Application Form

Complete Application

A complete development application consists of the following:

1. A properly completed and signed application form (signature must be original in planners file);
2. Supporting information adequate to illustrate your proposal as indicated in **Section H** of this application form (plans are required in paper copy and digital PDF format);
3. Written authorization from the registered owner of the subject lands where the applicant is not the owner as per Section N; and,
4. Cash, debit or cheque payable to Norfolk County in the amount set out in the user fees By-Law.

The above information is required to ensure that your application is given full consideration. An incomplete or improperly prepared application will not be accepted and may result in delays during the processing of the application. This application must be typed or printed in ink and completed in full.

Pre-Submission Consultation "Pre-consultation":

A pre-consultation meeting with staff is required for all applications; however, minor applications may be exempted depending on the nature of the proposal, with approval from the Director of Planning or delegate. 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 County and Agency staff to identify the required information and materials to be submitted with the application in order for it to be considered complete. The applicant has the opportunity to make revisions to the application prior to submission, without the additional costs of recirculation fees. It may be necessary to seek the assistance of independent professional help (for example, a planning consultant or engineer) for complex applications. If a pre-consultation meeting has been held to discuss your development, please **include a copy of the Pre-consultation minutes with your application** as part of the submission package. It should be noted **that pre-consultation minutes are valid for one year after the meeting date**.

Development Application Process

Once an application has been deemed complete by a planner, it will be circulated to public agencies and County departments for review and comments. Notice of the application is also provided to adjacent land owners. The comments received assist the planner with the review and recommendation/approval of your application. The time involved in processing an application varies depending upon its complexity and its

acceptability to the other agencies and is subject to statutory *Planning Act* decision timeframes.

An additional fee will be required if a review by the Long Point Region Conservation Authority or by the Grand River Conservation Authority is deemed necessary by planning staff and/or by the Authority. A separate cheque payable to the Long Point Region Conservation Authority or the Grand River Conservation Authority is required in accordance with their fee schedule at the same time your application is submitted.

Additional studies required as part of the complete application shall be at the sole expense of the applicant. It should also be noted that in some instances peer reviews may be necessary to review particular studies and that the cost shall be at the expense of the applicant. The company to complete the peer review shall be selected by the County.

If the application is withdrawn prior to the circulation to commenting agencies, the entire original fee will be refunded. If withdrawn after the circulation to agencies, half the original fee will be refunded. If your drawings are required to be recirculated there will be an additional fee. Also, please note that if your engineering drawings require more than three reviews due to revisions by the owner or failure to revise your engineering drawings as requested, an additional fee will be charged. No refund is available after the public meeting and/or after approval of application.

Notification Sign Requirements

For the purpose of public notification and in order for staff to locate your lands for appropriate applications (zoning, subdivision, condominium or official plan) you will be given 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, not on a tree;
3. Notify the Planner when the sign is in place in order to avoid processing delays; and
4. Maintain the sign until the development application is finalized and thereafter removed.

Contact Us

For additional information or assistance in 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 end result of this application (for example: a special zoning provision on the subject lands to include additional use(s), changing the zone and/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 _____

It is the responsibility of the owner or applicant to notify the planner of any changes in ownership within 30 days of such a change.

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 _____

Please specify to whom all communications should be sent. Unless otherwise directed, all correspondence and notices in respect of this application will be forwarded 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 are to 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 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, m^2 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
   - ☐ Municipal piped water
   - ☐ Communal wells
   - ☐ Individual wells
   - ☐ Other (describe below)

   _____

   Sewage Treatment
   - ☐ Municipal sewers
   - ☐ Communal system
   - ☐ Septic tank and tile bed in good working order
   - ☐ Other (describe below)

   _____

   Storm Drainage
   - ☐ Storm sewers
   - ☐ Open ditches
   - ☐ Other (describe below)

   _____

2. Existing or proposed access to subject lands:
   - ☐ Municipal road
   - ☐ Provincial highway
   - ☐ Unopened road
   - ☐ 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.
   _____
   _____
   _____
   _____

H. Supporting Material to be submitted by Applicant

In order for your application to be considered complete, **folded** hard copies (number of paper copies as directed by the planner) and an **electronic version (PDF) of the properly named site plan drawings, additional plans, studies and reports** will be required, including but not limited to the following details:

1. Concept/Layout Plan
2. All measurements in metric
3. Key map
4. Scale, legend and north arrow
5. Legal description and municipal address
6. Development name
7. Drawing title, number, original date and revision dates
8. Owner's name, address and telephone number
9. Engineer's name, address and telephone number
10. Professional engineer's stamp
11. Existing and proposed easements and right of ways
12. Zoning compliance table – required versus proposed
13. Parking space totals – required and proposed
14. All entrances to parking areas marked with directional arrows
15. Loading spaces, facilities and routes (for commercial developments)
16. All dimensions of the subject lands
17. Dimensions and setbacks of all buildings and structures
18. Location and setbacks of septic system and well from all existing and proposed lot lines, and all existing and proposed structures
19. Gross, ground and useable floor area
20. Lot coverage
21. Floor area ratio
22. Building entrances, building type, height, grades and extent of overhangs
23. Names, dimensions and location of adjacent streets including daylighting triangles
24. Driveways, curbs, drop curbs, pavement markings, widths, radii and traffic directional signs
25. All exterior stairways and ramps with dimensions and setbacks
26. Retaining walls including materials proposed
27. Fire access and routes
28. Location, dimensions and number of parking spaces (including visitor and accessible) and drive aisles
29. Location of mechanical room, and other building services (e.g. A/C, HRV)
30. Refuse disposal and storage areas including any related screening (if indoors, need notation on site plan)
31. Winter snow storage location

32. Landscape areas with dimensions
33. Natural features, watercourses and trees
34. Fire hydrants and utilities location
35. Fencing, screening and buffering – size, type and location
36. All hard surface materials
37. Light standards and wall mounted lights (plus a note on the site plan that all outdoor lighting is to be dark sky compliant)
38. Business signs (make sure they are not in sight lines)
39. Sidewalks and walkways with dimensions
40. Pedestrian access routes into site and around site
41. Bicycle parking
42. Architectural elevations of all building sides
43. All other requirements as per the pre-consultation meeting

In addition, the following additional plans, studies and reports, including but not limited to, **may** also be required as part of the complete application submission:

☐ Zoning Deficiency Form

☐ On-Site Sewage Disposal System Evaluation Form (to verify location and condition)

☐ Architectural Plan

☐ Buildings Elevation Plan

☐ Cut and Fill Plan

☐ Erosion and Sediment Control Plan

☐ Grading and Drainage Control Plan (around perimeter and within site) (existing and proposed)

☐ Landscape Plan

☐ Photometric (Lighting) Plan

☐ Plan and Profile Drawings

☐ Site Servicing Plan

☐ Storm water Management Plan

☐ Street Sign and Traffic Plan

☐ Street Tree Planting Plan

☐ Tree Preservation Plan

☐ Archaeological Assessment

☐ Environmental Impact Study

☐ 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 Ministry of Environment and Climate Change, Ministry of Transportation or 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 approval for site plan, 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 for the registration of all transfer(s) of land to the County, and/or transfer(s) of 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.

Lloyd Wood — Nov 2 2022

Owner/Applicant Signature — 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 _____ am/are the registered owner(s) of the lands that is the subject of this application.

I/We authorize _____ 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.

Lloyd Wood — Nov 2 2022

Owner — Date

_____ _____

Owner — Date

N. Declaration

I, MICHAEL SULLIVAN of THOROLD

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:

THOROLD

Owner/Applicant Signature

In Niagara

This 15th day of November

A.D., 2022

CAROLE IDA SULLIVAN
a Commissioner, etc., Province of Ontario,
for LandPro Planning Solutions Inc.,
and limited to process serving only.
Expires July 17, 2024.

A Commissioner, etc.

PLAN OF SURVEY

OF PART OF

LOT 11
CONCESSION 8

IN THE GEOGRAPHIC

TOWNSHIP OF WINDHAM

IN

NORFOLK COUNTY

SCALE: 1 : 1000

10 0 40 METRES

JEWITT AND DIXON LTD.

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATED ______________

____
R. C. DIXON
ONTARIO LAND SURVEYOR

PLAN 37R-________

RECEIVED AND DEPOSITED

DATED ______________

____
REPRESENTATIVE FOR THE LAND REGISTRAR FOR THE LAND TITLES DIVISION OF NORFOLK (No. 37)

SCHEDULE

PART	PART LOT	CONCESSION	PIN No.	AREA (sq.m)
1	PART OF LOT 11	CONCESSION 8	PART OF PIN 50185–0271 (LT)	50715.321 sq.m
2	PART OF LOT 11	CONCESSION 8	PART OF PIN 50185–0271 (LT)	2081.767 sq.m
3	PART OF LOT 11	CONCESSION 8	PART OF PIN 50185–0271 (LT)	46.582 sq.m
4	PART OF LOT 11	CONCESSION 8	PART OF PIN 50185–0271 (LT)	708.283 sq.m

PARTS 1, 2, 3 & 4 COMPRISE PART OF PIN 50185–0271 (LT)
PARTS 2, 3 & 4 ARE SUBJECT TO AN EASEMENT AS IN INSTRUMENT No. NK129967

NOTE:

BEARINGS ARE ASTRONOMIC AND ARE REFFERED TO THE SOUTHERLY LIMIT OF THE RAILWAY LANDS AS SHOWN ON PLAN 37R–10119, HAVING A BEARING OF N79°16'00"E, AND CAN BE CONVERTED TO GRID BY APPLYING A ROTATION OF 0°17'17" COUNTER CLOCKWISE.
DISTANCES AND COORDINATES ARE METRIC GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999693933 THEN DIVIDING BY 0.3048 TO CONVERT TO IMPERIAL.
RESULTANT BEARINGS FROM COORDINATE TABLE ARE UTM GRID, DERIVED FROM SIMULTANEOUS GPS OBSERVATIONS ON MONUMENT A TO B, HAVING A BEARING OF N78°50'58"E, UTM ZONE 17, (81° WEST LONGITUDE) NAD83 (CSRS) (2010)

OBSERVED REFERENCE POINTS (ORPs): DERIVED FROM GPS OBSERVATIONS USING THE CAN–NET NETWORK, UTM ZONE 17 (81° WEST LONGITUDE) NAD83 (CSRS) (2010) COORDINATES ARE TO A RURAL ACCURACY AS PER SEC. 14 (2) OF O.REG. 216/10

POINT ID	NORTHING	EASTING
ORP A	4751261.824	547005.185
ORP B	4751377.458	547591.629

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE–ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT, AND THE LAND TITLES ACT, AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE

DATED:

R. C. DIXON
ONTARIO LAND SURVEYOR

LEGEND

2.5cm X 2.5cm X 1.2m STANDARD IRON BARS SHOWN SIB
1.6cm X 1.6cm X 0.6m IRON BARS SHOWN IB
1.6cm ROUND X 0.6m IRON BARS SHOWN IB Ø
LOT LINES SHOWN
DEED LINES SHOWN
FENCE LINES SHOWN
OVERHEAD HYDROLINE SHOWN
ROAD LINES SHOWN
FOUND IRON BARS SHOWN — PLANTED IRON BARS SHOWN

JEWITT AND DIXON LTD.	SHOWN	(700)
D. J. RAITHBY, O.L.S.	SHOWN	(1684)
W. C. MCDOWELL, O.L.S.	SHOWN	(689)
J. E. WHITE, O.L.S.	SHOWN	(1477)
J. B. DODD, O.L.S.	SHOWN	(996)
WITNESS MONUMENT	SHOWN	(WIT)
ORIGIN UNKNOWN	SHOWN	(OU)
CHAIN LINK FENCE	SHOWN	CLF
HYDRO POLE	SHOWN	
HYDRO POLE GUY WIRE	SHOWN	

PLAN 37R–10119	SHOWN	(P1)
REGISTERED PLAN 800 (FILE P.557)	SHOWN	(P2)
PLAN 37R–1552	SHOWN	(P3)
PLAN 37R–8395	SHOWN	(P4)
PLAN 37R–11292	SHOWN	(P5)
PLAN 37R–7155	SHOWN	(P6)
PLAN 37R–11292	SHOWN	(P7)
NORFOLK STANDARD CONDOMINIUM PLAN 42	SHOWN	(P8)
PLAN 37R–7988	SHOWN	(P9)
REGISTERED PLAN	SHOWN	R.P.

NOTE: THE FOLLOWING APPLY UNLESS OTHERWISE NOTED: ALL BUILDING TIES ARE PERPENDICULAR TO PROPERTY LINES. PROPERTY LINES ARE UNFENCED. FENCES ARE ON LINE. ALL HEDGE, BUSH AND TREE DIMENSIONS ARE TO CENTRELINE.

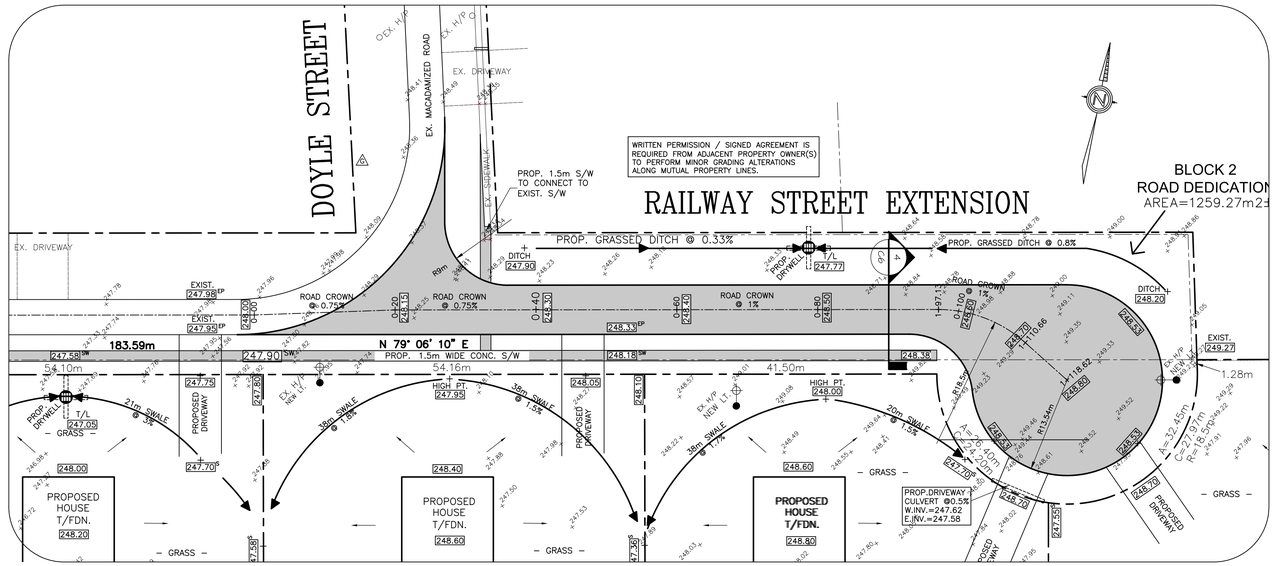
METRIC NOTE:

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRIC AND CAN BE CONVERTED TO IMPERIAL BY DIVIDING BY 0.3048.

JEWITT AND DIXON LTD.
ONTARIO LAND SURVEYORS
R.R.1, SIMCOE, ONTARIO, N3Y 4J9
(51 PARK ROAD)
PHONE: (519) 426–0842 FAX: (519) 426–1034
E–mail: surveyors@amtelecom.net

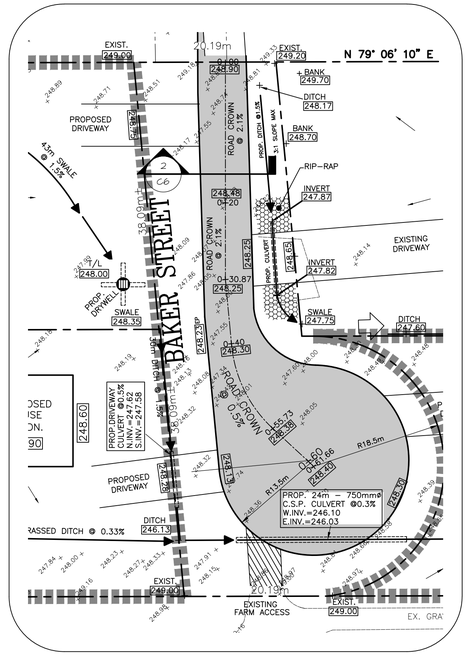
F.W.	J.P.H.
BOOK	LL–FILE
CALC.	J.L.M.
PLAN	J.L.M.
CHECK	K.H.
CLIENT	WOOD
JOB No.	15–992

15–992–SEVRP



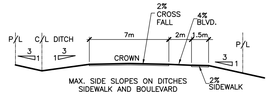
1 / C6 SITE GRADING PLAN

SCALE= 1:400 (METRIC)



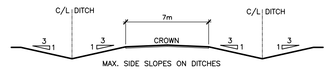
3 / C6 SITE GRADING PLAN

SCALE= 1:400 (METRIC)



2 / C6 TYPICAL DRIVEWAY CROSS-SECTION

SCALE: N.T.S.



4 / C6 TYPICAL DRIVEWAY CROSS-SECTION

SCALE: N.T.S.

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- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 06 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO. REVISION	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 26th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2019	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 6th 2019	A.D.

DO NOT SCALE DRAWINGS; THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

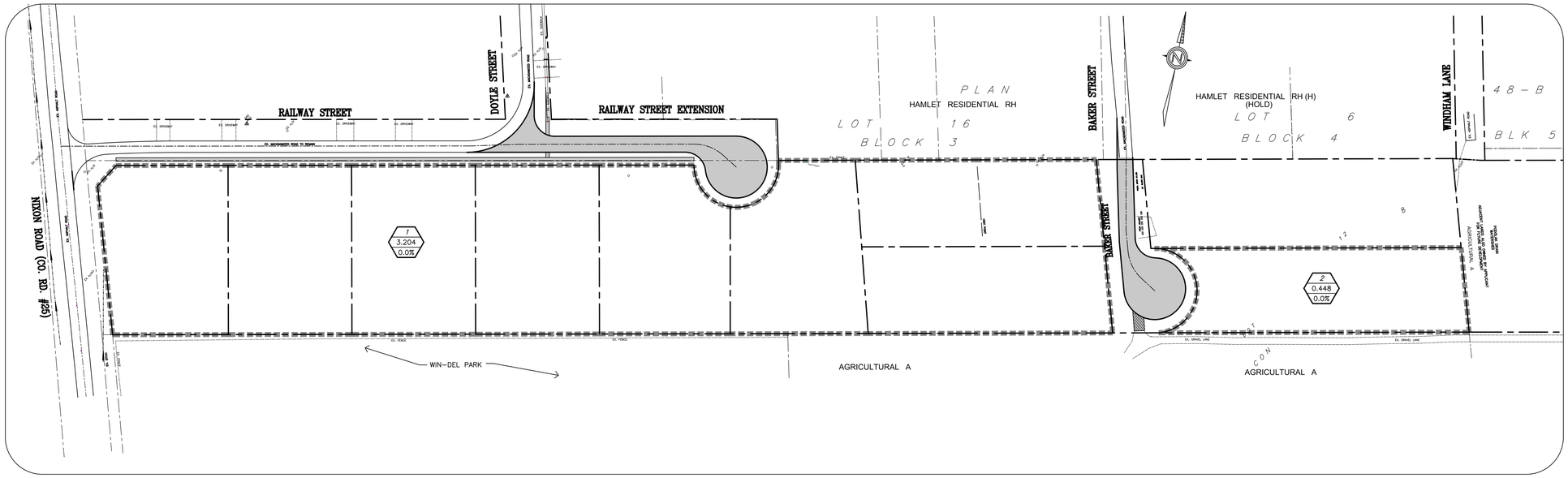
PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
PLAN & PROFILE - RAILWAY STREET AND BAKER STREET EXTENSION

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C6
REV. NO.: 4

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO



1/C5 PRE-DEVELOPMENT STORM DRAINAGE AREAS

SCALE= 1:1000 (METRIC)

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- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
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SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	REVISION	DESCRIPTION	DATE	BY

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PROJECT NORTH

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E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
PRE-DEVELOPMENT STORM DRAINAGE AREAS

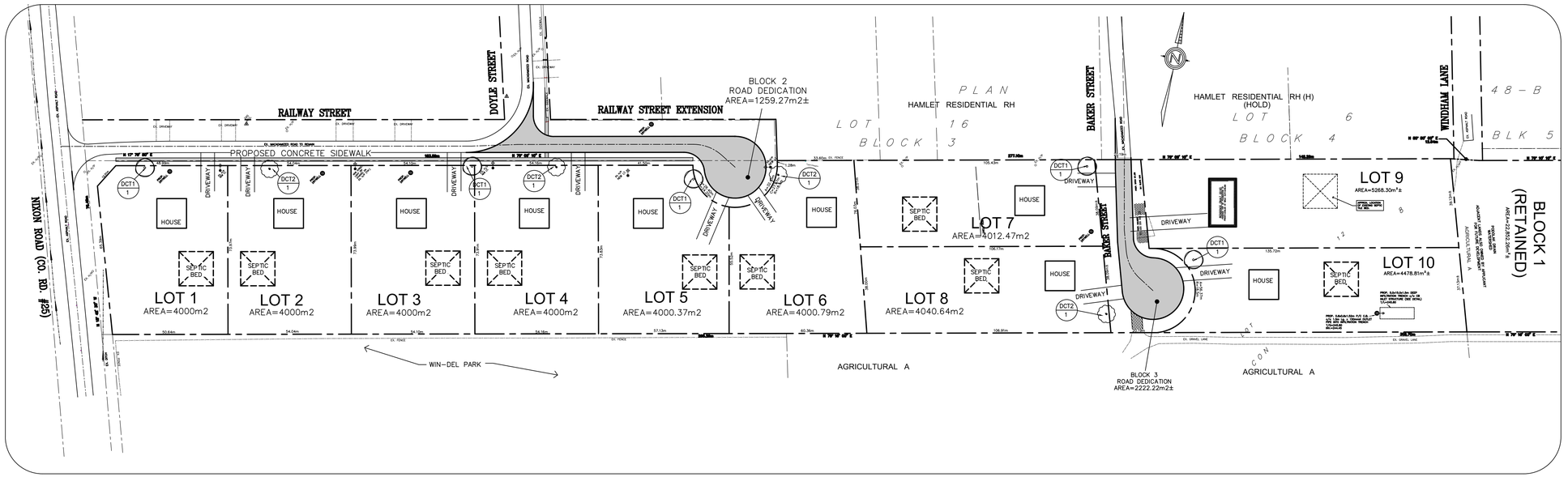
SCALE:	AS SHOWN
DRAWN BY:	K.P.B.
CHECKED BY:	R.W.P.
DATE:	FEB 2023
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C8
REV. NO.: 0

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO

LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS
- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C5.
- PRE STORM DRAINAGE AREA: 6 / 0.071 / 65.0% — DRAINAGE AREA NUMBER; DRAINAGE AREA IN HECTARES; COEFFICIENT OF RUNOFF (% IMPERVIOUS)



1 / C5 OVERALL SITE PLAN / DRAINAGE

SCALE= 1:1000 (METRIC)

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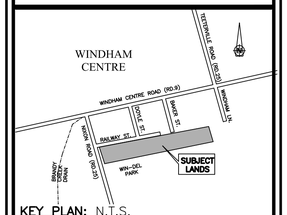

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:

PART OF LOT 12
CONCESSION 8,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:

THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 O6 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21

TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO. REVISION	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 26th 2019	R.M.
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A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

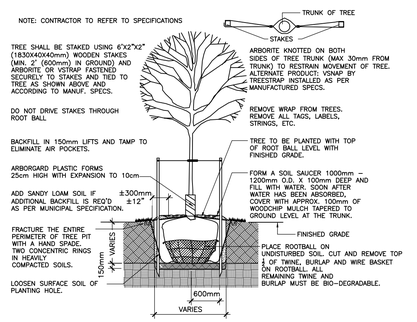
SHEET TITLE:
PLANTING PLAN

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C5
REV. NO.: 4

PLANTING SCHEDULE

KEY	COMMON NAME	BOTANICAL NAME	QUANT.	CONDITION	PROPERTIES	SIZE
TREES						
DCT1	APOLLO SUGAR MAPLE	ACER SACCHARUM 'BARRETT COLE'	5	(B&B) W/B	F, FC, NT	7.5m HT
DCT2	RED EMPEROR JAPANESE MAPLE	ACER PALMATUM 'RED EMPEROR'	4	(B&B) W/B	FL, FC, NT	4.5m HT
* FOR TYP. PLANTING DETAIL AND NOTES REFER TO PAGE SP4						



NOTE:
1. TREES ARE SUBJECT TO ACCEPTANCE BY THE CITY. REJECTED TREES SHALL BE REMOVED FROM WORK SITE.
2. TREES SHALL BE REJECTED FOR ANY ONE OF THE FOLLOWING CRITERIA: DOUBLE LEADERS, DAMAGED ROOT BALLS, TRUNK DAMAGE, SPECIES NON-CONFORMING TO SPECS, GIRDLED TRUNKS, POORLY DEVELOPED CROWN, ROOT BALL NOT SIZED ACCORDING TO CANADIAN NURSERIES TRADE ASSOCIATION (C.N.T.A.), EXCESSIVELY DRIED LEAVES.

2 / C5 TYP. TREE PLANTING

SCALE: NTS

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PAHLJR
PROVINCE OF ONTARIO

PLANT MATERIALS:

1. ALL TREE PITS SHALL BE AT LEAST 2 FT. (600MM) WIDER THAN BALL OF THE TREE TO BE PLANTED AND SHALL BE DEEP ENOUGH SO THAT THE TOP OF BALL IS AT THE SAME LEVEL AS SURROUNDING GRADE. A MINIMUM OF 6" (150MM) OF BACKFILL SHALL BE PLACED UNDER BALL. TREE PITS ARE NOT TO BE LEFT OPEN OVER NIGHT.
2. SHRUB BEDS SHALL BE EXCAVATED TO A DEPTH OF 18" (450MM) AND FILLED WITH APPROVED BACKFILL MATERIAL.
3. ALL TREES SHALL HAVE AN EARTH SAUCER AT ITS BASE WITH A DIAMETER AS LARGE AS EXCAVATED AREA TO SHAPE TO RETAIN WATER. SEE DETAIL. EARTH SAUCER TO HAVE APPROVED MULCH INSTALLED TO A MINIMUM DEPTH OR 2.5" (63MM).
4. ALL BURLAP SHALL BE CUT AND BURIED BELOW SURFACE DURING PLANTING.
5. ALL EVERGREENS ARE TO WRAPPED THE FIRST WINTER.

LANDSCAPE NOTES:

1. ANY PLANT MATERIAL REQUIRES THE APPROVAL OF THE CITY OF NORFOLK COUNTY.
2. PLANT MATERIAL OR FENCING SHALL BE MINIMUM TO BE PROVIDED BY THE OWNER. ANY ADDITIONS MUST COMPLY WITH THE ZONING BY-LAW.
3. ANY SODDING, PLANTING, OR WORK ON LANDS ABUTTING THE PROPERTY FROM THE LOT LINES TO SIDEWALK AND CURBING, SHALL BE TO THE SATISFACTION OF THE CITY.
4. ALL LANDSCAPING SHALL BE INSTALLED PRIOR TO THE END OF THE FIRST GROWING SEASON FOLLOWING OCCUPANCY OF THE DEVELOPMENT.
5. UNLESS OTHERWISE SPECIFIED ALL LANDSCAPED AREAS TO BE SODDED.
6. UNLESS OTHERWISE SPECIFIED ALL UNDEVELOPED AREAS SHALL BE UNDISTURBED AND KEPT FREE AND CLEAR OF DEBRIS AND MAINTAINED.
7. ALL PLANTING BEDS TO BE PROPERLY MULCHED.

GENERAL PLANTING NOTES:

TOPSOIL:

ALL SHRUB BEDS AND TREES TO BE BACKFILLED WITH GOOD QUALITY TOPSOIL SCARIFIED FREE OF ALL STONES, ROOTS, BRANCHES LARGER THAN 1" (25MM) AND COMPACTED TO 85% S.P.D.

ALL SUBSOIL TO BE SCARIFIED TO A DEPTH OF 6" (150 MM) PRIOR TO THE INSTALLATION OF TOPSOIL TO ENSURE NO HARDPAN CONDITIONS.

DIRECT ALL RAIN LEADERS AND SUMP LEADERS AWAY FROM PLANTING BEDS AND TO THE DESIGNATED SWALES.

MULCH:

ALL TREE PITS, SHRUB PITS AND PLANTING AREAS ARE TO BE MULCHED WITH MIN. 75MM OF MEDIUM MULCH, UNLESS OTHERWISE NOTED.

PLANTING MATERIAL:
CONTRACTOR TO VERIFY ALL PLANT MATERIAL ON DRAWING(S) AND PLANT MATERIAL LIST(S). REPORT ALL DISCREPANCIES.

PLANTINGS MAY BE ADJUSTED TO SUIT UTILITIES STRUCTURES AND AESTHETIC CONCERNS,

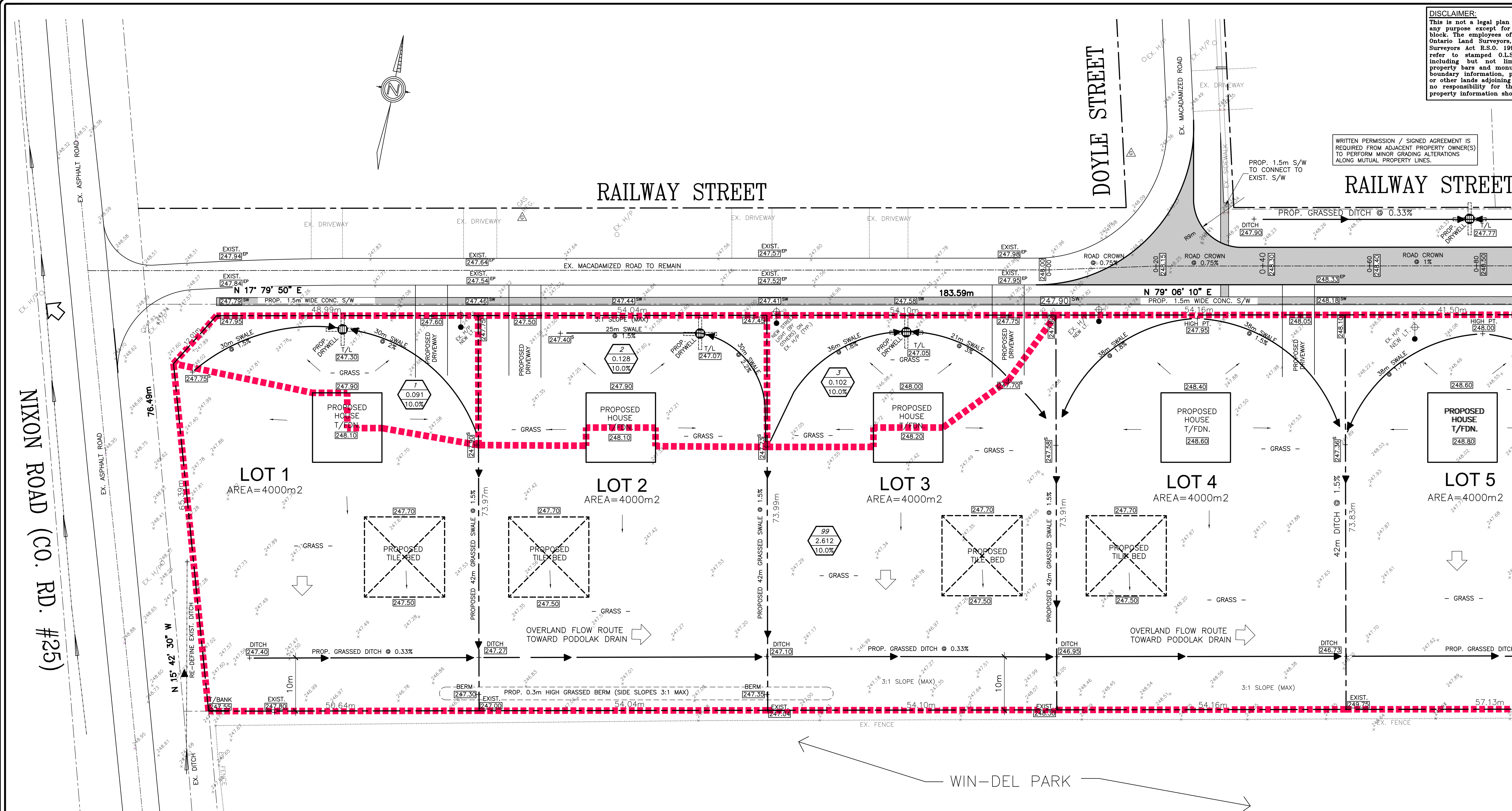
DO NOT INSTALL PLANT MATERIAL IN DRAINAGE SWALES.
ALL TREES TO BE PROPERLY STAKED WITH HOSE COATED WIRE. REMOVE ALL GUY WIRES AFTER 2 FULL GROWING SEASONS.

SOD:

UPON INSTALLATION AREAS SHOULD BE WATERED SO AS TO SATURATE SOD AND THE UPPER 4" (100MM) OF BACKFILL TOPSOIL. AFTER SOD AND SOIL HAVE DRIED SUFFICIENTLY TO PREVENT DAMAGE, IT SHALL BE ROLLED WITH A ROLLER.

LEGEND

PROPERTY LINE SUBJECT LANDS
OTHER PROPERTY LINES
EXISTING FEATURE TO BE REMOVED
APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
EXISTING CONTOURS AT 1m VERTICAL INTERVALS
PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C5.
249.00



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KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION 8,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
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SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO. REVISION	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
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PROJECT NORTH

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICE WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF MC ENGINEERING.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
3. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON SITE AT ALL TIMES.
4. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
5. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
6. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED AND MAINTAINED TO THE SATISFACTION AND TO THE REQUIREMENTS OF MC ENGINEERING.
7. ALL AREAS OF WORK WHICH WILL REMAIN DISTURBED FOR A PERIOD OF THIRTY DAYS OR MORE MUST BE STABILIZED TO THE SATISFACTION OF MC ENGINEERING.
8. ALL MATERIAL STOCKPILES ARE TO BE LOCATED WITHIN THE BOUNDARY OF THE INDICATED SILT FENCE. ADDITIONAL SILT FENCE IS TO BE ERECTED AROUND ANY PROPOSED STOCKPILES.
9. CATCH BASINS TO HAVE SILT TRAPS INSTALLED FOR THE DURATION OF CONSTRUCTION. REFERENCE DETAIL ON THIS PAGE.
10. SILT FENCE AS PER OPSD 219.130
11. ALL EROSION CONTROL DEVICES ARE TO BE INSPECTED AND MAINTAINED WEEKLY AND AFTER EACH RAINFALL.
12. OWNER IS RESPONSIBLE FOR INSPECTIONS AND MAINTENANCE OF STORMCEPTOR AS PER MANUFACTURER'S INSTRUCTIONS. ALL EROSION AND SEDIMENTATION CONTROL DEVICES MUST BE IN PLACE PRIOR TO ANY EARTH MOVING/CONSTRUCTION ACTIVITIES AND MUST BE MAINTAINED UNTIL FINAL COVER IS ESTABLISHED.

SILT FENCE NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 1.5m BEYOND TOE OF SLOPE, 3m PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
4. SILT FENCE AS PER OPSD 219.130
5. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED.
6. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
9. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
10. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

1 / C2 SITE GRADING PLAN
SCALE= 1:400 (METRIC)
0m 5m 20m

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO

SILTATION CONTROLS:

PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:

ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT

DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF T=__MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE DRYWELL DETAIL ON THE DESIGN DRAWING.

LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE. (I.B.)
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS (249.00)
- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C5.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES — EXISTING GRADES TO REMAIN 200.00 EX; PROPOSED GRADES 200.00; PROPOSED SWALE GRADES 200.00 S
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C8
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180 (CD)
- PROPOSED GRASSED EARTH BERM MAX. SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS. (NEW LT. EX. H/P)
- POST STORM DRAINAGE AREA — DRAINAGE AREA NUMBER (6); DRAINAGE AREA IN HECTARES (0.071); COEFFICIENT OF RUNOFF (% IMPERVIOUS) (45.0%)

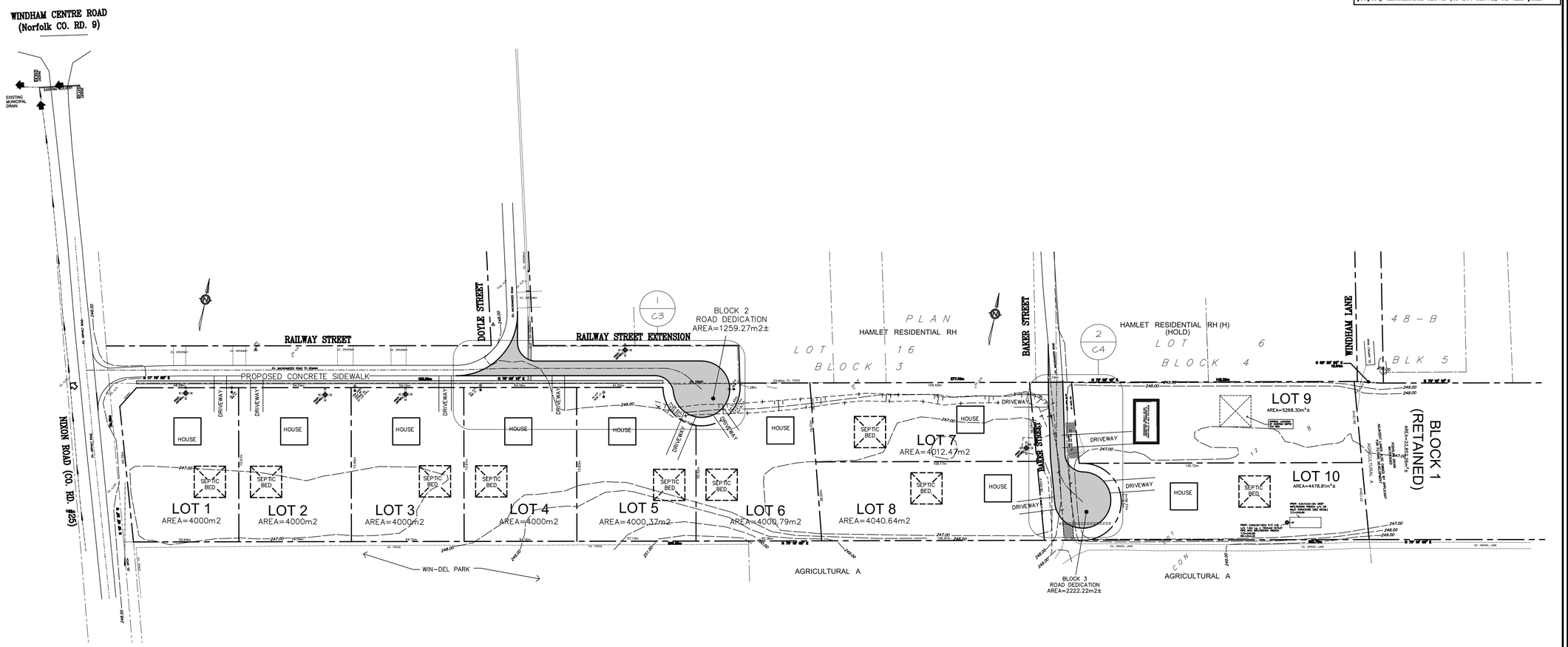
M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE: CONCEPT GRADING AT (WEST AREA) AND NIXON ROAD CULVERT

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg
PROJECT NO.:	15640/7251
DWG. NO.:	C2
REV. NO.:	4



1 / C1 OVERALL SITE PLAN / DRAINAGE

SCALE= 1:1000 (METRIC)

IMPORTANT

PLEASE READ THE FOLLOWING NOTES IN CONJUNCTION WITH ALL SITE DRAWINGS

SITE LIGHTING:
REFER TO ELECTRICAL DRAWINGS FOR ALL SITE LIGHTING, LIGHT FIXTURE TYPES, WIRING, UTILITY POLES ETC., LOCATIONS AND SPECIFICATIONS. ALL EXTERIOR LIGHT FIXTURES TO BE DARK-SKY COMPLIANT: NO EXTERIOR LIGHTING ARRAY TO BE DIRECTED OFF PROPERTY TO ROAD ALLOWANCE OR ADJACENT PROPERTIES. ALL LIGHTING ARRAY DIRECTIONS TO SHINE INTERNALLY TOWARD SUBJECT PROPERTY.

GARBAGE / REFUSE STORAGE:
REFUSE STORAGE (GARBAGE) TO BE INSIDE THE PROPOSED BUILDINGS

BUILDING / ARCHITECTURAL:
REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL BUILDING EXTERIOR AND INTERIOR DIMENSIONS, INTERIOR ROOM LAYOUT AND ROOM NAMES, WALL TYPES AND CONSTRUCTION AND SPECIFICATIONS.

FROST PROTECTION:
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ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

SILTATION CONTROLS:
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SITE STATISTICS

ITEM		VALUE
PROPOSED ZONING		HAMLET RESIDENTIAL (RH)
TOTAL LOT AREA		47,183.25m²
LOT AREA (PER PROPOSED LOT)		0.4 ha (MIN)
LOT FRONTAGE (PER INTERIOR PROPOSED LOT)		30m (MIN)
LOT FRONTAGE (PER CORNER PROPOSED LOT)		30m (MIN)
FRONT YARD SET BACK		6m (MIN)
	ATTACHED GARAGE	1.2m EACH SIDE (MIN)
	DETACHED GARAGE	3m AND 1.2m
REAR YARD SET BACK		9m (MIN)
MAX. BUILDING HEIGHT		11m
PARKING		(2) PARKING SPACES 3m x 5.8m PER DWELLING

LICENSED PROFESSIONAL ENGINEER — 23/02/23 — R. W. PHILLIPS — PROVINCE OF ONTARIO

GENERAL NOTES:

1. PRIMARY UNITS ARE METRIC. DIMENSIONS ARE METERS.
2. PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. [REFER TO TO OPSD 219.130].
3. ANY DISCREPANCY(S) BETWEEN INFORMATION ON THIS SITE DRAWING AND ACTUAL FIELD CONDITIONS, WHICH MAY IMPACT ON THE PROPOSED DEVELOPMENT, ARE TO BE REPORTED TO THE SENIOR CONSULTANT / P.ENG.
4. REQUIRED SERVICES & SERVICE CONNECTIONS NOT SHOWN ON DRAWING TO BE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER.
5. ALL NECESSARY RELOCATIONS OR REMOVALS OF EXISTING PHYSICAL SITE FEATURES INCLUDING U/G SERVICES TO BE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER.
6. EXACT LOCATIONS & ELEVATIONS OF ALL EXISTING SERVICES (SANITARY SEWER, WATER, GAS, BELL, ETC.), GRADES, MATERIAL LENGTHS, ELEVATIONS, INVERTS, ETC. TO BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCEMENT OF ANY SITEWORK.
7. ANY FILL PLACED ON SITE MUST BE COMPACTED TO TO A MIN. 98% STANDARD PROCTER DENSITY.
8. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S BONDED CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
   - ROAD CUT PERMITS
   - SEWER PERMITS
   - RELOCATION OF SERVICES
9. THIS DRAWING TO BE READ IN CONJUNCTION WITH ANY AND ALL OTHER DOCUMENTS SUBMITTED FOR MUNICIPAL APPROVAL(S).
10. RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2m.
11. ALL EXCESS EXCAVATED MATERIAL WILL BE REMOVED FROM THE SITE.
12. THE EXISTING DRAINAGE PATTERN WILL BE MAINTAINED EXCEPT WHERE NOTED. PROPOSED ELEVATIONS SHOW GENERAL INTENT OF GRADING PLAN.
13. ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF NORFOLK COUNTY

LEGEND

PROPERTY LINE SUBJECT LANDS
OTHER PROPERTY LINES
EXISTING FEATURE TO BE REMOVED
APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
EXISTING CONTOURS AT 1m VERTICAL INTERVALS
PROPOSED TREE PLANTING
REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C5.
EXISTING SPOT ELEVATION
PROPOSED DRAINAGE
PROPOSED GRADES — EXISTING GRADES TO REMAIN 200.00 EX
PROPOSED GRADES 200.00
PROPOSED SWALE GRADES 200.00
C/L PROPOSED SWALE
C/L EXISTING DITCH
PROPOSED DRYWELL
REFER TO DETAIL 2 ON C8
DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180
CD
PROPOSED GRASSED EARTH BERM MAX. SIDE SLOPES 3:1
OVERLAND FLOW ROUTE DIRECTION
DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS.
NEW LT. EX. HYD

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- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 OF 06 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO. REVISION	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 26th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2019	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 6th 2019	A.D.

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J.H. COHOON ENGINEERING LIMITED
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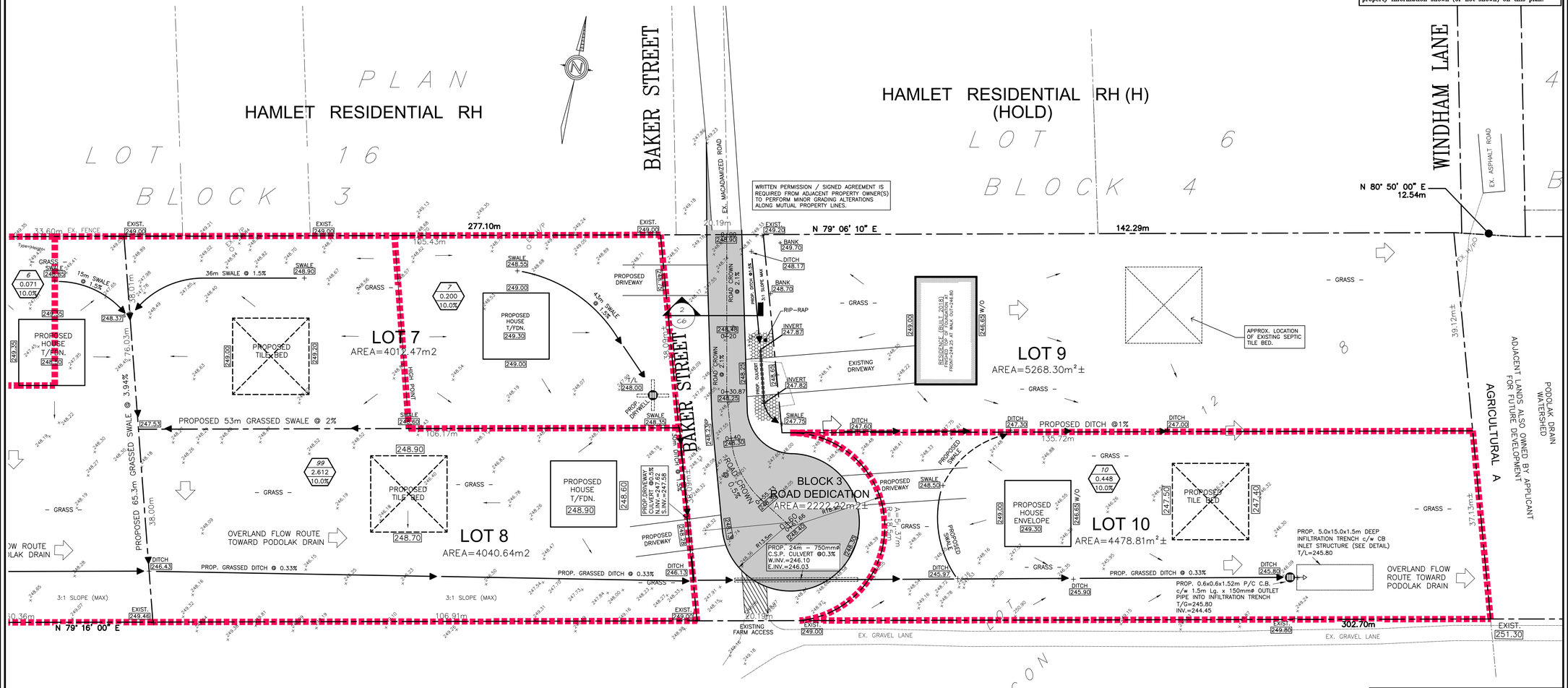
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
OVERALL CONCEPT LOT LAYOUT AND OVERALL FLOW ROUTE

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

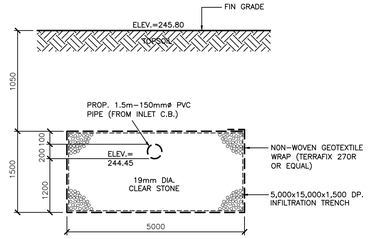
PROJECT NO.: 15640/7251
DWG. NO.: C1
REV. NO.: 4



SITE GRADING PLAN

SCALE= 1:400 (METRIC)

0m 5m 20m



INFILTRATION TRENCH DETAIL

N.T.S.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO

IMPORTANT

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POST STORM DRAINAGE AREA — 6 / 0.071 / 45.0% — DRAINAGE AREA NUMBER; DRAINAGE AREA IN HECTARES; COEFFICIENT OF RUNOFF (% IMPERVIOUS)

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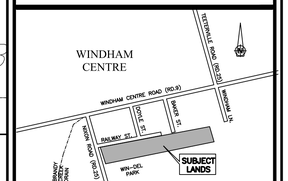

KEY PLAN: N.T.S.

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GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

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SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	DESCRIPTION	DATE	BY
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3	ISSUED FOR CLIENT REVIEW	APR. 26th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2019	R.M.
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A DIVISION OF 392583 ALBERTA LTD.

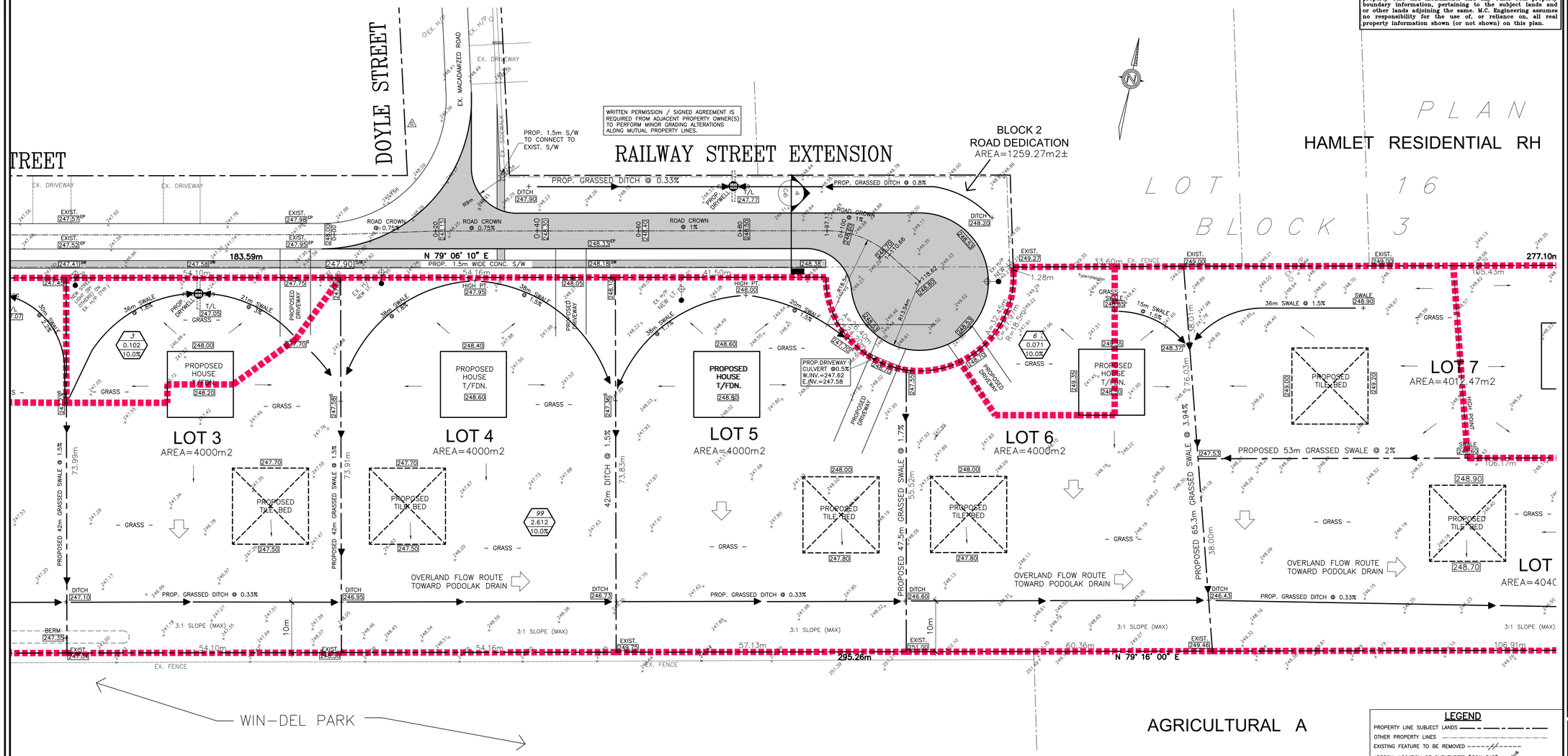
J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
CONCEPT LOT SITE GRADING
(EAST AREA)

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C4
REV. NO.: 4



SITE GRADING PLAN

C3 — SCALE= 1:400 (METRIC)

0m 5m 20m

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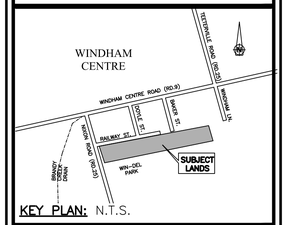

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:

PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:

THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 06 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK:

ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	REVISION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 26th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2019	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 6th 2019	A.D.

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PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
CONCEPT LOT SITE GRADING
(MIDDLE AREA)

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.:	15640/7251
DWG. NO.:	C3
REV. NO.:	4

IMPORTANT

PLEASE READ THE FOLLOWING NOTES IN CONJUNCTION WITH ALL SITE DRAWINGS

SITE LIGHTING:
REFER TO ELECTRICAL DRAWINGS FOR ALL SITE LIGHTING, LIGHT FIXTURE TYPES, WIRING, UTILITY POLES ETC., LOCATIONS AND SPECIFICATIONS. ALL EXTERIOR LIGHT FIXTURES TO BE DARK-SKY COMPLIANT. NO EXTERIOR LIGHTING ARRAY TO BE DIRECTED OFF PROPERTY TO ROAD ALLOWANCE OR ADJACENT PROPERTIES. ALL LIGHTING ARRAY DIRECTIONS TO SHINE INTERNALLY TOWARD SUBJECT PROPERTY.

GARBAGE / REFUSE STORAGE:
REFUSE STORAGE (GARBAGE) TO BE INSIDE THE PROPOSED BUILDINGS

BUILDING / ARCHITECTURAL:
REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL BUILDING EXTERIOR AND INTERIOR DIMENSIONS, INTERIOR ROOM LAYOUT AND ROOM NAMES, WALL TYPES AND CONSTRUCTION AND SPECIFICATIONS.

FROST PROTECTION:
RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2M.

ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO

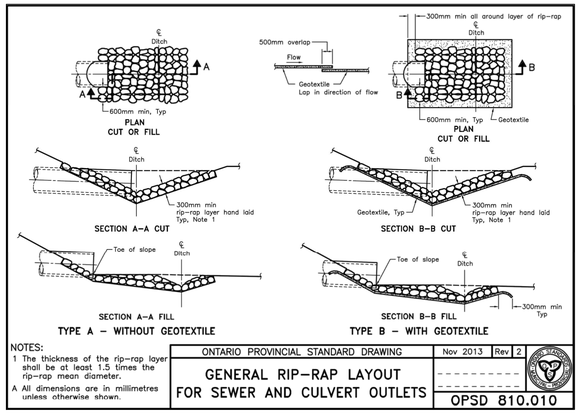
SILTATION CONTROLS:
PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:
ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT
DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF T=__MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE DRYWELL DETAIL ON THE DESIGN DRAWING.

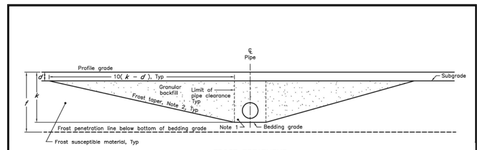
LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE. (IB / CD)
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS
- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C5.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES
- EXISTING GRADES TO REMAIN (200.00 EX)
- PROPOSED GRADES (200.00)
- PROPOSED SWALE GRADES (200.00)
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C8 (CD)
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180
- PROPOSED GRASSED EARTH BERM MAX. SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS. (NEW L.F. EX. HYD.)
- POST STORM DRAINAGE AREA (6 / 0.071 / 45.0%)
  - DRAINAGE AREA NUMBER
  - DRAINAGE AREA IN HECTARES
  - COEFFICIENT OF RUNOFF (% IMPERVIOUS)



NOTES:
1 The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.
A All dimensions are in millimetres unless otherwise shown.

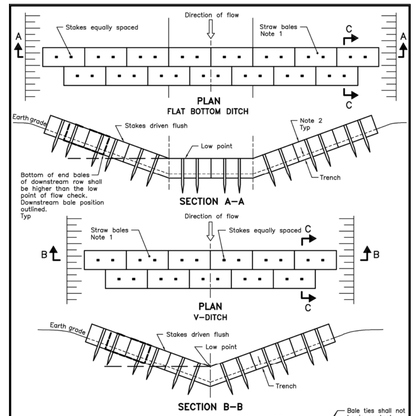
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev 2
GENERAL RIP-RAP LAYOUT FOR SEWER AND CULVERT OUTLETS		
	OPSD 810.010	



NOTES:
1 Pipe embedment or bedding, cover, and backfill shall be according to:
a) Flexible OPSD 802.010, 802.013, 802.014, 802.020, 802.023, and 802.024.
b) Rigid – OPSD 802.030, 802.031, 802.032, 802.033, 802.034, 802.050, 802.051, 802.052, 802.053, and 802.054.
2 Frost tapers shall start at bedding grade.

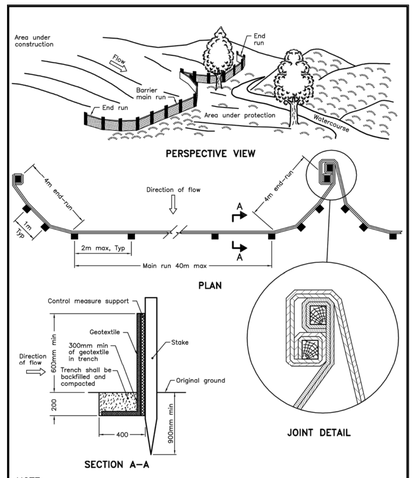
LEGEND:
d' –depth of roadbed granular
A –depth of frost treatment below profile grade
f –depth of frost penetration below profile grade

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 3
FROST TREATMENT – PIPE CULVERTS FROST PENETRATION LINE BELOW BEDDING GRADE		
	OPSD 803.030	



NOTES:
1 Number of bales varies and shall suit ditch.
2 Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

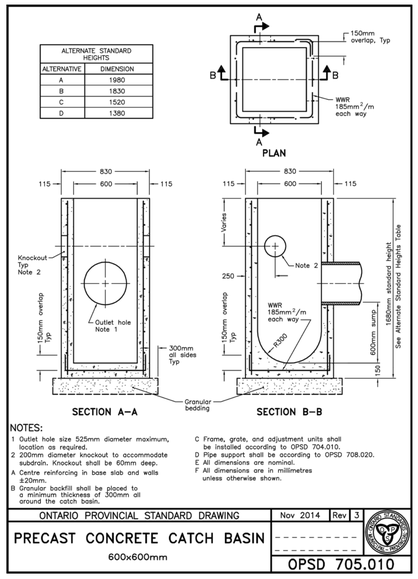
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
STRAW BALE FLOW CHECK DAM		
	OPSD 219.180	



NOTE:
A All dimensions are in millimetres unless otherwise shown.

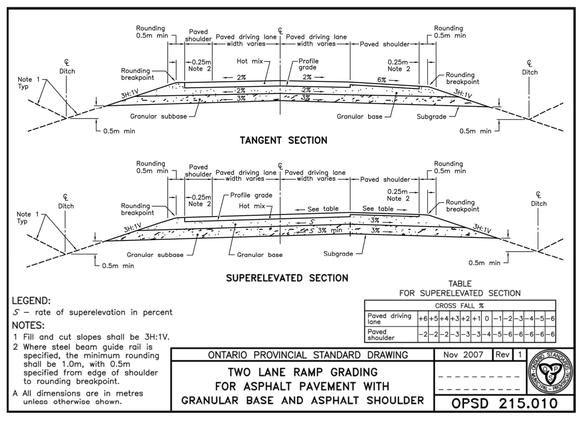
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
HEAVY–DUTY SILT FENCE BARRIER		
	OPSD 219.130	

ALTERNATE STANDARD HEIGHTS	
ALTERNATIVE	DIMENSION
A	1980
B	1830
C	1520
D	1380



NOTES:
1 Outlet hole size 525mm diameter maximum, location as required.
2 200mm diameter knockout to accommodate subdrain. Knockout shall be 60mm deep.
A Centre reinforcing in base slab and walls ±20mm.
B Granular backfill shall be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.
D Pipe support shall be according to OPSD 708.020.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
PRECAST CONCRETE CATCH BASIN 600x600mm		
	OPSD 705.010	



LEGEND:
S – rate of superelevation in percent

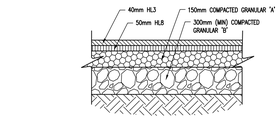
NOTES:
1 Fill and cut slopes shall be 3H:1V.
2 Where steel beam guide rail is specified, the minimum rounding shall be 1.0m, with 0.5m specified from edge of shoulder to rounding breakpoint.
A All dimensions are in metres unless otherwise shown.

TABLE
FOR SUPERELEVATED SECTION

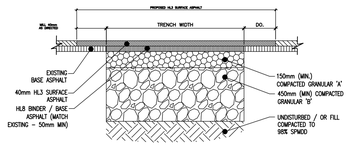
	CROSS FALL %												
Paved driving lane	+6	+5	+4	+3	+2	+1	0	–1	–2	–3	–4	–5	–6
Paved shoulder	–2	–2	–2	–3	–3	–3	–4	–5	–6	–6	–6	–6	–6

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2007	Rev 1
TWO LANE RAMP GRADING FOR ASPHALT PAVEMENT WITH GRANULAR BASE AND ASPHALT SHOULDER		
	OPSD 215.010	

1 / C7 TYPICAL ROAD CROSS–SECTION
SCALE= N.T.S.



5 / C7 TYPICAL ASPHALT DETAIL
SCALE= N.T.S.

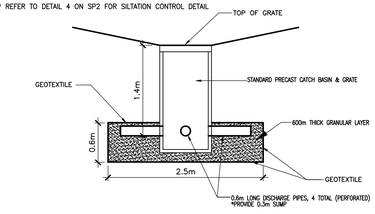


ROADWAY RESTORATION NOTES:

1. CONTRACTOR TO OBTAIN ALL NECESSARY ROAD CUT PERMITS PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO MAINTAIN A MINIMUM OF ONE LANE OF TRAFFIC AT ALL TIMES. IF TEMPORARY ROAD CLOSURES ARE NECESSARY, THEN CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS WITH NORFOLK COUNTY.
3. CONTRACTOR SHALL LOCATE AND PROTECT ALL UTILITIES.
4. ALL CUTS TO EXISTING ASPHALT AND CONCRETE SHALL BE CLEAN SAW CUTS ONLY.
5. BACKFILL FOR ALL SERVICE TRENCHES FROM EDGE OF ASPHALT TO BACK OF SIDEWALK SHALL BE GRANULAR 'B'
6. BACKFILL FOR ALL SERVICE TRENCHES FROM BACK OF SIDEWALK TO STREET LINE SHALL BE SELECT NATIVE MATERIAL.
7. ALL BEDDING AND BACKFILL SHALL BE COMPACTED TO MIN. 98% SPMDD
8. CURBS AND SUBDRAINS SHALL BE RESTORED TO MATCH EXISTING CONDITIONS TO THE SATISFACTION OF NORFOLK COUNTY.
9. BOULEVARDS, SHALL BE RESTORED WITH NO.1 NURSERY SOD ON MINIMUM 100mm IMPORTED TOPSOIL TO THE SATISFACTION OF NORFOLK COUNTY.

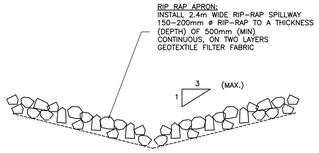
4 / C7 TYPICAL ROAD RESTORATION DETAIL
SCALE= N.T.S.

PROPOSED CATCH BASIN AND DRYWELL:
–TOP OF GRATE AT ELEVATION AS PER DRAWING
–EXCAVATE AREA, REMOVE EXISTING SOIL AND REPLACE WITH GRAVEL LAYER AS INDICATED.
–INSTALL 2.5m x 2.5m x 0.6m GRAVEL LAYER (USE GRAN 'B', C/W FILTER CLOTH
–TOTAL THICKNESS OF BURIED GRAVEL TO BE 0.6m
–BOTTOM OF GRANULAR LAYER, 2m BELOW TOP OF GRATE. (TOTAL THICKNESS is 0.6m)
–INSTALL (4) – 0.6m LONG 150mm DIA. PERFORATED HDPE DISCHARGE PIPES, INVERT ELEVATION FOR ALL 4 DISCHARGE PIPES TO BE 1.4m BELOW GRATE
–FILTER CLOTH REQUIRED AROUND ENTIRE AREA OF GRANULAR
* REFER TO DETAIL 4 ON SP2 FOR SILTATION CONTROL DETAIL



2 / C7 TYPICAL DRYWELL DETAIL
SCALE= N.T.S.

RIP RAP APRON:
INSTALL 2.4m WIDE RIP–RAP SPILLWAY 150–200mm ø RIP–RAP TO A THICKNESS (DEPTH) OF 500mm (MIN) CONTINUOUS, ON TWO LAYERS GEOTEXTILE FILTER FABRIC



3 / C7 TYPICAL RIP–RAP DETAIL
SCALE= N.T.S.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILIPS
PROVINCE OF ONTARIO

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
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KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
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CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
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SITE BENCHMARK: ELEV. 248.21
TOP OF SOUTH–WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

REVISION	DESCRIPTION	DATE	BY
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A.D. PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519–428–6790 Fax: 519–426–8960
E–mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
DETAIL PAGE

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C7
REV. NO.: 4

J.H. COHOON ENGINEERING LIMITED

CONSULTING ENGINEERS
440 Hardy Road, Unit #1, Brantford, ON N3T 5L8
Tel: (519) 753-2656 Fax: (519) 753-4263
www.cohooneng.com

15640

February 17, 2023

Norfolk County
Engineer
Environmental and Infrastructure Services Division
185 Robinson St., Suite 200
Simcoe, Ontario
N3Y 5L6

Attention: Mr. Tim Dickhout
Project Manager, Development

Re: Proposed Residential Development
MN 32 Nixon Road
Windham Centre, Ontario
Norfolk County
Traffic Considerations

Dear Sir:

In response to request from the owner of the property, Mr. L. Wood, our firm has reviewed the traffic impacts of the proposed development to be located at MN 32 Nixon Street in Windham Centre in Norfolk County.

In support of an application for re-zoning and draft approval of a nine (9) lot subdivision, (9 units total) on the subject property, a traffic brief was requested as part of the pre-consultation notes. The proposed engineering drawings relating to the development has been included within Appendix 'A' of this report.

Existing Transportation Network

The subject property is located on the south side of Railway Street in Windham Centre. The property extends to the east so that three (3) of the proposed lots are adjacent to the Barker Street right-of-way. The attached aerial photograph and the key plan presented within Figure No. 1, illustrates the existing transportation network in the area.

The site is not serviced with municipal sidewalks on the existing streets as it is a rural setting for the development. Our firm reached out to Norfolk County and determined that no existing traffic volumes were available for the abutting streets being Nixon Road, Baker Street and Railway Street.

The current zoning for the site is 'RH' – Hamlet Residential Lands which is predominately a single-family residential zone. Additional land uses in the area are also residential with a scattering of some additional lands uses. A land use plan illustrating the existing land uses in the area has been included within Appendix 'B' of this report.

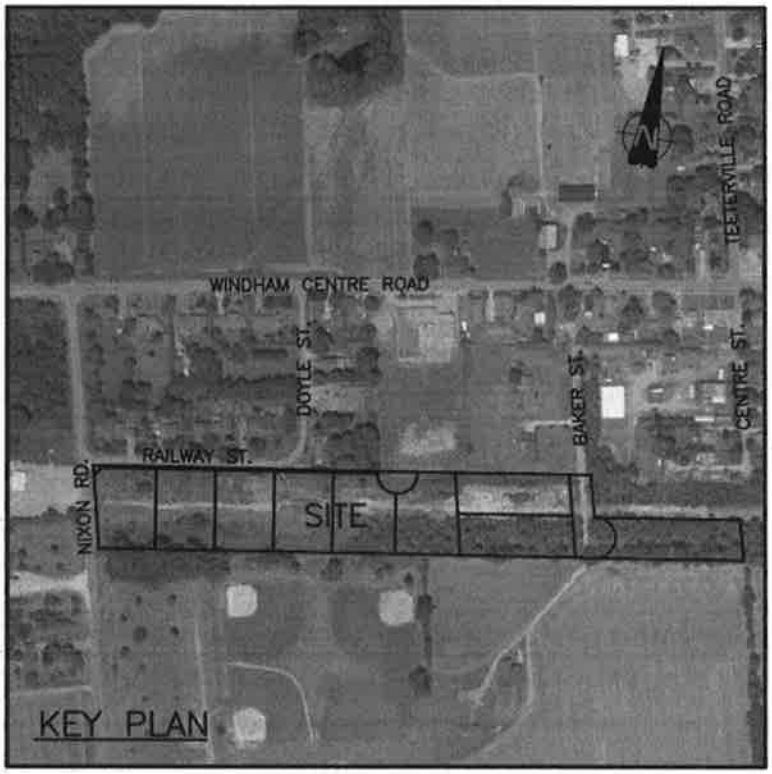


Figure No. 1
Key Plan

Development Proposal

In consideration of the impacts of the traffic generated on the subject property and utilizing the ITE manual for trip generations during the peak hours, we have estimated the following trip generations for this site during the peak hours

Residential
Nine (9) Single Detached Dwellings)
= Approximately 2.0 trips per unit for the peak pm hour For the purpose of this analysis, a trip generation of 2.0 was utilized.

In this case, this would translate into about 18 peak hour trips relating to this site.

In review of the requirements for the typical TIS report, a full TIS is usually only required when the trip generation exceed 75 peak hour vehicles generated. As such, a traffic brief is being proposed in support of this application.

The site is anticipated to operate without any impacts to the existing road network. The addition of 18 peak hour trips associated with the development on Railway Street and Baker Street would be considered insignificant for this area in Norfolk County. We have included the following information relating to this development.

Site Access
The proposed site plan has been reviewed with consideration of access to the neighbouring / abutting residential streets.

In the review of the site plan in conjunction with the road network, the proposed driveway access locations are provided with suitable sight distance to allow for safe access into the property. Both Railway Street and Baker Lane has existing driveways existing.

Conclusions:

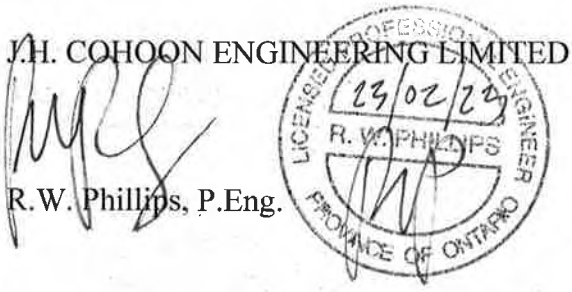
The findings of our analysis of the site complete with considerations of the overall development are as follows:

- The development proposal is to redevelop the subject property to allow for approximately nine (9) single family homes
- The access to the site is intended to be a full movement driveway onto both Railway Street and Baker Lane.
- The development is going to generate only a maximum of 18 peak pm hour movements as a result of the increased development
- The anticipated increased traffic from the development would be considered insignificant as it relates to the overall capacity of existing infrastructure in the area.

I trust that this information will be sufficient to allow the re-zoning application to proceed.

Yours truly,

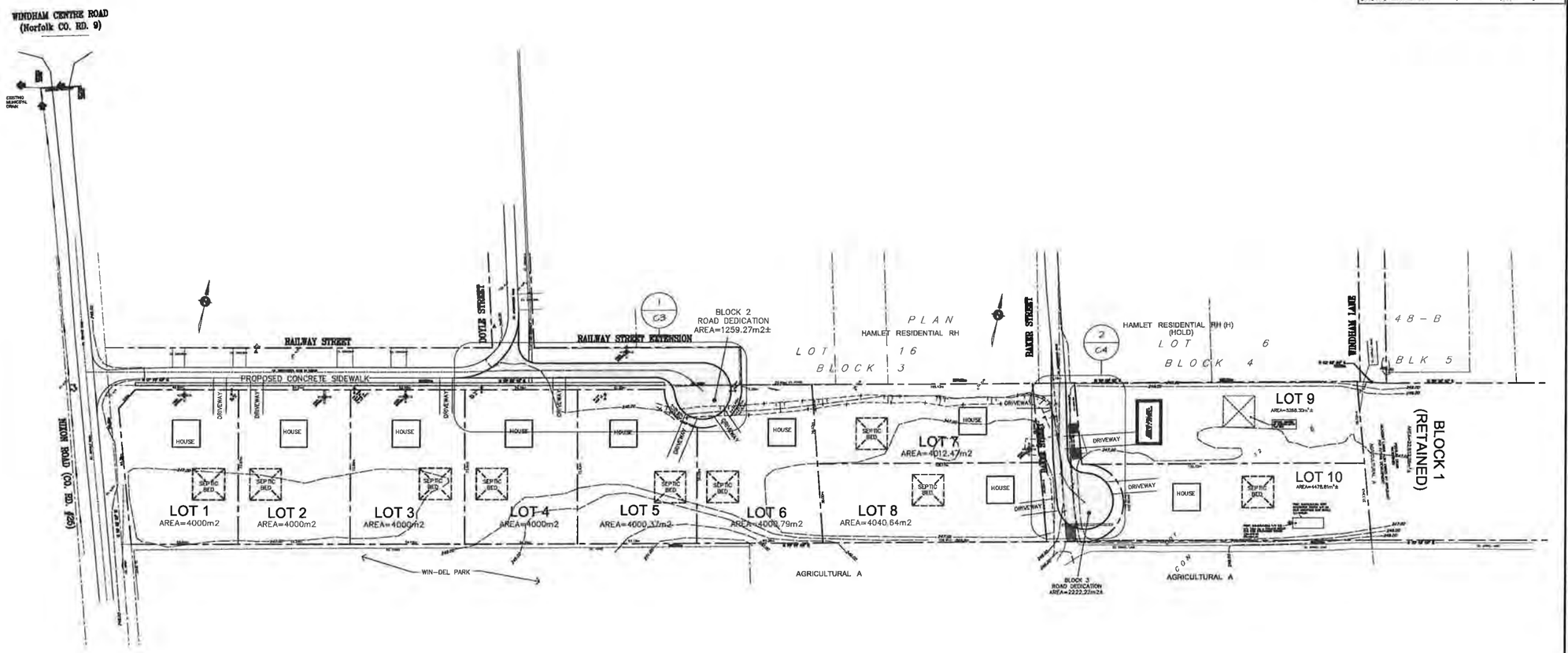
J.H. COHOON ENGINEERING LIMITED



R.W. Phillips, P.Eng.

Appendix 'A'

J H Cohoon Engineering Limited – Site Development Plans



1/C1 OVERALL SITE PLAN / DRAINAGE

SCALE= 1:1000 (METRIC)

IMPORTANT

PLEASE READ THE FOLLOWING NOTES IN CONJUNCTION WITH ALL SITE DRAWINGS

*** SITE LIGHTING:**
REFER TO ELECTRICAL DRAWINGS FOR ALL SITE LIGHTING, LIGHT FIXTURE TYPES, WIRING, UTILITY POLES ETC., LOCATIONS AND SPECIFICATIONS. ALL EXTERIOR LIGHT FIXTURES TO BE DARK-SKY COMPLIANT: NO EXTERIOR LIGHTING ARRAY TO BE DIRECTED OFF PROPERTY TO ROAD ALLOWANCE OR ADJACENT PROPERTIES. ALL LIGHTING ARRAY DIRECTIONS TO SHINE INTERNALLY TOWARD SUBJECT PROPERTY.

GARBAGE / REFUSE STORAGE:
REFUSE STORAGE (GARBAGE) TO BE INSIDE THE PROPOSED BUILDINGS

BUILDING / ARCHITECTURAL:
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FROST PROTECTION:
RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2M.

ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

SILTATION CONTROLS:
PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:
ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT
DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF T=__MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE ORYWELL DETAIL ON THE DESIGN DRAWING.

LICENSED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO R.W. PUTTEN 23/02/23

SITE STATISTICS

ITEM	VALUE
PROPOSED ZONING	HAMLET RESIDENTIAL (RH)
TOTAL LOT AREA	47,153.25m²
LOT AREA (PER PROPOSED LOT)	0.4 ha (MIN)
LOT FRONTAGE (PER INTERIOR PROPOSED LOT)	30m (MIN)
LOT FRONTAGE (PER CORNER PROPOSED LOT)	30m (MIN)
FRONT YARD SET BACK	6m (MIN)
ATTACHED GARAGE	1.2m EACH SIDE (MIN)
DETACHED GARAGE	3m AND 1.2m
REAR YARD SET BACK	9m (MIN)
MAX. BUILDING HEIGHT	11m
PARKING	(2) PARKING SPACES 3m x 5.5m PER DWELLING

GENERAL NOTES:

1. PRIMARY UNITS ARE METRIC. DIMENSIONS ARE METERS.
2. PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. (REFER TO TO OPSD 219.130).
3. ANY DISCREPANCY(S) BETWEEN INFORMATION ON THIS SITE DRAWING AND ACTUAL FIELD CONDITIONS, WHICH MAY IMPACT ON THE PROPOSED DEVELOPMENT, ARE TO BE REPORTED TO THE SEWER CONSULTANT / P.ENG.
4. REQUIRED SERVICES & SERVICE CONNECTIONS NOT SHOWN ON DRAWING TO BE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER.
5. ALL NECESSARY RELOCATIONS OR REMOVALS OF EXISTING PHYSICAL SITE FEATURES INCLUDING U/G SERVICES TO BE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER.
6. EXACT LOCATIONS & ELEVATIONS OF ALL EXISTING SERVICES (SANITARY SEWER, WATER, GAS, BELL, ETC.), GRADES, MATERIAL LENGTHS, ELEVATIONS, INVERTS, ETC. TO BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCEMENT OF ANY SITEWORK
7. ANY FILL PLACED ON SITE MUST BE COMPACTED TO TO A MIN 98% STANDARD PROCTER DENSITY.
8. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S BONDED CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
   - ROAD CUT PERMITS
   - SEWER PERMITS
   - RELOCATION OF SERVICES
9. THIS DRAWING TO BE READ IN CONJUNCTION WITH ANY AND ALL OTHER DOCUMENTS SUBMITTED FOR MUNICIPAL APPROVAL(S).
10. RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2m
11. ALL EXCESS EXCAVATED MATERIAL WILL BE REMOVED FROM THE SITE.
12. THE EXISTING DRAINAGE PATTERN WILL BE MAINTAINED EXCEPT WHERE NOTED. PROPOSED ELEVATIONS SHOW GENERAL INTENT OF GRADING PLAN.
13. ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF NORFOLK COUNTY

LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS
- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C9 AND PLANTING DETAIL AND NOTES ALSO ON C9.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES: EXISTING GRADES TO REMAIN 248.00; PROPOSED GRADES 250.00; PROPOSED SWALE GRADES 250.00
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C8
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180
- PROPOSED GRASSED EARTH BERM MAX SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS.

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 06 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2023	K.P.B
3	ISSUED FOR CLIENT REVIEW	APR. 26th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 25th 2018	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 9th 2018	A.D.

DO NOT SCALE DRAWINGS; THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-8700 Fax: 519-426-8960
E-mail: mc@mcengineering.net
A DIVISION OF 392503 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME:
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

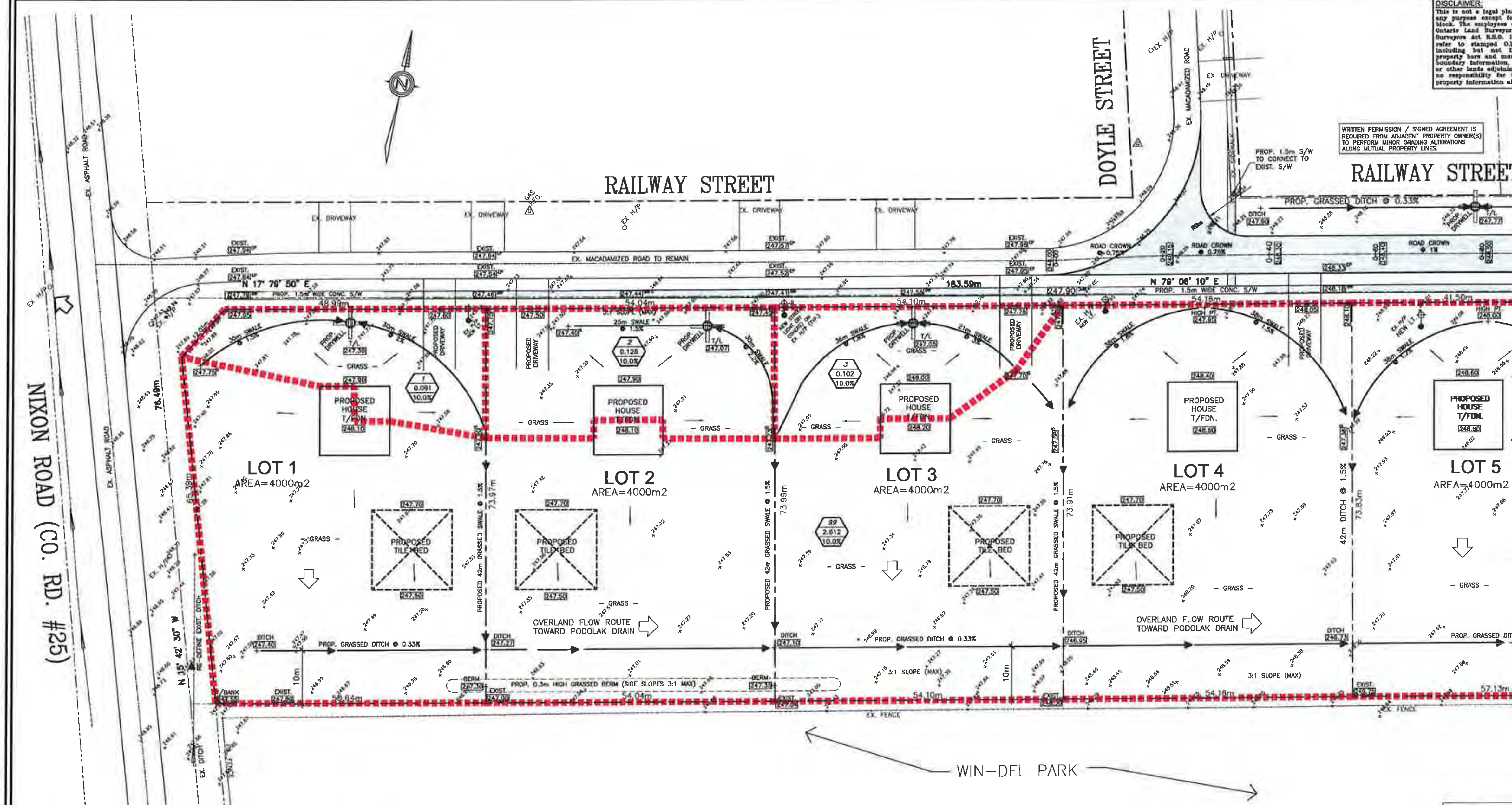
SHEET TITLE:
OVERALL CONCEPT LOT LAYOUT AND OVERALL FLOW ROUTE

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C1
REV. NO.: 4

DISCLAIMER:
This is not a legal plan of survey and shall not be used for any purpose except for the purpose indicated in the title block. The employees of M. C. Engineering are not licensed Ontario Land Surveyors, therefore in accordance with the Surveyors Act R.S.O. 1990, c.29, (as amended 2009) please refer to stamped O.L.S. drawing(s) for all survey data, including but not limited to, bearings and distances, property bars and monuments and any other real property boundary information, pertaining to the subject lands and or other lands adjoining the same. M.C. Engineering assumes no responsibility for the use of, or reliance on, all real property information shown (or not shown) on this plan.

WRITTEN PERMISSION / SIGNED AGREEMENT IS REQUIRED FROM ADJACENT PROPERTY OWNER(S) TO PERFORM MINOR GRADING ALTERATIONS ALONG MUTUAL PROPERTY LINES.



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- ☐ ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ☐ ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
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- ☐ PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION 8,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 06 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO. REVISION	DESCRIPTION	DATE	BY
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PROJECT NORTH

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICE WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF MC ENGINEERING.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
3. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON SITE AT ALL TIMES
4. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
5. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
6. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED AND MAINTAINED TO THE SATISFACTION AND TO THE REQUIREMENTS OF MC ENGINEERING.
7. ALL AREAS OF WORK WHICH WILL REMAIN DISTURBED FOR A PERIOD OF THIRTY DAYS OR MORE MUST BE STABILIZED TO THE SATISFACTION OF MC ENGINEERING.
8. ALL MATERIAL STOCKPILES ARE TO BE LOCATED WITHIN THE BOUNDARY OF THE INDICATED SILT FENCE. ADDITIONAL SILT FENCE IS TO BE ERECTED AROUND ANY PROPOSED STOCKPILES
9. CATCH BASINS TO HAVE SILT TRAPS INSTALLED FOR THE DURATION OF CONSTRUCTION REFERENCE DETAIL ON THIS PAGE.
10. SILT FENCE AS PER OPSD 219.130
11. ALL EROSION CONTROL DEVICES ARE TO BE INSPECTED AND MAINTAINED WEEKLY AND AFTER EACH RAINFALL.
12. OWNER IS RESPONSIBLE FOR INSPECTIONS AND MAINTENANCE OF STORMCEPTOR AS PER MANUFACTURER'S INSTRUCTIONS. ALL EROSION AND SEDIMENTATION CONTROL DEVICES MUST BE IN PLACE PRIOR TO ANY EARTH MOVING/CONSTRUCTION ACTIVITIES AND MUST BE MAINTAINED UNTIL FINAL COVER IS ESTABLISHED

SILT FENCE NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 1.5m BEYOND TOE OF SLOPE, 3m PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE
4. SILT FENCE AS PER OPSD 219.130
5. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED.
6. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
9. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR) IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
10. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW

SILTATION CONTROLS:

PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS

ROAD RESTORATION:

ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT

DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF T=__MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE DRYWELL DETAIL ON THE DESIGN DRAWING.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO

LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS — 249.00
- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C5.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES — EXISTING GRADES TO REMAIN 200.00; PROPOSED GRADES 200.00; PROPOSED SWALE GRADES 200.00
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C8
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180 — CD
- PROPOSED GRASSED EARTH BERM MAX. SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS. — NEW LT. EX. H/P
- POST STORM DRAINAGE AREA — 8 (DRAINAGE AREA NUMBER); 0.071 (DRAINAGE AREA IN HECTARES); 45.0% (COEFFICIENT OF RUNOFF (% IMPERVIOUS))

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

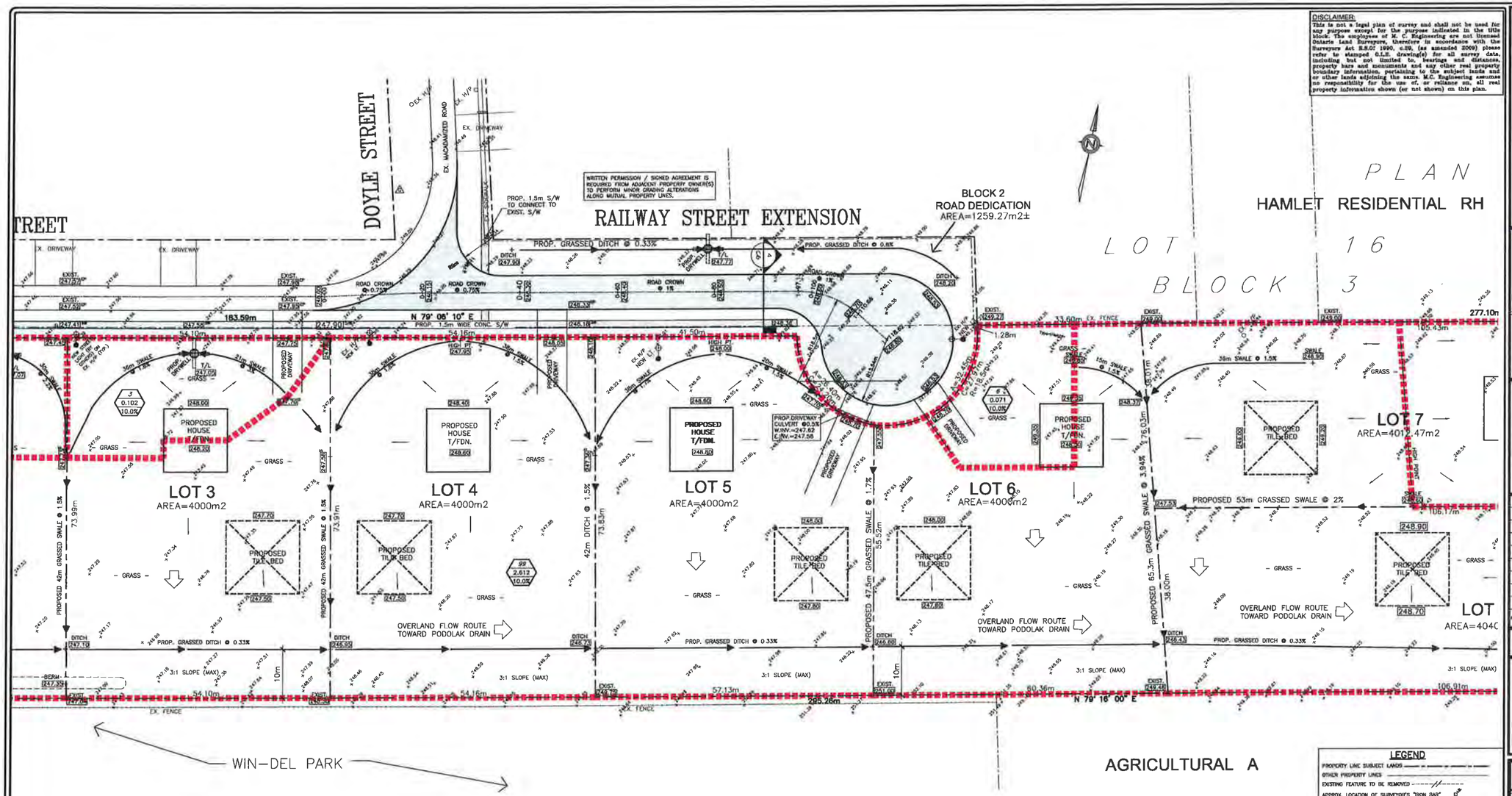
PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
CONCEPT GRADING AT (WEST AREA) AND NIXON ROAD CULVERT

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C2
REV. NO.: 4

1 / C2 SITE GRADING PLAN
SCALE= 1:400 (METRIC)



1 / C3 SITE GRADING PLAN

SCALE= 1:400 (METRIC)

IMPORTANT

PLEASE READ THE FOLLOWING NOTES IN CONJUNCTION WITH ALL SITE DRAWINGS

SITE LIGHTING:
REFER TO ELECTRICAL DRAWINGS FOR ALL SITE LIGHTING, LIGHT FIXTURE TYPES, WIRING, UTILITY POLES ETC., LOCATIONS AND SPECIFICATIONS. ALL EXTERIOR LIGHT FIXTURES TO BE DARK-SKY COMPLIANT: NO EXTERIOR LIGHTING ARRAY TO BE DIRECTED OFF PROPERTY TO ROAD ALLOWANCE OR ADJACENT PROPERTIES. ALL LIGHTING ARRAY DIRECTIONS TO SHINE INTERNALLY TOWARD SUBJECT PROPERTY.

GARBAGE / REFUSE STORAGE:
REFUSE STORAGE (GARBAGE) TO BE INSIDE THE PROPOSED BUILDINGS

BUILDING / ARCHITECTURAL:
REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL BUILDING EXTERIOR AND INTERIOR DIMENSIONS, INTERIOR ROOM LAYOUT AND ROOM NAMES, WALL TYPES AND CONSTRUCTION AND SPECIFICATIONS

FROST PROTECTION:
RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2M.

ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

SILTATION CONTROLS:
PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:
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LICENSED PROFESSIONAL ENGINEER 23/02/23 R.W. PHILLIPS PROVINCE OF ONTARIO

LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
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- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C6.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES
- EXISTING GRADES TO REMAIN
- PROPOSED GRADES
- PROPOSED SWALE GRADES
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C6
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180
- PROPOSED GRASSED EARTH BERM MAX SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS.
- POST STORM DRAINAGE AREA — DRAINAGE AREA NUMBER; DRAINAGE AREA IN HECTARES; COEFFICIENT OF RUNOFF (% IMPERVIOUS)

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- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION 8
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 OF A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	REVISION / DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 29th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2018	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 6th 2018	A.D.

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PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-426-5790 Fax: 519-426-8060
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME:
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
132 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
CONCEPT LOT SITE GRADING
(MIDDLE AREA)

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C3
REV. NO.: 4

DISCLAIMER:
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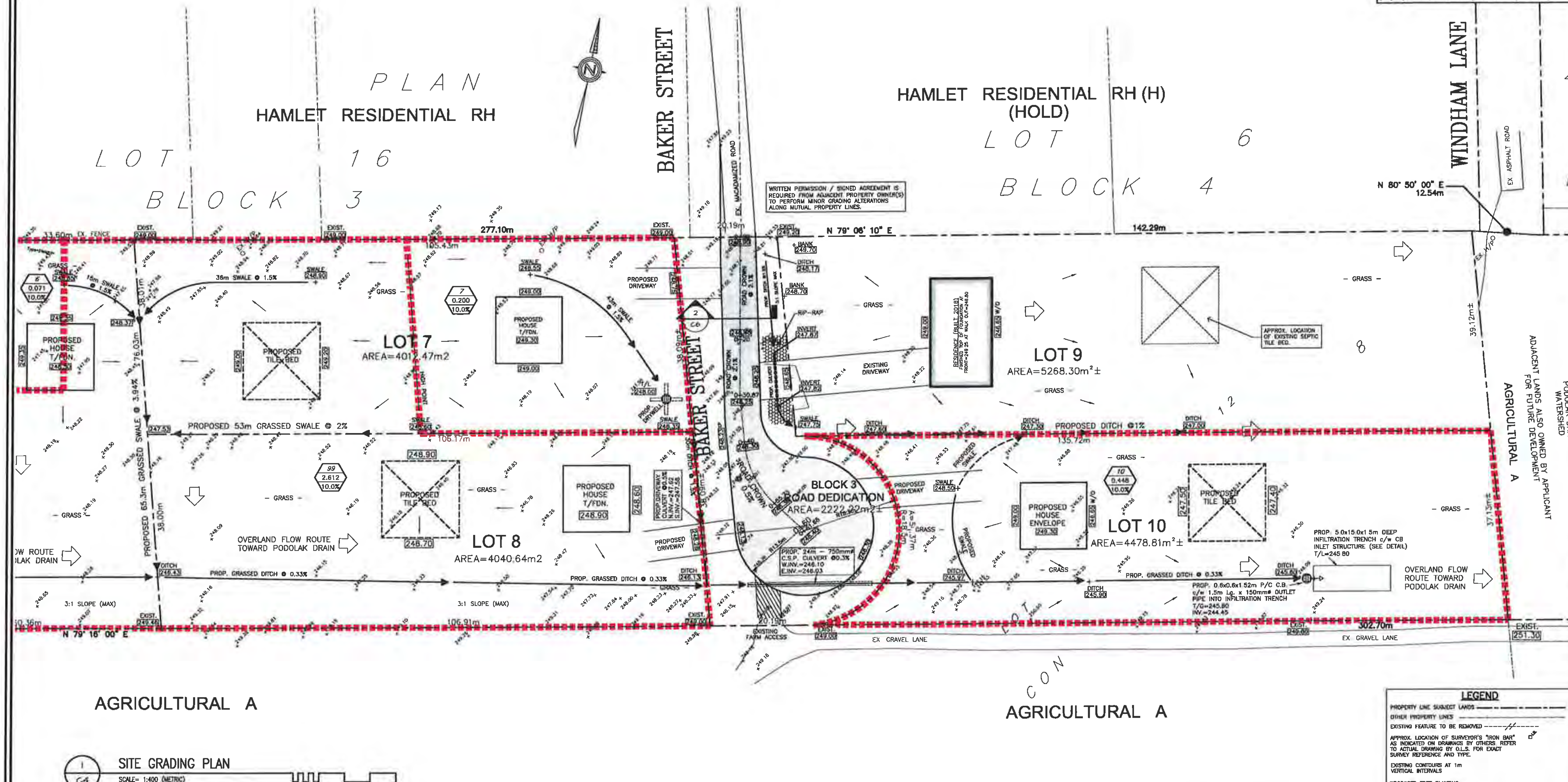
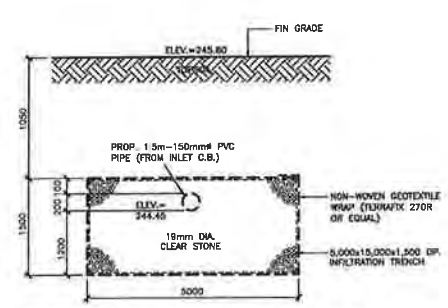




INFILTRATION TRENCH DETAIL
N.T.S.

23/02/23
R. W. PHILLIPS
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

IMPORTANT

PLEASE READ THE FOLLOWING NOTES IN CONJUNCTION WITH ALL SITE DRAWINGS

*** SITE LIGHTING:**
REFER TO ELECTRICAL DRAWINGS FOR ALL SITE LIGHTING, LIGHT FIXTURE TYPES, WIRING, UTILITY POLES ETC., LOCATIONS AND SPECIFICATIONS. ALL EXTERIOR LIGHT FIXTURES TO BE DARK-SKY COMPLIANT: NO EXTERIOR LIGHTING ARRAY TO BE DIRECTED OFF PROPERTY TO ROAD ALLOWANCE OR ADJACENT PROPERTIES. ALL LIGHTING ARRAY DIRECTIONS TO SHINE INTERNALLY TOWARD SUBJECT PROPERTY.

GARBAGE / REFUSE STORAGE:
REFUSE STORAGE (GARBAGE) TO BE INSIDE THE PROPOSED BUILDINGS

BUILDING / ARCHITECTURAL:
REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL BUILDING EXTERIOR AND INTERIOR DIMENSIONS, INTERIOR ROOM LAYOUT AND ROOM NAMES, WALL TYPES AND CONSTRUCTION AND SPECIFICATIONS.

FROST PROTECTION:
RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2M.

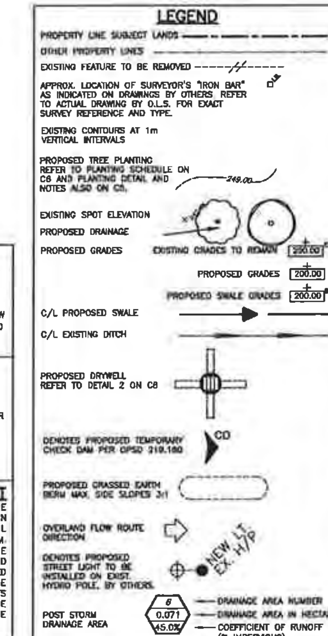
ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

SILTATION CONTROLS:
PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:
ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT
DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF T=__MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE DRYWELL DETAIL ON THE DESIGN DRAWING.

LEGEND



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CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

- ☐ ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ☐ ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
- ☐ THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- ☐ PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION 8,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
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SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO. REVISION	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 28th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2019	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 6th 2019	A.S.

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A DIVISION OF 392583 ALBERTA LTD.

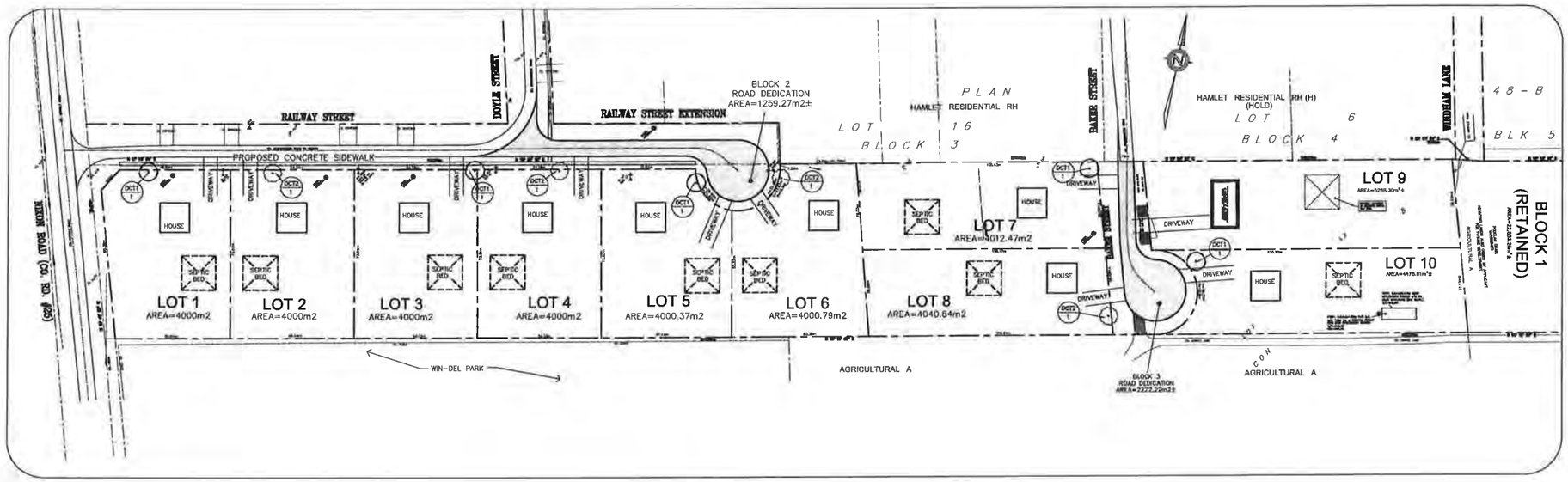
J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME:
PROPOSED SUBDIVISION FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE: CONCEPT LOT SITE GRADING (EAST AREA)

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C4
REV. NO.: 4

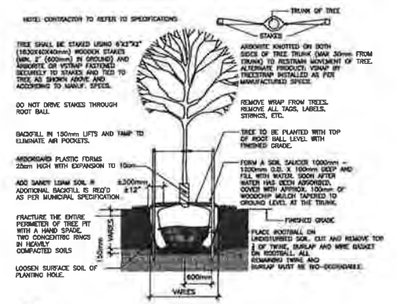


1 / C5 OVERALL SITE PLAN / DRAINAGE
SCALE= 1:1000 (METRIC)

PLANTING SCHEDULE

KEY	COMMON NAME	BOTANICAL NAME	QUANT.	CONDITION	PROPERTIES	SIZE
		TREES				
DCT1	APOLLO NORWAY MAPLE	ACER NEDOWNUM 'APOLLO'	5	(B&B) W/B	F, HC, NT	7.0m HT
DCT2	RED EMPEROR JAPANESE MAPLE	ACER PALMATUM 'RED EMPEROR'	4	(B&B) W/B	FL, FC, NT	4.5m HT

* FOR TYP. PLANTING DETAILAND NOTES REFER TO PAGE SP4



2 / C5 TYP. TREE PLANTING
SCALE: NTS

PLANT MATERIALS:

1. ALL TREE PITS SHALL BE AT LEAST 2 FT. (600MM) WIDER THAN BALL OF THE TREE TO BE PLANTED AND SHALL BE DEEP ENOUGH SO THAT THE TOP OF BALL IS AT THE SAME LEVEL AS SURROUNDING GRADE. A MINIMUM OF 6" (150MM) OF BACKFILL SHALL BE PLACED UNDER BALL. TREE PITS ARE NOT TO BE LEFT OPEN OVER NIGHT.
2. SHRUB BEDS SHALL BE EXCAVATED TO A DEPTH OF 18" (450MM) AND FILLED WITH APPROVED BACKFILL MATERIAL.
3. ALL TREES SHALL HAVE AN EARTH SAUCER AT ITS BASE WITH A DIAMETER AS LARGE AS EXCAVATED AREA TO SHAPE TO RETAIN WATER. SEE DETAIL. EARTH SAUCER TO HAVE APPROVED MULCH INSTALLED TO A MINIMUM DEPTH OR 2.5" (63MM).
4. ALL BURLAP SHALL BE CUT AND BURIED BELOW SURFACE DURING PLANTING.
5. ALL EVERGREENS ARE TO WRAPPED THE FIRST WINTER.

LANDSCAPE NOTES:

1. ANY PLANT MATERIAL REQUIRES THE APPROVAL OF THE CITY OF NORFOLK COUNTY.
2. PLANT MATERIAL OR FENCING SHALL BE MINIMUM TO BE PROVIDED BY THE OWNER. ANY ADDITIONS MUST COMPLY WITH THE ZONING BY-LAW.
3. ANY SODDING, PLANTING, OR WORK ON LANDS ABUTTING THE PROPERTY FROM THE LOT LINES TO SIDEWALK AND CURBING, SHALL BE TO THE SATISFACTION OF THE CITY.
4. ALL LANDSCAPING SHALL BE INSTALLED PRIOR TO THE END OF THE FIRST GROWING SEASON FOLLOWING OCCUPANCY OF THE DEVELOPMENT.
5. UNLESS OTHERWISE SPECIFIED ALL LANDSCAPED AREAS TO BE SODDED.
6. UNLESS OTHERWISE SPECIFIED ALL UNDEVELOPED AREAS SHALL BE UNDISTURBED AND KEPT FREE AND CLEAR OF DEBRIS AND MAINTAINED
7. ALL PLANTING BEDS TO BE PROPERLY MULCHED.

GENERAL PLANTING NOTES:

TOPSOIL:

ALL SHRUB BEDS AND TREES TO BE BACKFILLED WITH GOOD QUALITY TOPSOIL SCARIFIED FREE OF ALL STONES, ROOTS, BRANCHES LARGER THAN 1" (25MM) AND COMPACTED TO 85% S.P.D.

ALL SUBSOIL TO BE SCARIFIED TO A DEPTH OF 6" (150 MM) PRIOR TO THE INSTALLATION OF TOPSOIL TO ENSURE NO HARDPAN CONDITIONS.

DIRECT ALL RAIN LEADERS AND SUMP LEADERS AWAY FROM PLANTING BEDS AND TO THE DESIGNATED SWALES.

MULCH:

ALL TREE PITS, SHRUB PITS AND PLANTING AREAS ARE TO BE MULCHED WITH MIN. 75MM OF MEDIUM MULCH, UNLESS OTHERWISE NOTED.

PLANTING MATERIAL:
CONTRACTOR TO VERIFY ALL PLANT MATERIAL ON DRAWING(S) AND PLANT MATERIAL LIST(S). REPORT ALL DISCREPANCIES

PLANTINGS MAY BE ADJUSTED TO SUIT UTILITIES STRUCTURES AND AESTHETIC CONCERNS,

DO NOT INSTALL PLANT MATERIAL IN DRAINAGE SWALES.
ALL TREES TO BE PROPERLY STAKED WITH HOSE COATED WIRE. REMOVE ALL GUY WIRES AFTER 2 FULL GROWING SEASONS.

SOD:

UPON INSTALLATION AREAS SHOULD BE WATERED SO AS TO SATURATE SOD AND THE UPPER 4" (100MM) OF BACKFILL TOPSOIL. AFTER SOD AND SOIL HAVE DRIED SUFFICIENTLY TO PREVENT DAMAGE, IT SHALL BE ROLLED WITH A ROLLER.

LEGEND

PROPERTY LINE SUBJECT LANDS
OTHER PROPERTY LINES
EXISTING FEATURE TO BE REMOVED
APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
EXISTING CONTOURS AT 1m VERTICAL INTERVALS
PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C5 AND PLANTING DETAIL AND NOTES AL30 ON C5.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PASTORIUS
PROVINCE OF ONTARIO

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KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

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SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	REVISION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 26th 2018	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	DEC. 20th 2018	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 9th 2018	A.G.

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A DIVISION OF 392363 ALBERTA LTD.

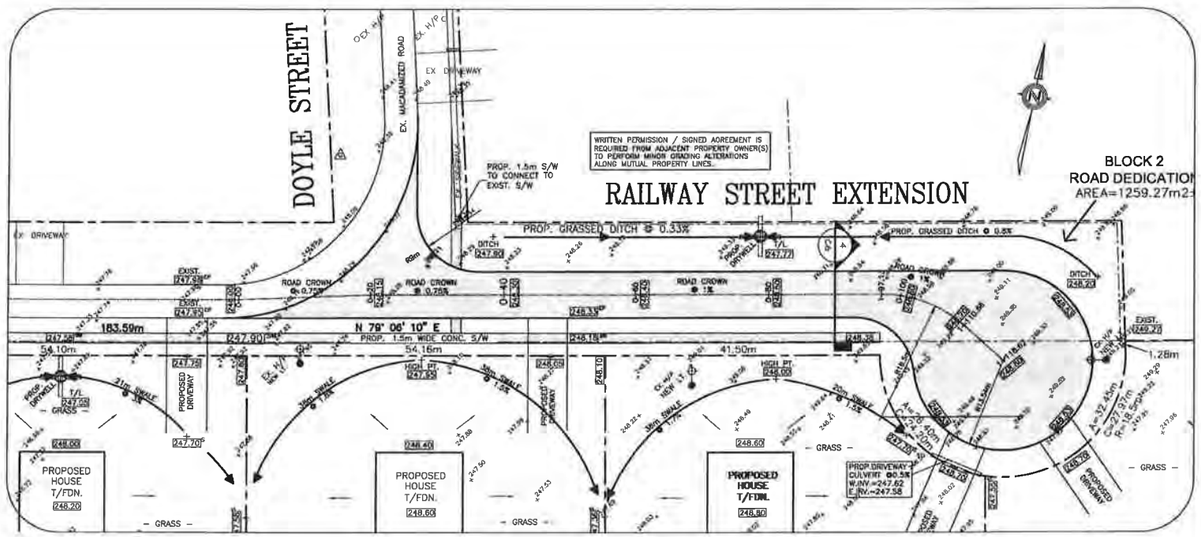
J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
PLANTING PLAN

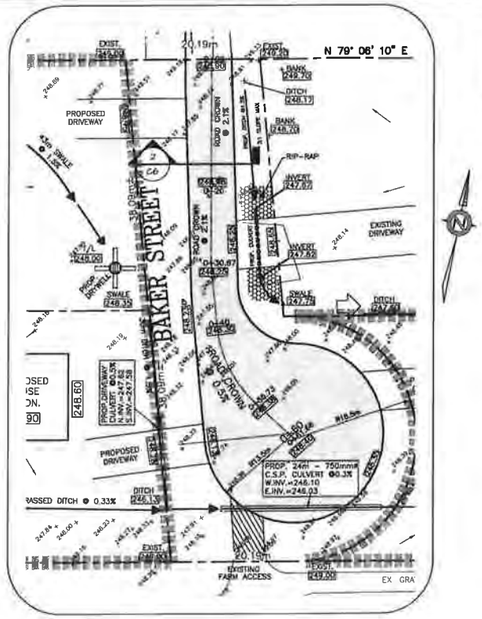
SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: **15640/7251**
DWG. NO.: **C5** REV. NO.: **4**



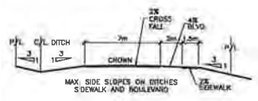
1 / C6 SITE GRADING PLAN

SCALE= 1:400 (METRIC)



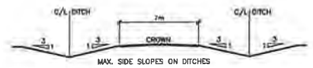
3 / C6 SITE GRADING PLAN

SCALE= 1:400 (METRIC)



2 / C6 TYPICAL DRIVEWAY CROSS-SECTION

SCALE: N.T.S



4 / C6 TYPICAL DRIVEWAY CROSS-SECTION

SCALE: N.T.S.

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KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

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SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

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J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

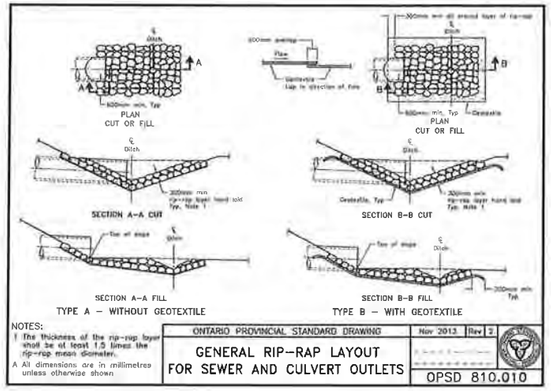
PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE
PLAN & PROFILE - RAILWAY STREET AND BAKER STREET EXTENSION

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

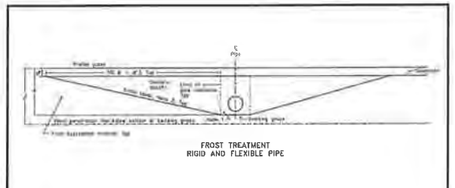
PROJECT NO.: 15640/7251
DWG NO.: C6
REV. NO.: 4

LICENSED PROFESSIONAL ENGINEER
23/02/23
R.W. PUMPA
PROVINCE OF ONTARIO



NOTES:
1 The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.
A All dimensions are in millimetres unless otherwise shown

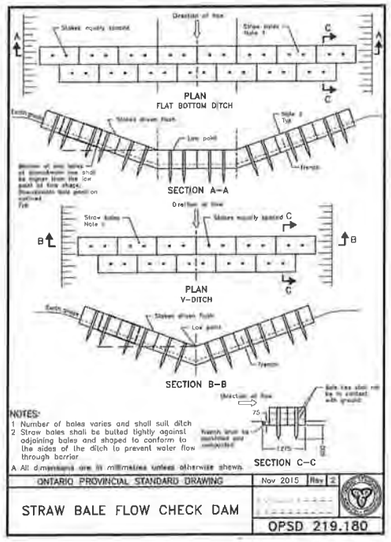
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev 2
GENERAL RIP-RAP LAYOUT FOR SEWER AND CULVERT OUTLETS		
	OPSD 810.010	



NOTES:
1 Pipe embedment or bedding cover, and backfill shall be according to
a) Flexible OPSD 802.010, 802.013, 802.014, 802.020, 802.023, and 802.024.
b) Rigid – OPSD 802.030, 802.031, 802.032, 802.033, 802.034, 802.050, 802.051, 802.052, 802.053, and 802.054.
2 Frost tapers shall start at bedding grade

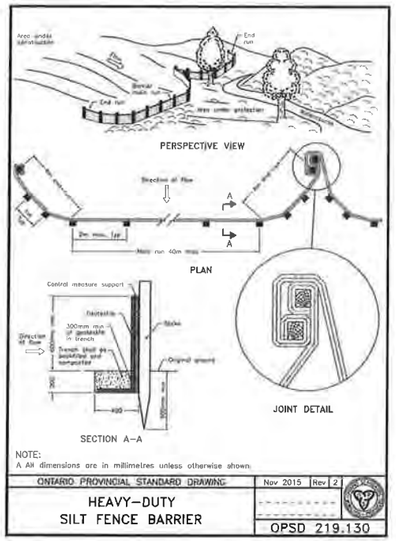
LEGEND:
d –depth of roadbed granular
A –depth of frost treatment below profile grade
f –depth of frost penetration below profile grade

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
FROST TREATMENT – PIPE CULVERTS FROST PENETRATION LINE BELOW BEDDING GRADE		
	OPSD 803.030	



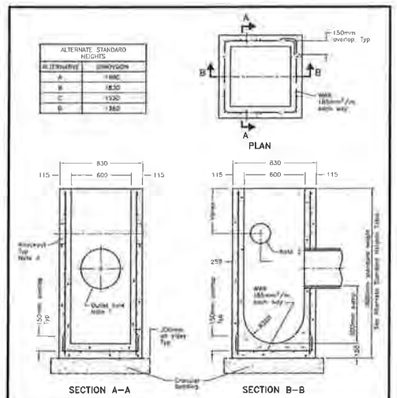
NOTES:
1 Number of bales varies and shall suit ditch
2 Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
STRAW BALE FLOW CHECK DAM		
	OPSD 219.180	



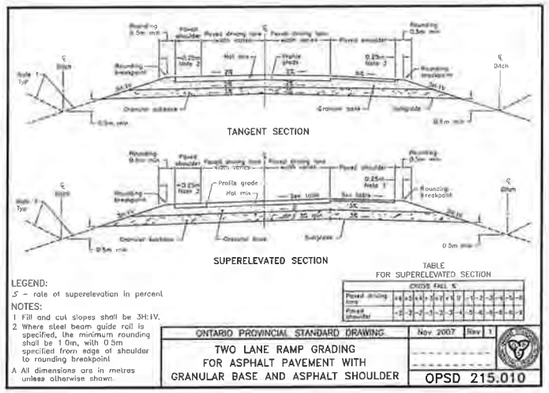
NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
HEAVY-DUTY SILT FENCE BARRIER		
	OPSD 219.130	



NOTES:
1 Outlet hole and 525mm diameter maximum heights as required.
2 200mm diameter knockout is recommended substitute Knockout shall be 40mm deep.
A Centre reinforcing in base slab and walls 300mm
B Granular backfill shall be placed in a minimum thickness of 300mm all around the catch basin.
C Frame grate and adjustment units shall be installed according to OPSD 704.010
D Pipe support shall be according to OPSD 705.020
E All dimensions are nominal
F All dimensions are in millimetres unless otherwise shown

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
PRECAST CONCRETE CATCH BASIN 600x600mm		
	OPSD 705.010	



LEGEND:
S – rate of superelevation in percent

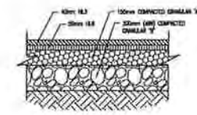
NOTES:
1 Fill and cut slopes shall be 3H:1V.
2 Where steel beam guide rail is specified, the minimum rounding shall be 1.0m, with 0.3m specified from edge of shoulder to rounding breakpoint
A All dimensions are in metres unless otherwise shown.

TABLE FOR SUPERELEVATED SECTION

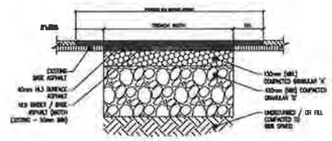
CROSS FALL %																
Paved driving lane	+6	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6	-6	-6	-6
Paved shoulder	+2	+2	+2	+2	+2	+2	+2	+2	+2	+2	+2	+2	+2	+3	+4	+5

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2007	Rev 1
TWO LANE RAMP GRADING FOR ASPHALT PAVEMENT WITH GRANULAR BASE AND ASPHALT SHOULDER		
	OPSD 215.010	

1/C7 TYPICAL ROAD CROSS-SECTION
SCALE= N.T.S.



5/C7 TYPICAL ASPHALT DETAIL
SCALE= N.T.S

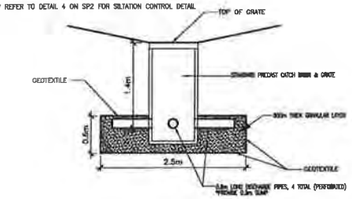


ROADWAY RESTORATION NOTES:

1. CONTRACTOR TO OBTAIN ALL NECESSARY ROAD CUT PERMITS PRIOR TO CONSTRUCTION
2. CONTRACTOR TO MAINTAIN A MINIMUM OF ONE LANE OF TRAFFIC AT ALL TIMES. IF TEMPORARY ROAD CLOSURES ARE NECESSARY, THEN CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS WITH NORFOLK COUNTY.
3. CONTRACTOR SHALL LOCATE AND PROTECT ALL UTILITIES
4. ALL CUTS TO EXISTING ASPHALT AND CONCRETE SHALL BE CLEAN SAW CUTS ONLY.
5. BACKFILL FOR ALL SERVICE TRENCHES FROM EDGE OF ASPHALT TO BACK OF SIDEWALK SHALL BE GRANULAR 'B'
6. BACKFILL FOR ALL SERVICE TRENCHES FROM BACK OF SIDEWALK TO STREET LINE SHALL BE SELECT NATIVE MATERIAL.
7. ALL BEDDING AND BACKFILL SHALL BE COMPACTED TO MIN 98% SPMDD
8. CURBS AND SUBDRAINS SHALL BE RESTORED TO MATCH EXISTING CONDITIONS TO THE SATISFACTION OF NORFOLK COUNTY.
9. BOULEVARDS, SHALL BE RESTORED WITH NO.1 NURSERY SOD DM MINIMUM 100mm IMPORTED TOPSOIL TO THE SATISFACTION OF NORFOLK COUNTY.

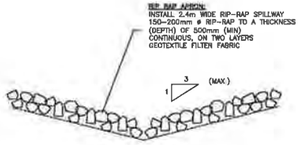
4/C7 TYPICAL ROAD RESTORATION DETAIL
SCALE= N.T.S.

PROPOSED CATCH BASIN AND DRYWELL:
-TOP OF GRATE AT ELEVATION AS PER DRAWING
-EXCAVATE AREA, REMOVE EXISTING SOIL AND REPLACE WITH GRAVEL LAYER AS INDICATED.
-INSTALL 2.5m x 2.5m x 0.6m GRAVEL LAYER (USE GRAN 'A', C/W FILTER CLOTH
-TOTAL THICKNESS OF (BURIED) GRAVEL TO BE 0.6m
-BOTTOM OF GRANULAR LAYER, 2m BELOW TOP OF GRATE. (TOTAL THICKNESS is 0.6m)
-INSTALL (4) – 0.6m LONG 150mm DIA. PERFORATED HDPE DISCHARGE PIPES. INVERT ELEVATION FOR ALL 4 DISCHARGE PIPES TO BE 1.4m BELOW GRATE
-FILTER CLOTH REQUIRED AROUND ENTIRE AREA OF GRANULAR
* REFER TO DETAIL 4 ON SP2 FOR SILTATION CONTROL DETAIL



2/C7 TYPICAL DRYWELL DETAIL
SCALE= N.T.S

RIP RAP APRON:
INSTALL 2.4m WIDE RIP-RAP SPILLWAY 150-200mm ø RIP-RAP TO A THICKNESS (DEPTH) OF 500mm (MIN) CONTINUOUS, ON TWO LAYERS GEOTEXTILE FILTEN FABRIC



3/C7 TYPICAL RIP-RAP DETAIL
SCALE= N.T.S.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PEARSON
PROVINCE OF ONTARIO

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

- CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 OB A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD, ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 248.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

REVISION	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B
3	ISSUED FOR CLIENT REVIEW	APR. 28th 2016	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2015	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 8th 2015	A.D.

DO NOT SCALE DRAWINGS; THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

A.D. PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392565 ALBERTA LTD.

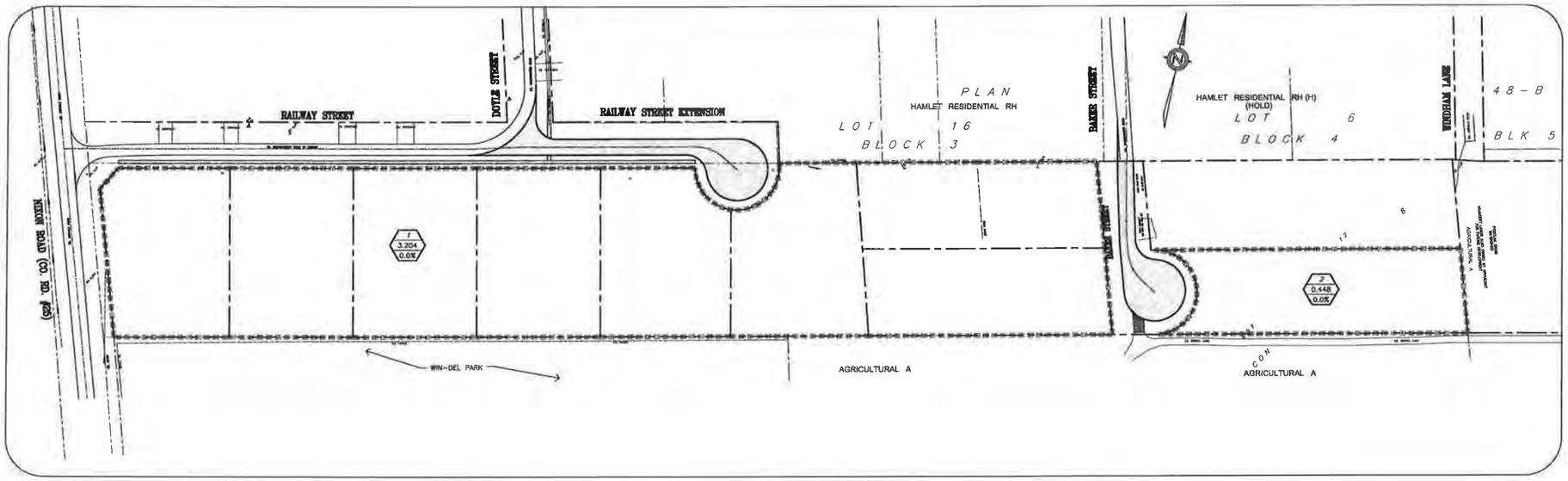
J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME:
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
DETAIL PAGE

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG NO.: C7
REV. NO.: 4



1/C5 PRE-DEVELOPMENT STORM DRAINAGE AREAS

SCALE= 1:1000 (METRIC)

DISCLAIMER:
This is not a legal plan of survey and shall not be used for any purpose except for the purpose indicated in the title block. The employees of M. C. Engineering are not licensed Ontario Land Surveyors, therefore in accordance with the Surveyors Act R.S.O. 1990, c.S9, (as amended 2009) please refer to stamped O.L.S. drawing(s) for all survey data, including but not limited to, bearings and distances, property bars and monuments and any other real property boundary information, pertaining to the subject lands and or other lands adjoining the same. M.C. Engineering assumes no responsibility for the use of, or reliance on, all real property information shown (or not shown) on this plan.

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK..
- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 OF A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	REVISION	DESCRIPTION	DATE	BY

DO NOT SCALE DRAWINGS; THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
PRE-DEVELOPMENT STORM DRAINAGE AREAS

SCALE:	AS SHOWN
DRAWN BY:	K.P.B.
CHECKED BY:	R.W.P.
DATE:	FEB 2023
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C8
REV. NO.: 0

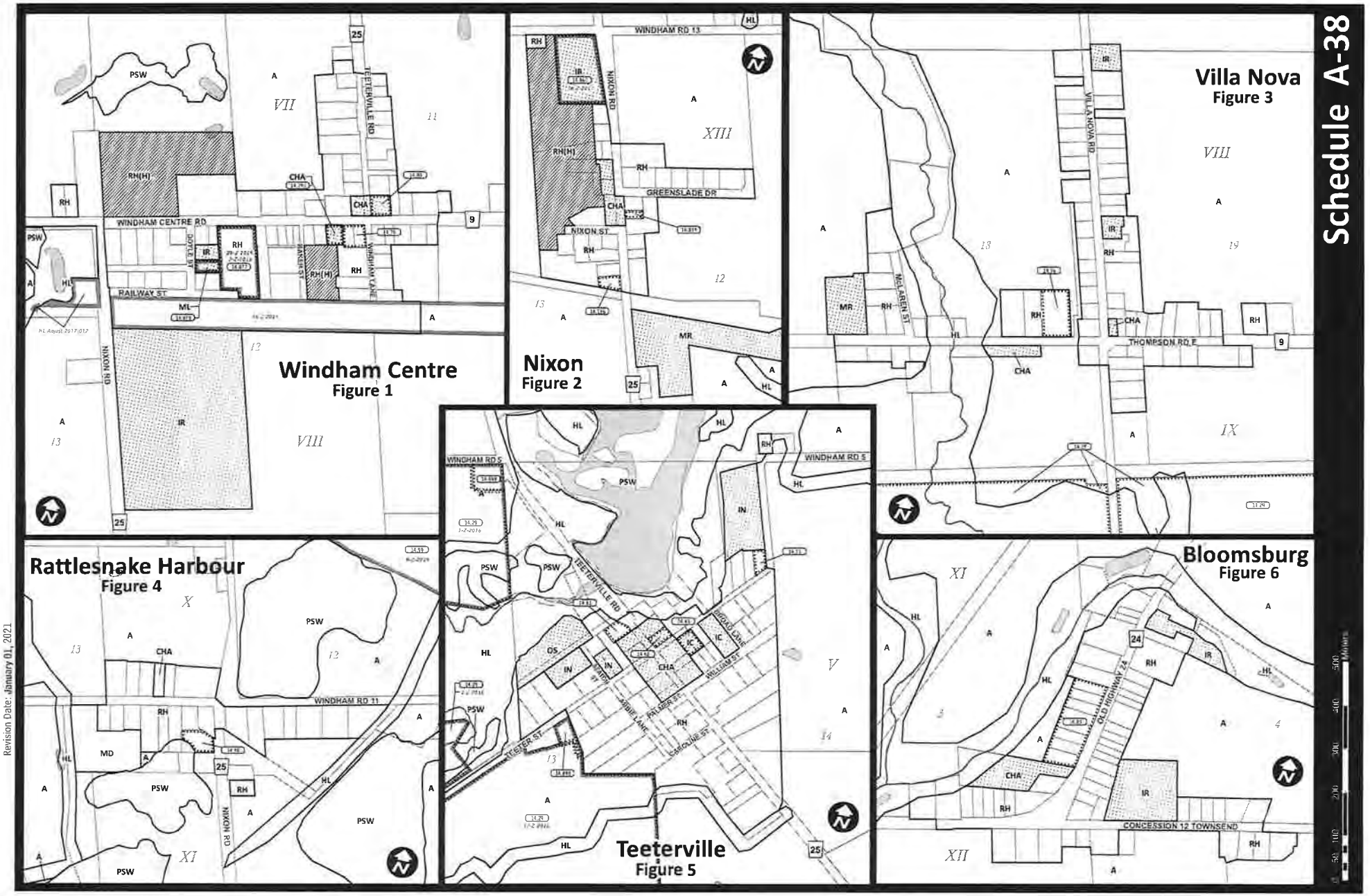
LEGEND

PROPERTY LINE SUBJECT LANDS
SITHER PROPERTY LINES
EXISTING FEATURE TO BE REMOVED
APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
EXISTING CONTOURS AT 1m VERTICAL INTERVALS
PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C8 AND PLANTING DETAIL AND NOTES ALSO ON C8.
PRE STORM DRAINAGE AREA — 1 / 0.071 / 45.0% — DRAINAGE AREA NUMBER; DRAINAGE AREA IN HECTARES; COEFFICIENT OF RUNOFF (% IMPERVIOUS)

LICENSED PROFESSIONAL ENGINEER — 23/02/23 — R. W. PEWITT — PROVINCE OF ONTARIO

Appendix 'B'
Land Use Aerial Photo of Subject Area
Including zoning bylaw provisions for the Area

Schedule A-38



Revision Date: January 01, 2021

Google Maps

Nixon Rd

MN 32 Nixon Road, Windham Centre

Imagery ©2023 CNES / Airbus, First Base Solutions, Maxar Technologies, Map data ©2023 50 m

August 17, 2022

Lloyd Wood
C/O Landpro Planning Solutions
707 E Main Street
Welland, Ontario, N3T 5L8

Subject: **Lot Severance – T-Time and Infiltration Assessment**
25 Bakers Street, Windham Centre, ON
Englobe reference: OC.04-02205818-GE-L-0001-01

Dear Sir:

Englobe Corp. (Englobe) is pleased to provide this letter with the results of percolation time and infiltration assessment for the proposed lot severance at 25 Bakers Street in Windham Centre, ON. The project involves the severance of a property and creating ten new residential lots. Each new lot will be serviced with a private onsite sewage system and lots 1 to 3 will have infiltration galleries.

The purpose of the geotechnical investigation is to determine the subsurface soil and groundwater conditions at the proposed septic bed and infiltration gallery locations and provide recommended T times for use in designing the on site sewage system at each new lot and estimated infiltration rates for use in designing the infiltration galleries.

The fieldwork for the assignment was carried out on June 27, 2022 and involved the excavation of twelve test pits (Test Pit TP-01-22 and TP-12-22) to depths of 1.8 to 3.0 m at the locations shown on Drawing 1, appended.

1. Fieldwork

The test pits were advanced with a tracked hydraulic excavator supplied by Mr. Lloyd Wood. Soil samples were recovered from the test pit at select intervals. Groundwater observations were carried out in the open test pits during and upon completion of excavating. The observations are provided on the test pit logs, appended. Upon completion of excavating, the test pits were backfilled with on-site soil.

The fieldwork was monitored by an experienced Engineering Technician who was also responsible for sampling.

The test pits locations and ground surface elevations were surveyed by Englobe. The test pit locations were provided in the field by Mr. Lloyd Wood and it is understood that the locations represent the location of the proposed septic beds and infiltration galleries. The ground surface elevations are referred to the following temporary benchmark (TBM):

TBM: Nail set in the asphalt at the intersection of Nixon Road and Railway Street.

Elevation 100.00 m (local datum).

2. Summarized Conditions

The soil conditions, at the proposed septic beds and infiltration galleries (Test Pit TP-01-22 to TP-12-22) typically comprise a surficial layer of fill overlying native sand and silt deposits that range in composition from sand with trace to some silt and gravel to silt and sand with trace to some gravel and clay. The fill extended to the termination depth of test pits TP-11-22 and TP-12-22.

Groundwater was encountered in test pits TP-02-22, TP-05-22 and TP-10-22 at depths of 1.2 to 1.4 m. It is noteworthy that the soils were observed to be wet in most test pits at depths of 1.5 to 2.5 m. The groundwater conditions at the site may vary locally due to seasonal fluctuations, groundwater regimes at the site or as a consequence of construction activities at the site or adjacent sites.

Twelve soil samples from the test pits excavated were submitted to Englobe's laboratory for particle size analyses and the results are provided on Figures 1 to 12, appended and summarized in Table 1:

Table 1: Summary of Granular Particle Size Analyses

Test Pit Number	Depth (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
TP-01-22 (Sa1)	1.6	0.8	83.2	8.2	7.8
TP-02-22 (Sa1)	0.2	1.0	44.8	39.9	14.3
TP-03-22 (Sa3)	1.5	17.9	38.5	33.1	10.5
TP-04-22 (Sa1)	0.8	0	56.5	35.5	8.0
TP-05-22 (Sa1)	0.7	14	64.1	18.1	3.8
TP-06-22 (Sa2)	1.6	17.9	45.3	33.2	3.6
TP-07-22 (Sa3)	1.5	0	50.9	36.1	13.0
TP-08-22 (Sa2)	0.9	2.0	36.1	53.9	8.0
TP-09-22 (Sa2)	1.3	7.8	44.1	42.2	5.9
TP10-22 (Sa3)	1.6	2.7	53.3	40.4	3.6
TP-11-22 (Sa2)	1.0	14.3	44.8	34.1	6.8
TP-12-22 (Sa2)	1.0	19.2	61.8	14.4	4.6

3. Recommendations

The house lots at this site will be serviced by individual on-site sewage systems. The subgrade soil within the proposed septic beds as shown on Drawing 1, will comprise native sand and silt. The results of nine particle size analyses carried out on samples of the native sand and silt are plotted on Figures 4 to 12, Appended and summarized in Table 1.

The percolation rate of the soil deposits at the tile bed locations were assessed based on the physical characteristics encountered during the subsurface investigation (i.e. structure, density, organics, etc.); and the soil type as described by the Unified Soil Classification System in Supplementary Standard SB-6 of the OBC. Soil classifications and recommended 'T'-times for leaching bed design based on the subsurface conditions encountered are provided in the following table:

Table 2: Soil Classifications and 'T'-Times

Test Pit Number	Location	Sample Depth (m)	Soil Classification	Percolation Time Range (min/cm)	Recommended 'T'-Time (min/cm)
TP-04-22	Lot 1	0.8	SM-SC	8-50	25
TP-05-22	Lot 2	0.7	SM	8-20	20
TP-06-22	Lot 3	1.6	SM-SC	8-50	25
TP-07-22	Lot 4	1.5	SM-SC	8-50	30
TP-08-22	Lot 5	0.9	ML	20-50	35
TP-09-22	Lot 6	1.3	SM-SC	8-50	35
TP-10-22	Lot 7	1.6	SM-SC	8-50	35
TP-11-22	Lot 8	1.0	SM-SC	8-50	30
TP-12-22	Lot 10	1.0	SM	8-20	20

Infiltration galleries are proposed for the front of lots 1 to 3 (TP-01-22 to TP-03-22). The hydraulic conductivities of the grain size distribution sample was assessed using those of the 15 available methods implemented in the spreadsheet “HydrogeoSieveXL ver. 2.2”, J.F. Devlin, University of Kansas, 2015, for which the samples in question met acceptance criteria. The calculated hydraulic conductivity of samples 1 to 3 is 10^{-3} to 10^{-4} cm/sec, corresponding to a factored infiltration rate of 20 to 30 mm/hr. It is noteworthy that groundwater seepage was encountered at a depth of 1.2 m in test pit TP-02-22 and this will impact the ability of the soil to infiltrate.

The estimated design infiltration rates are based on recommendations found in “Low Impact Development Stormwater Management Planning and Design Guide, Appendix C” published by the Toronto and Region Conservation Authority (TRCA) and the Credit Valley Conservation Authority (CVC), and the approximate relationship between hydraulic conductivity and infiltration rate. It should be noted that hydraulic conductivity and infiltration rate are distinct concepts and such, unit conversion does not apply.

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

It is the responsibility of the designer to and to carry out field inspections at the time of sewage system and infiltration gallery installation to confirm that the soil and groundwater conditions are consistent with the design assumptions.

We trust that this information is suitable for your immediate requirements. If you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours very truly,

Yours very truly,

Englobe Corp.

Thom Staples, C.E.T.

Senior Project Manager

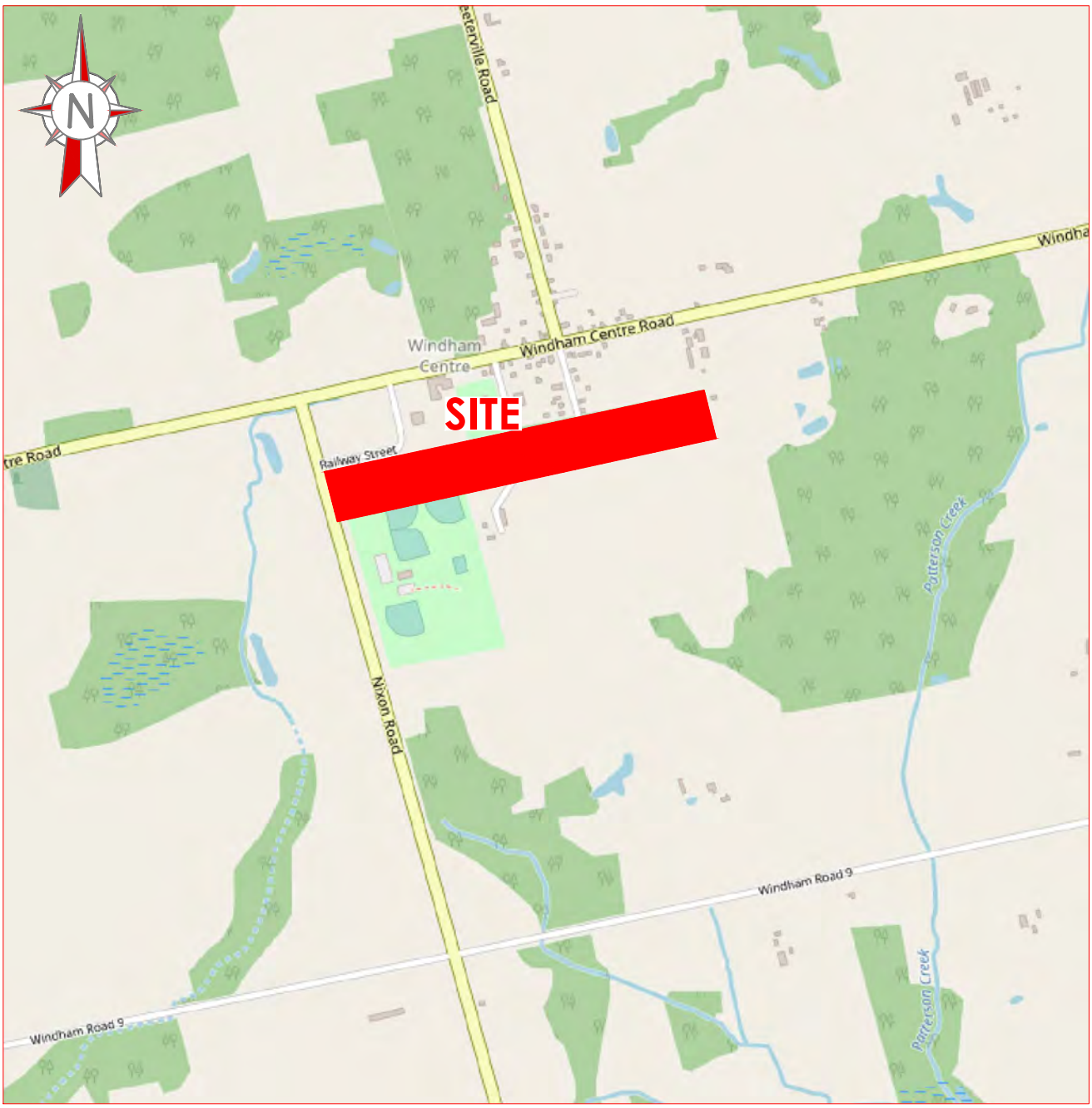
Brantford Area Manager

Rob Helwig, P.Geo., QP.

Senior Geoscientist

London Operations

Encl. Test Pit Plan
Encl. Drawing 1 – Test Pit Location Plan
Encl. Test Pit Log – TP-01-22 to TP-12-22
Encl. Figures 1 to 12 – Particle Size Analyses



NOTES:

1-REFERENCE: © OpenStreetMap contributors (2022).

2-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

0 100 200 300 400 500 m

SCALE 1:15000

Project

Nine Lot Development

25 Bakers St, Windham Centre

Title

LOCATION PLAN

ENGLOBE

440, Hardy Road, Unit 3
Brantford (Ontario) N3T 5L8
Telephone : 519.720.0078
Fax : 519.720.0976

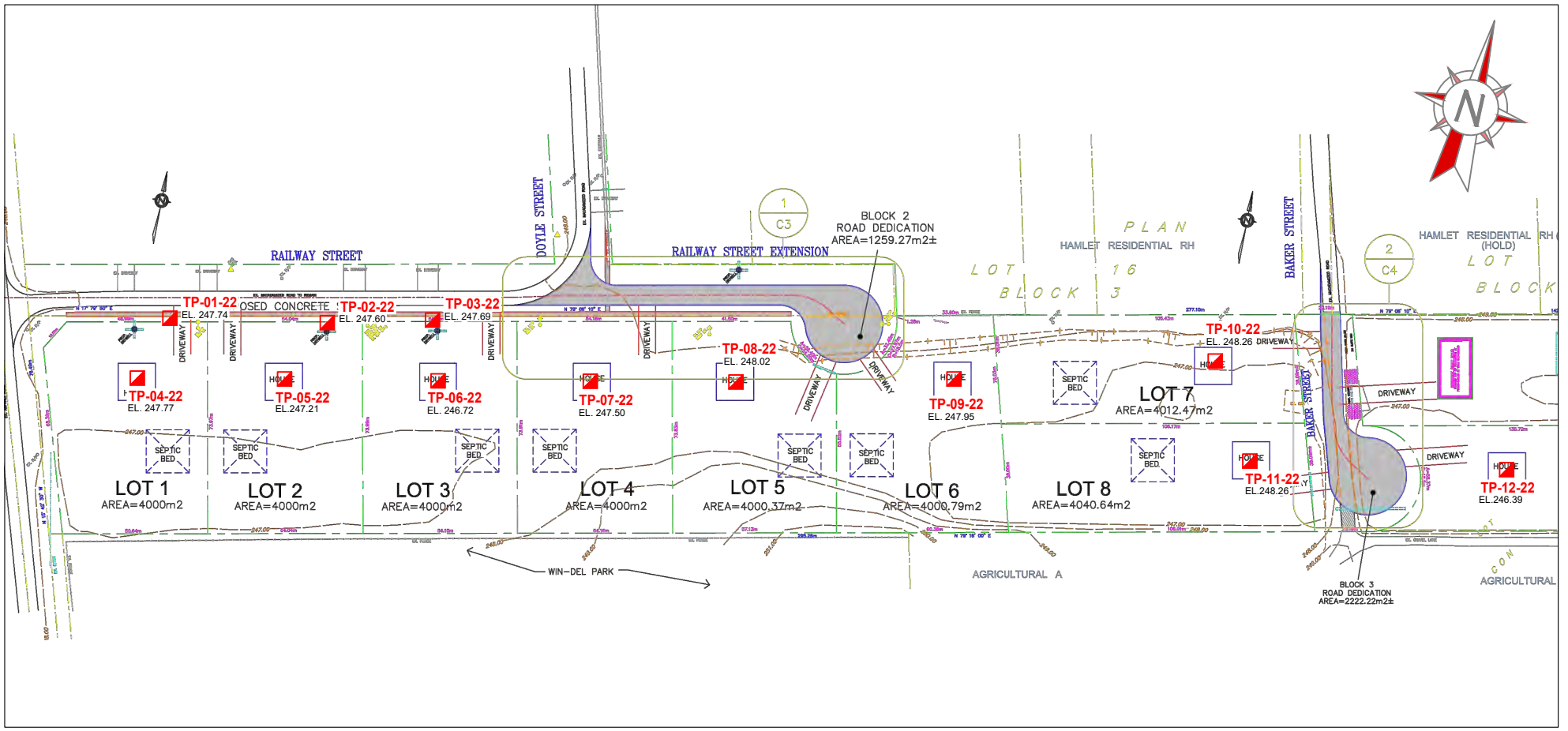
Prepared	E.Nimer	Discipline	GEOTECHNICAL	Project manager	T.Staples
Drawn	E.Nimer	Scale	1 : 15000	Sequence no.	01 of 02
Checked	T.Staples	Date	2022-08-03		

M. dept.	Project	Disc.	Dwg no.	Rev.
04	02205818.000	GE	001	00

P:\160\2022 (BRANTFORD-KITCHENER-LONDON)\02205818.000 - NINE LOT DEVELOPMENT, 25 BAKERS STREET, WINDHAM CENTRE\Z4_CAD\DWG001.DWG

P:\160\2022 (BRANTFORD-KITCHENER-LONDON)\02205818.000 - NINE LOT DEVELOPMENT, 25 BAKERS STREET, WINDHAM CENTRE\Z4_CAD\DWG002.DWG

0 1 2 3 4 5 10 cm



LEGEND :

BOREHOLE LOCATION

EL. 247.77 GROUND SURFACE ELEVATION (m)

NOTES :

1-REFERENCES : M C Engineering, Proposed subdivision for Lloyd Wood, May 2017, 7251, C1

2- All elevations were interpreted from drawing referenced above

3-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

0 20 40 60 80 100 m

SCALE 1:2000

Project

Nine Lot Development

25 Bakers St, Windham Centre

Title

SITE PLAN

ENGLOBE

440, Hardy Road, Unit 3
Brantford (Ontario) N3T 5L8
Telephone : 519.720.0078
Fax : 519.720.0976

Prepared	E.Nimer	Discipline	GEOTECHNICAL	Project manager	T.Staples
Drawn	E.Nimer	Scale	1 : 2000	Sequence no.	02 of 02
Checked	T.Staples	Date	2022-08-10		

M. dept.	Project	Disc.	Dwg no.	Rev.
04	02205818.000	GE	002	00

LOG OF BOREHOLE No. TP-01-22

Englobe

Project No. 02205818.000 DRAWING No. 01

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, trace silt and clay, with rootlets Brown, moist	99.06	0	20 40 60 80 50 100 150 200	20 40 60			
				1					
			97.46				SS	SS-01	
		SAND Sand, some silt and gravel Moist					SS	SS-02	
			97.26						
		Silty seams Mottled brown to grey, wet		2					
							SS	SS-03	
			96.06	3					
		Terminated at 3.0 m							

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

LOG OF BOREHOLE No. TP-02-22

Englobe

Project No. 02205818.000 DRAWING No. 02

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH
		TOPSOIL	98.52	0
		SAND Sand and silt, some clay trace of gravel Rusty brown	98.32	
			97.42	1
		SAND AND GRAVEL Trace of silt Brown, saturated		
		Terminated at 1.8 m	96.72	

Standard Penetration Test N Value: 20, 40, 60, 80
Shear Strength kPa: 50, 100, 150, 200
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20, 40, 60

SAMPLES: SS-01, SS-02

Natural Unit Weight kN/m³

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	1.1	1.2

LOG OF BOREHOLE No. TP-03-22

Englobe

Project No. 02205818.000 DRAWING No. 03

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH
		FILL Sand, some silt, trace gravel Brown, moist	98.91	0
		SAND Sand, some silt, trace of gravel Rusty brown, moist	98.01	1
		Silty sand, some gravel, some clay with silt seams Moist	97.41	2
		Wet	96.61	
		Terminated at 3.8 m	96.11	3

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES: SS-01, SS-02, SS-03, SS-04

Natural Unit Weight kN/m³

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

LOG OF BOREHOLE No. TP-04-22

Englobe

Project No. 02205818.000 DRAWING No. 04

Project: Nine Lot Development Sheet No. 1 of 1

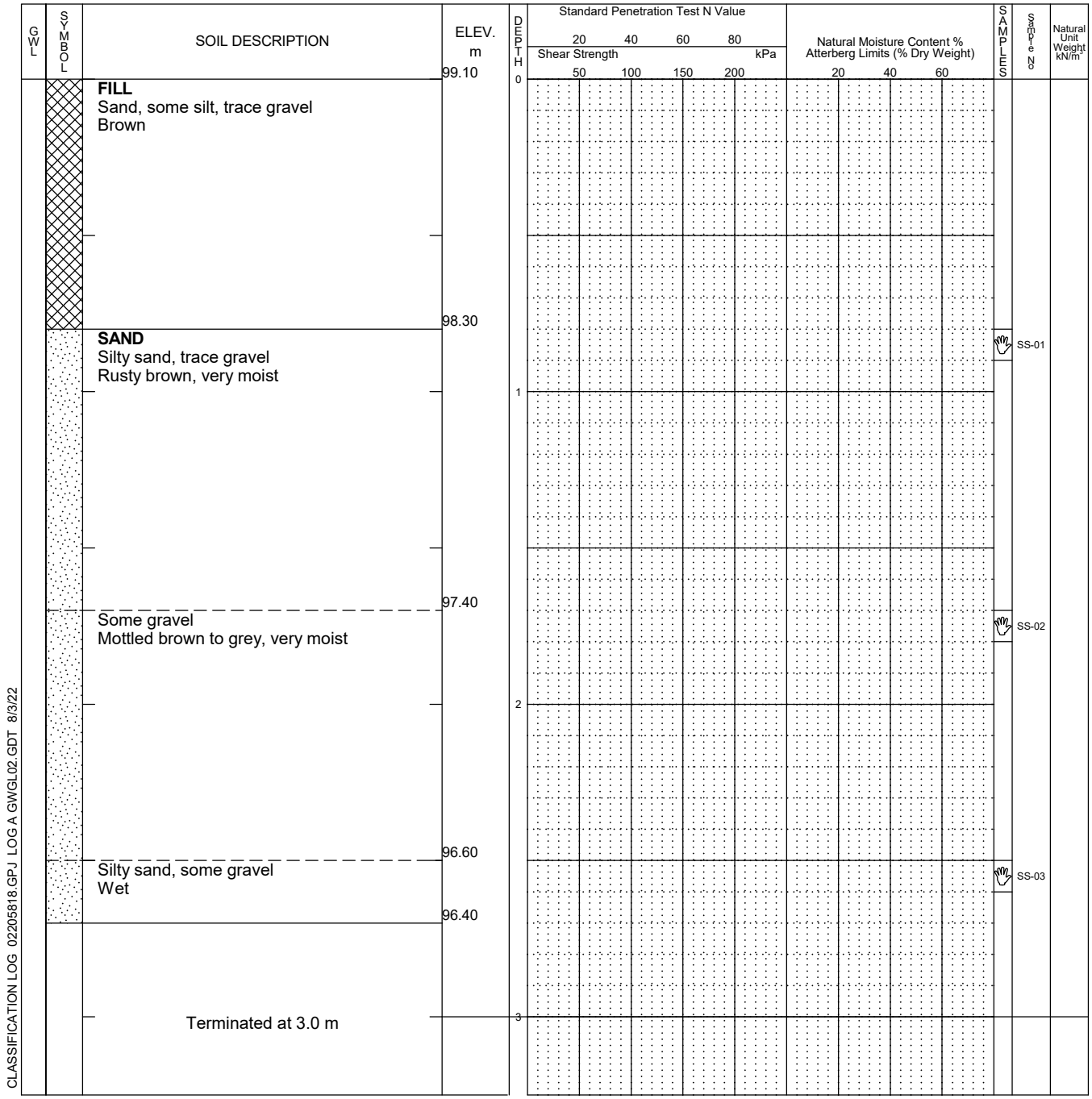
Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure (0, 5, 10, 15)
Shear Strength by Penetrometer Test



CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

LOG OF BOREHOLE No. TP-05-22

Englobe

Project No. 02205818.000 DRAWING No. 05

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some silt, trace to some gravel Brown	98.70	0	20 40 60 80 50 100 150 200	20 40 60			
		SAND Some silt and organics, some gravel, trace of clay brown to grey, wet	97.80	1			SS	SS-01	
		Brown to grey, saturated	97.10				SS	SS-02	
		Terminated at 2.0 m	96.70	2					

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	1.6	1.6

LOG OF BOREHOLE No. TP-06-22

Englobe

Project No. 02205818.000 DRAWING No. 06

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample ⊠
Auger Sample □
SPT (N) Value ●
Dynamic Cone Test —
Shelby Tube ■
Shear Strength by Vane Test S

Natural Moisture Content ×
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some silt, some gravel Dark brown	98.72	0	20 40 60 80 50 100 150 200	20 40 60		SS-01	
		SAND Sand, some silt, trace gravel Brown, moist	98.17					SS-02	
		Silty sand, some gravel, trace of clay Mottled Brown to grey	97.12	1				SS-03	
		Sand, some silt Brown, moist	96.82						
		Dilatant, wet	96.42	2				SS-04	
		Terminated at 2.8 m	95.92						

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

LOG OF BOREHOLE No. TP-07-22

Englobe

Project No. 02205818.000 DRAWING No. 07

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand Dark Brown, moist	98.93	0	20 40 60 80 50 100 150 200	20 40 60		SS-01	
		SAND Sand, some silt to silty sand Rusty brown to grey, very moist	98.43					SS-02	
		Some gravel and clay	97.43	1				SS-03	
		SAND AND GRAVEL Some silt Brown, moist	96.83	2				SS-04	
		Terminated at 2.8 m	96.13						

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

LOG OF BOREHOLE No. TP-08-22

Englobe

Project No. 02205818.000 DRAWING No. 08

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some gravel, some silt Brown, moist	99.41	0	20 40 60 80 50 100 150 200	20 40 60		SS-01	
		SILT Sand, trace of gravel and clay Grey, Very moist	98.71	1				SS-02	
		SAND AND SILT Some gravel Wet	97.21	2				SS-03	
		Terminated at 3.0 m	96.41	3					

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

LOG OF BOREHOLE No. TP-09-22

Englobe

Project No. 02205818.000 DRAWING No. 09

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand , some silt	99.62	0				SS-01	
		TOPSOIL Grey and black, moist	98.62	1					
		SAND Sand, silt, trace of gravel and clay Brown	98.32					SS-02	
		Wet	97.32	2				SS-03	
		Terminated at 3.0 m	96.62	3					

Standard Penetration Test N Value / Shear Strength: 20 40 60 80 kPa; 50 100 150 200

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 20 40 60

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

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-10-22

Englobe

Project No. 02205818.000 DRAWING No. 10

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

ELEV. m	DEPTH	SOIL DESCRIPTION	SAMPLES	Sample No	Natural Unit Weight kN/m³
99.25	0	**FILL** Sand, some gravel, some silt Moist		SS-01	
98.25	1	Grey to black, some organics Moist		SS-02	
97.65		**SAND** Silty sand, trace of gravel and clay Brown, very moist		SS-03	
97.05	2	Sand, some gravel, some silt Brown		SS-04	
96.25	3	Terminated at 3.0 m			

Standard Penetration Test N Value: 20 40 60 80
Shear Strength kPa: 50 100 150 200
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	2.4	none

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-11-22

Englobe

Project No. 02205818.000 DRAWING No. 11

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some silt, trace of gravel Brown, moist	99.45	0	20 40 60 80 50 100 150 200	20 40 60		SS-01	
		Sand, some gravel, trace of clay Dark brown, moist	98.75	1				SS-02	
		Gravel and cobbles, with rootlets Greyish, very moist	97.15	2				SS-03	
		Terminated at 3.0 m	96.45	3					

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

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-12-22

Englobe

Project No. 02205818.000 DRAWING No. 12

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some silt, trace to some gravel Moist	99.59	0	20 40 60 80 50 100 150 200	20 40 60		SS-01	
		Sand, some gravel, some silt, trace of clay Brown	98.49	1				SS-02	
		Greyish, very moist	97.89	2					
		With organics Grey	96.79					SS-03	
		Terminated at 3.0 m	96.59	3					

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-504	**SAMPLE ID:**	Test Pit 01-22, Sample#1	**SAMPLE DEPTH:**	1.6m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

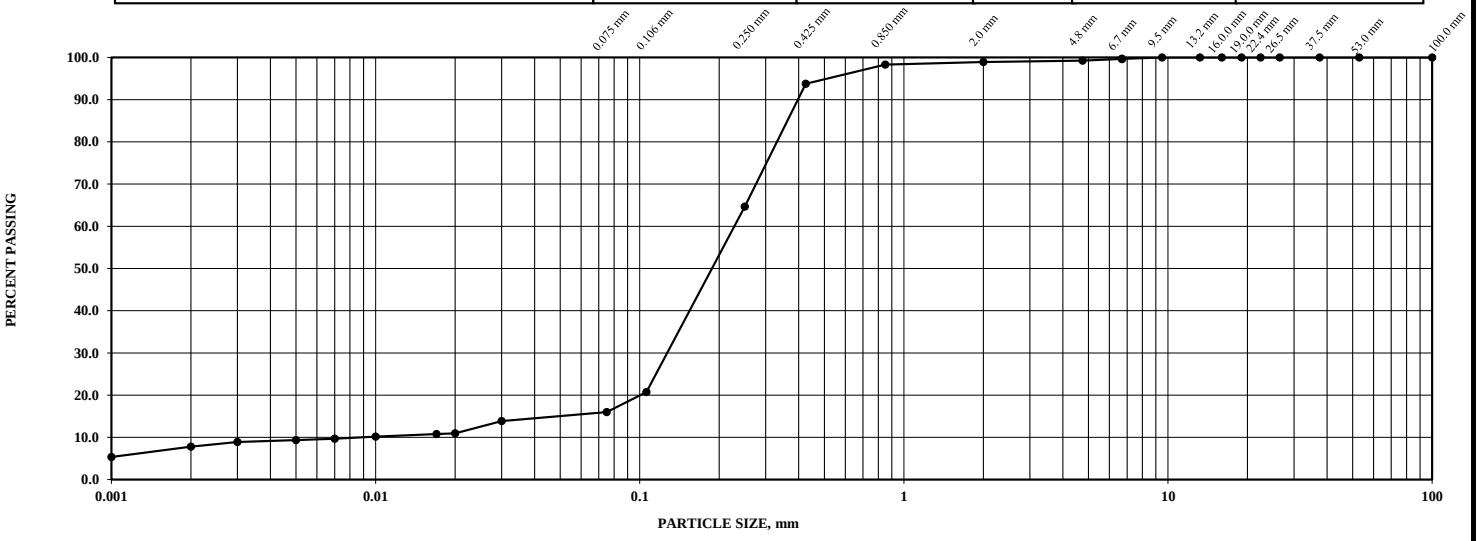
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.235	**D30**	0.136	**D10**	0.009	**Cc**	8.900	**Cu**	26.35

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	13.9
37.5	100.0	0.020	11.0
26.5	100.0	0.017	10.8
22.4	100.0	0.010	10.2
19	100.0	0.007	9.7
16	100.0	0.005	9.3
13.2	100.0	0.002	7.8
9.5	100.0	0.001	5.4
6.7	99.6	**ATTERBERG LIMITS**	
4.75	99.2		
2.00	98.9	Liquid Limit	
0.850	98.3		
0.425	93.8	Plastic Limit	
0.250	64.7		
0.106	20.7	Plastic Index	
0.075	16.0		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	0.8
% SAND (75 µm to 4.75 mm):	83.2
% SILT (2 µm to 75 µm):	8.2
% CLAY (<2 µm):	7.8
SOIL DESCRIPTION:	SAND, trace Silt, trace Clay

REMARKS

Figure: 1

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-505	**SAMPLE ID:**	Test Pit 02-22, Sample #1	**SAMPLE DEPTH:**	0.2m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

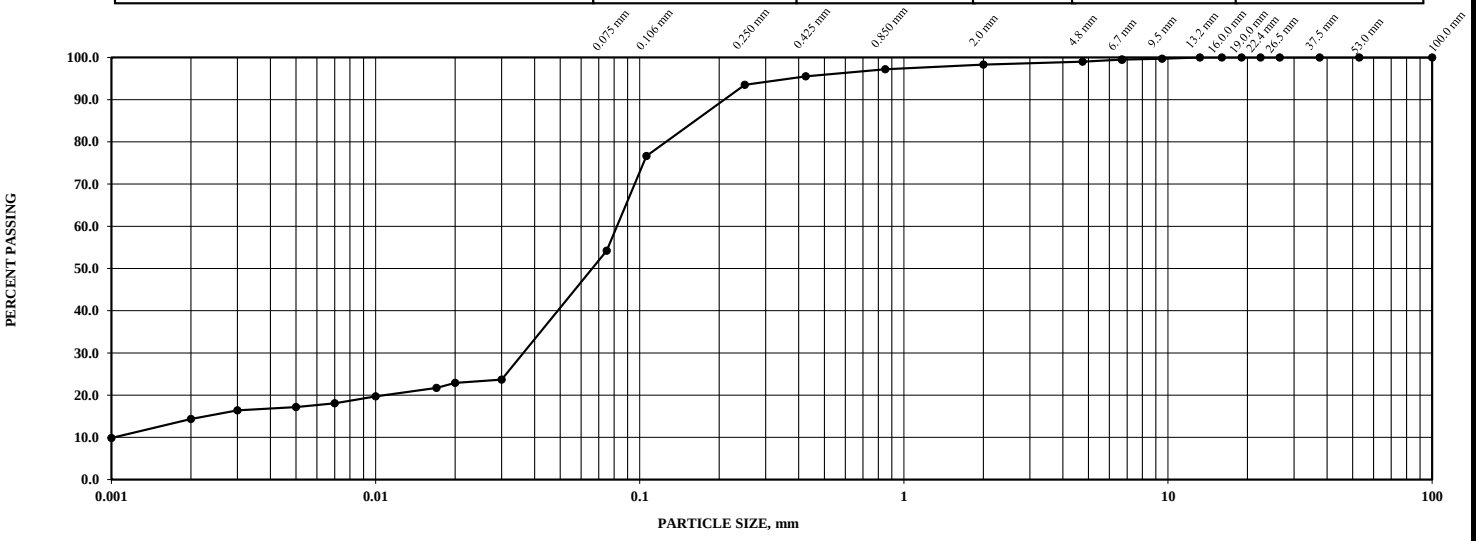
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.083	**D30**	0.039	**D10**	0.001	**Cc**	18.062	**Cu**	80.46

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	23.7
37.5	100.0	0.020	22.9
26.5	100.0	0.017	21.7
22.4	100.0	0.010	19.7
19	100.0	0.007	18.1
16	100.0	0.005	17.2
13.2	100.0	0.002	14.3
9.5	99.7	0.001	9.9
6.7	99.5	**ATTERBERG LIMITS**	
4.75	99.0		
2.00	98.3	Liquid Limit	
0.850	97.2		
0.425	95.5	Plastic Limit	
0.250	93.5		
0.106	76.6	Plastic Index	
0.075	54.2		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	1.0
% SAND (75 µm to 4.75 mm):	44.8
% SILT (2 µm to 75 µm):	39.9
% CLAY (<2 µm):	14.3
SOIL DESCRIPTION:	SAND and SILT, some Clay, trace Gravel

REMARKS

Figure: 2

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-506	**SAMPLE ID:**	Test Pit 03-22, Sample #3	**SAMPLE DEPTH:**	1.5m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

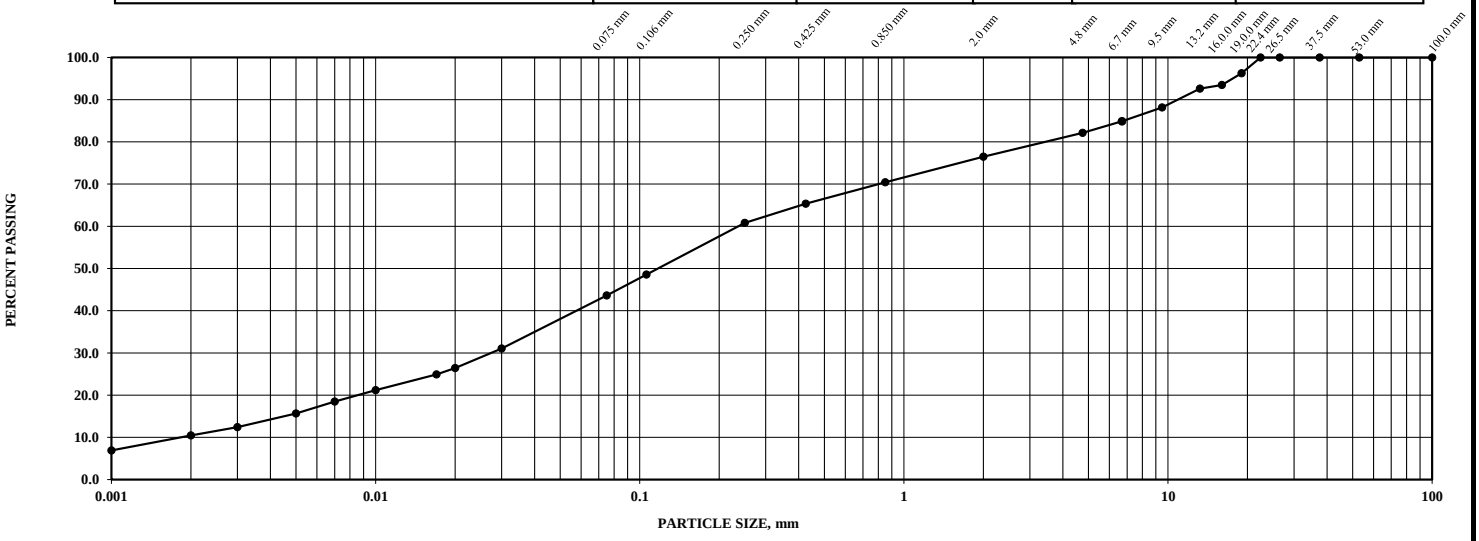
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.240	**D30**	0.028	**D10**	0.002	**Cc**	1.708	**Cu**	128.50

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	31.1
37.5	100.0	0.020	26.4
26.5	100.0	0.017	24.9
22.4	100.0	0.010	21.2
19	96.3	0.007	18.5
16	93.5	0.005	15.6
13.2	92.6	0.002	10.5
9.5	88.2	0.001	6.9
6.7	84.9	**ATTERBERG LIMITS**	
4.75	82.1		
2.00	76.5	Liquid Limit	
0.850	70.4		
0.425	65.3	Plastic Limit	
0.250	60.8		
0.106	48.6	Plastic Index	
0.075	43.6		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	17.9
% SAND (75 µm to 4.75 mm):	38.5
% SILT (2 µm to 75 µm):	33.1
% CLAY (<2 µm):	10.5
SOIL DESCRIPTION:	Silty SAND, some Gravel, some Clay

REMARKS

Figure: 3

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

ENGLOBE

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-507	**SAMPLE ID:**	Test Pit 04-22, Sample #1	**SAMPLE DEPTH:**	0.8m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

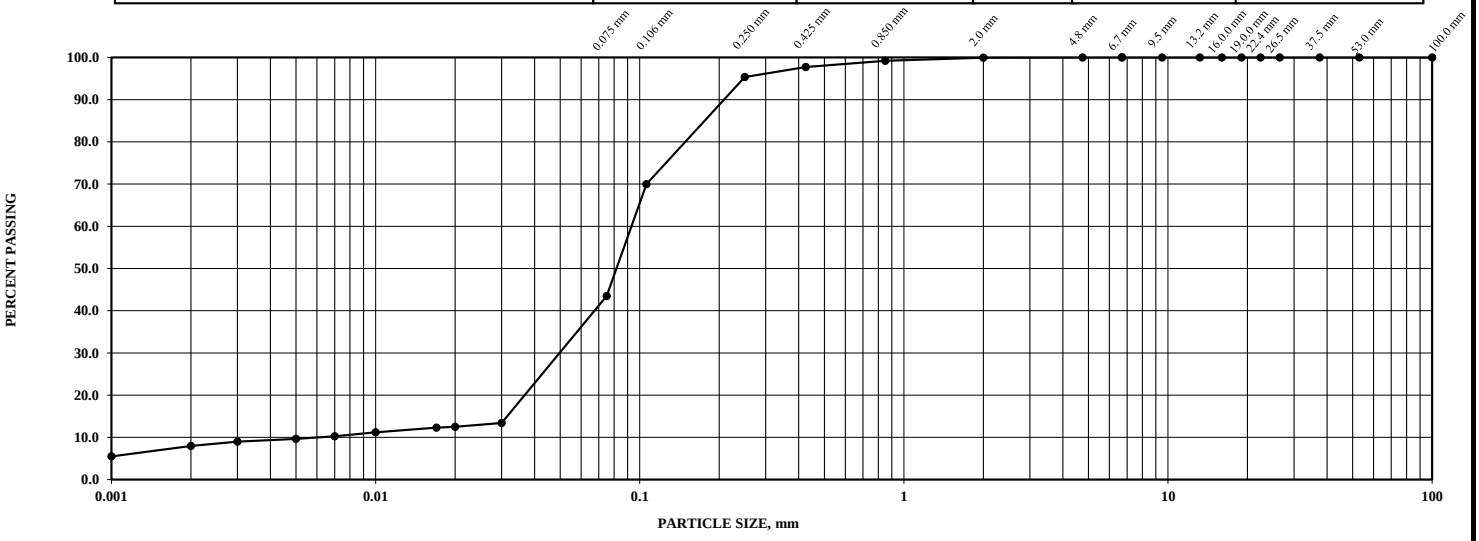
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.094	**D30**	0.055	**D10**	0.006	**Cc**	5.172	**Cu**	15.31

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	13.4
37.5	100.0	0.020	12.5
26.5	100.0	0.017	12.3
22.4	100.0	0.010	11.2
19	100.0	0.007	10.3
16	100.0	0.005	9.7
13.2	100.0	0.002	8.0
9.5	100.0	0.001	5.5
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	99.9	Liquid Limit	
0.850	99.2		
0.425	97.7	Plastic Limit	
0.250	95.3		
0.106	70.0	Plastic Index	
0.075	43.5		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	
% SAND (75 µm to 4.75 mm):	56.5
% SILT (2 µm to 75 µm):	35.5
% CLAY (<2 µm):	8.0
SOIL DESCRIPTION:	Silty SAND, trace Clay

REMARKS

Figure: 4

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-508	**SAMPLE ID:**	Test Pit 05-22, Sample #1	**SAMPLE DEPTH:**	0.7m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

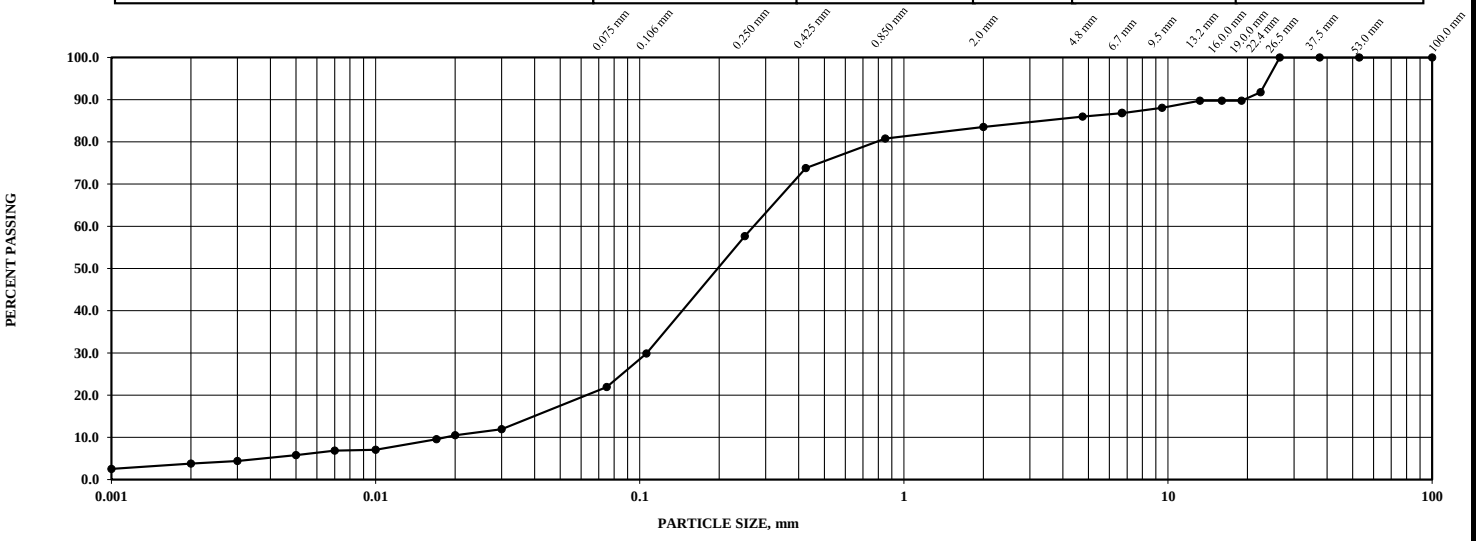
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.275	**D30**	0.107	**D10**	0.018	**Cc**	2.235	**Cu**	14.94

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	11.9
37.5	100.0	0.020	10.5
26.5	100.0	0.017	9.5
22.4	91.7	0.010	7.0
19	89.8	0.007	6.9
16	89.8	0.005	5.8
13.2	89.8	0.002	3.8
9.5	88.1	0.001	2.5
6.7	86.8	**ATTERBERG LIMITS**	
4.75	86.0		
2.00	83.5	Liquid Limit	
0.850	80.8		
0.425	73.8	Plastic Limit	
0.250	57.7		
0.106	29.9	Plastic Index	
0.075	21.9		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	14.0
% SAND (75 µm to 4.75 mm):	64.1
% SILT (2 µm to 75 µm):	18.1
% CLAY (<2 µm):	3.8
SOIL DESCRIPTION:	SAND, some Silt, some Gravel, trace Clay

REMARKS

Figure: 5

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-509	**SAMPLE ID:**	Test Pit 06-22, Sample #3	**SAMPLE DEPTH:**	1.6m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

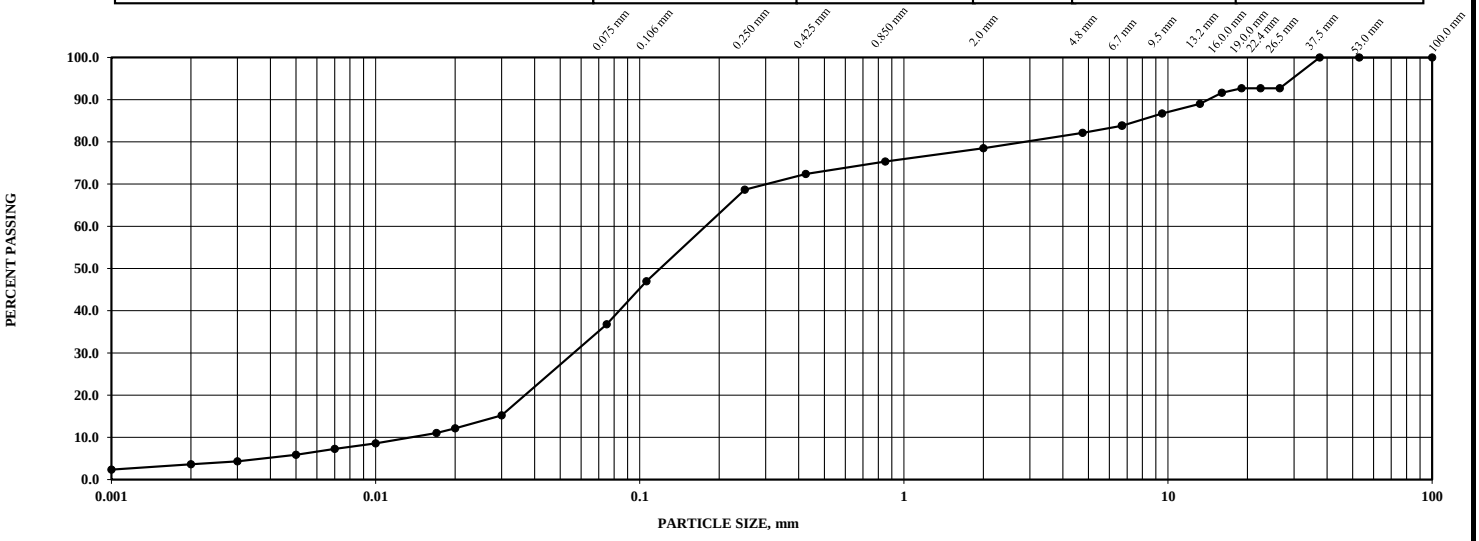
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.192	**D30**	0.061	**D10**	0.014	**Cc**	1.368	**Cu**	13.67

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	15.2
37.5	100.0	0.020	12.1
26.5	92.7	0.017	11.0
22.4	92.7	0.010	8.6
19	92.7	0.007	7.3
16	91.6	0.005	5.9
13.2	89.0	0.002	3.6
9.5	86.7	0.001	2.4
6.7	83.8	**ATTERBERG LIMITS**	
4.75	82.1		
2.00	78.5	Liquid Limit	
0.850	75.3		
0.425	72.4	Plastic Limit	
0.250	68.7		
0.106	47.0	Plastic Index	
0.075	36.8		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	17.9
% SAND (75 µm to 4.75 mm):	45.3
% SILT (2 µm to 75 µm):	33.2
% CLAY (<2 µm):	3.6
SOIL DESCRIPTION:	Silty SAND, some Gravel, trace Clay

REMARKS

Figure: 6

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-510	**SAMPLE ID:**	Test Pit 07-22, Sample #3	**SAMPLE DEPTH:**	1.5m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

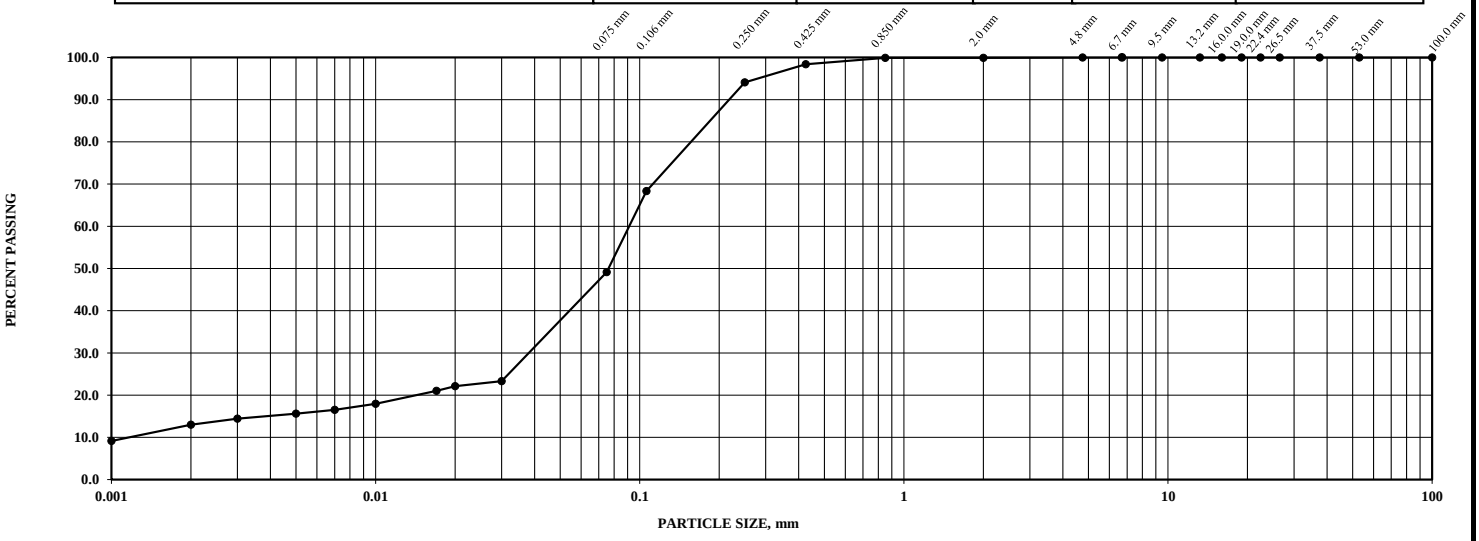
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.093	**D30**	0.042	**D10**	0.001	**Cc**	15.329	**Cu**	75.72

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	23.3
37.5	100.0	0.020	22.1
26.5	100.0	0.017	21.0
22.4	100.0	0.010	18.0
19	100.0	0.007	16.5
16	100.0	0.005	15.6
13.2	100.0	0.002	13.0
9.5	100.0	0.001	9.1
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	99.9	Liquid Limit	
0.850	99.9		
0.425	98.4	Plastic Limit	
0.250	94.1		
0.106	68.3	Plastic Index	
0.075	49.1		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	
% SAND (75 µm to 4.75 mm):	50.9
% SILT (2 µm to 75 µm):	36.1
% CLAY (<2 µm):	13.0
SOIL DESCRIPTION:	Silty SAND, some Clay

REMARKS

Figure: 7

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-511	**SAMPLE ID:**	Test Pit 08-22, Sample #2	**SAMPLE DEPTH:**	0.9m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

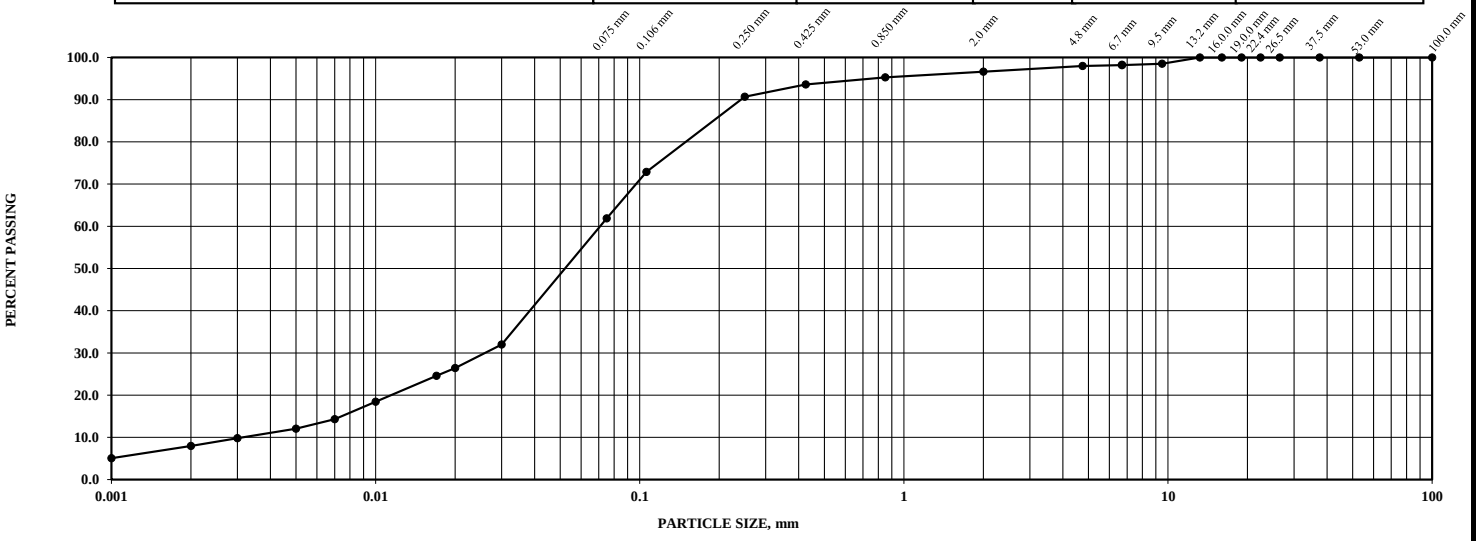
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.072	**D30**	0.026	**D10**	0.003	**Cc**	3.063	**Cu**	22.80

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	32.0
37.5	100.0	0.020	26.4
26.5	100.0	0.017	24.6
22.4	100.0	0.010	18.4
19	100.0	0.007	14.3
16	100.0	0.005	12.0
13.2	100.0	0.002	8.0
9.5	98.5	0.001	5.1
6.7	98.2	**ATTERBERG LIMITS**	
4.75	98.0		
2.00	96.6	Liquid Limit	
0.850	95.3		
0.425	93.6	Plastic Limit	
0.250	90.7		
0.106	72.9	Plastic Index	
0.075	61.9		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	2.0
% SAND (75 µm to 4.75 mm):	36.1
% SILT (2 µm to 75 µm):	53.9
% CLAY (<2 µm):	8.0
SOIL DESCRIPTION:	Sandy SILT, trace Gravel, trace Clay

REMARKS

Figure: 8

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-512	**SAMPLE ID:**	Test Pit 09-22, Sample #2	**SAMPLE DEPTH:**	1.3m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

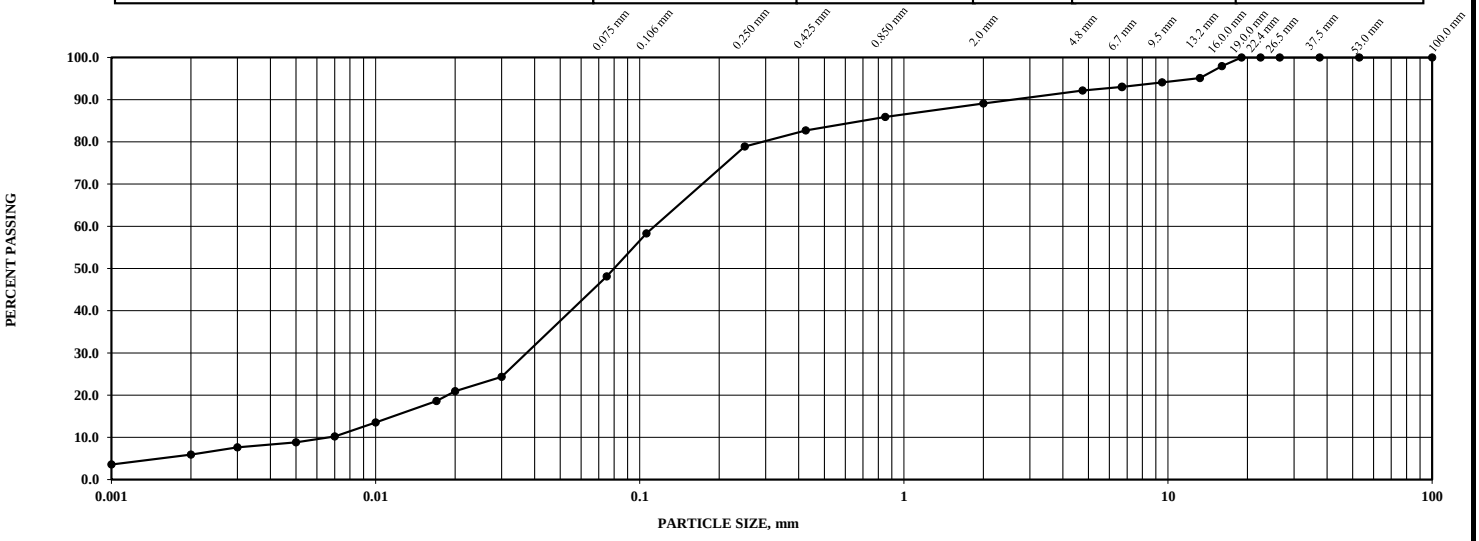
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.118	**D30**	0.041	**D10**	0.007	**Cc**	2.094	**Cu**	17.53

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	24.3
37.5	100.0	0.020	20.9
26.5	100.0	0.017	18.6
22.4	100.0	0.010	13.5
19	100.0	0.007	10.2
16	97.9	0.005	8.8
13.2	95.1	0.002	5.9
9.5	94.1	0.001	3.6
6.7	93.0	**ATTERBERG LIMITS**	
4.75	92.2		
2.00	89.1	Liquid Limit	
0.850	85.9		
0.425	82.7	Plastic Limit	
0.250	78.9		
0.106	58.3	Plastic Index	
0.075	48.1		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	7.8
% SAND (75 µm to 4.75 mm):	44.1
% SILT (2 µm to 75 µm):	42.2
% CLAY (<2 µm):	5.9
SOIL DESCRIPTION:	SAND and SILT, trace Gravel, trace Clay

REMARKS

Figure: 9

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-513	**SAMPLE ID:**	Test Pit 10-22, Sample #3	**SAMPLE DEPTH:**	1.6m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

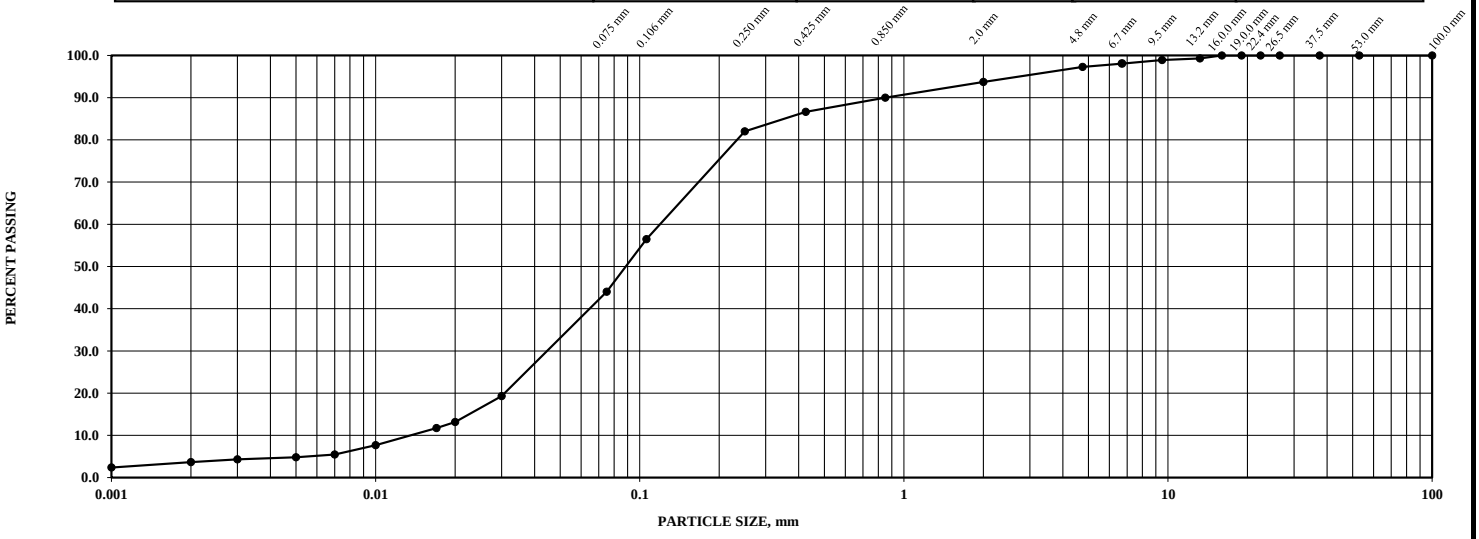
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.126	**D30**	0.049	**D10**	0.014	**Cc**	1.386	**Cu**	8.97

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	19.3
37.5	100.0	0.020	13.2
26.5	100.0	0.017	11.7
22.4	100.0	0.010	7.7
19	100.0	0.007	5.5
16	100.0	0.005	4.8
13.2	99.3	0.002	3.6
9.5	98.9	0.001	2.4
6.7	98.1	**ATTERBERG LIMITS**	
4.75	97.3		
2.00	93.7	Liquid Limit	
0.850	90.0		
0.425	86.7	Plastic Limit	
0.250	82.0		
0.106	56.5	Plastic Index	
0.075	44.0		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	2.7
% SAND (75 µm to 4.75 mm):	53.3
% SILT (2 µm to 75 µm):	40.4
% CLAY (<2 µm):	3.6
SOIL DESCRIPTION:	Silty SAND, trace Gravel, trace Clay

REMARKS

Figure: 10

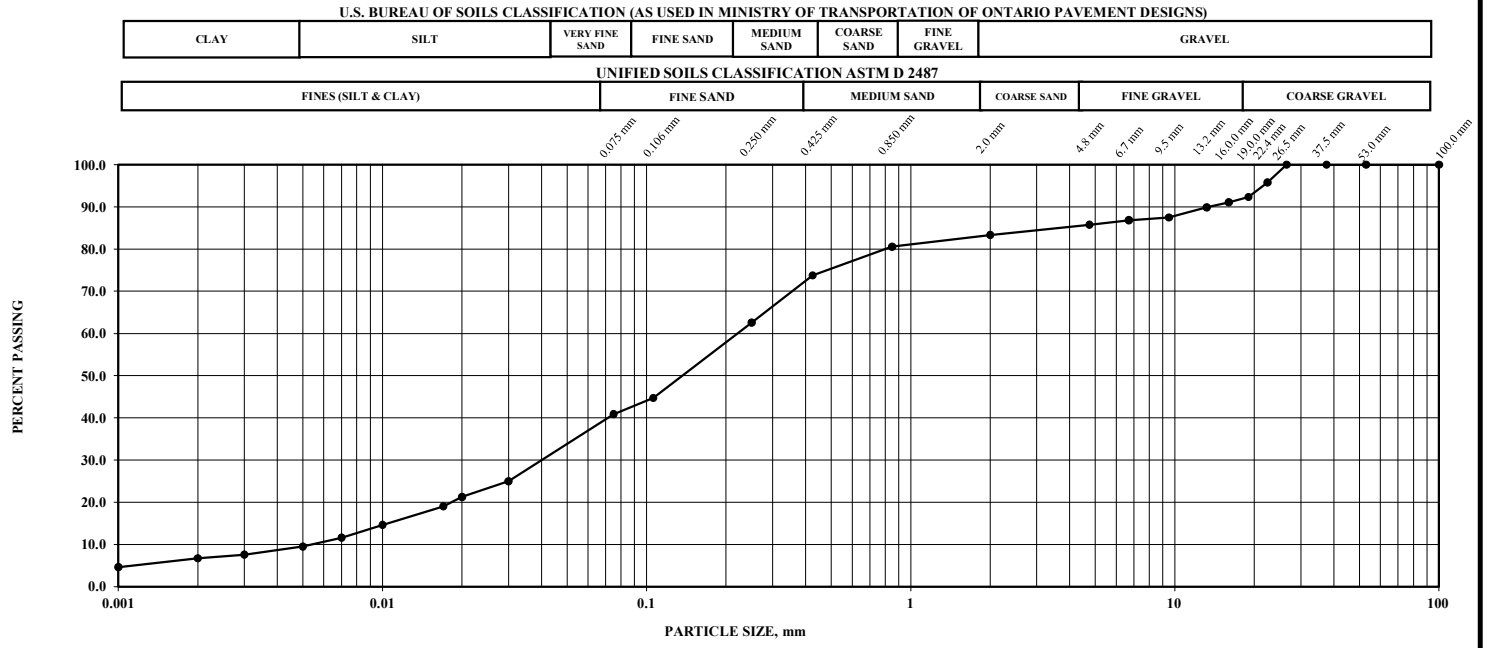
TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-514	**SAMPLE ID:**	Test Pit 11-22, Sample #2	**SAMPLE DEPTH:**	1.0m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

PARTICLE SIZE DISTRIBUTION, MTO LS-702



COEFFICIENTS									
D60	0.229	**D30**	0.044	**D10**	0.005	**Cc**	1.553	**Cu**	41.83

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	25.0
37.5	100.0	0.020	21.3
26.5	100.0	0.017	19.1
22.4	95.8	0.010	14.6
19	92.3	0.007	11.6
16	91.0	0.005	9.5
13.2	89.9	0.002	6.8
9.5	87.4	0.001	4.7
6.7	86.8	**ATTERBERG LIMITS**	
4.75	85.7		
2.00	83.3	Liquid Limit	
0.850	80.5		
0.425	73.7	Plastic Limit	
0.250	62.6		
0.106	44.7	Plastic Index	
0.075	40.9		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	14.3
% SAND (75 µm to 4.75 mm):	44.8
% SILT (2 µm to 75 µm):	34.1
% CLAY (<2 µm):	6.8
SOIL DESCRIPTION:	Silty SAND, some Gravel, trace Clay

REMARKS

Figure: 11

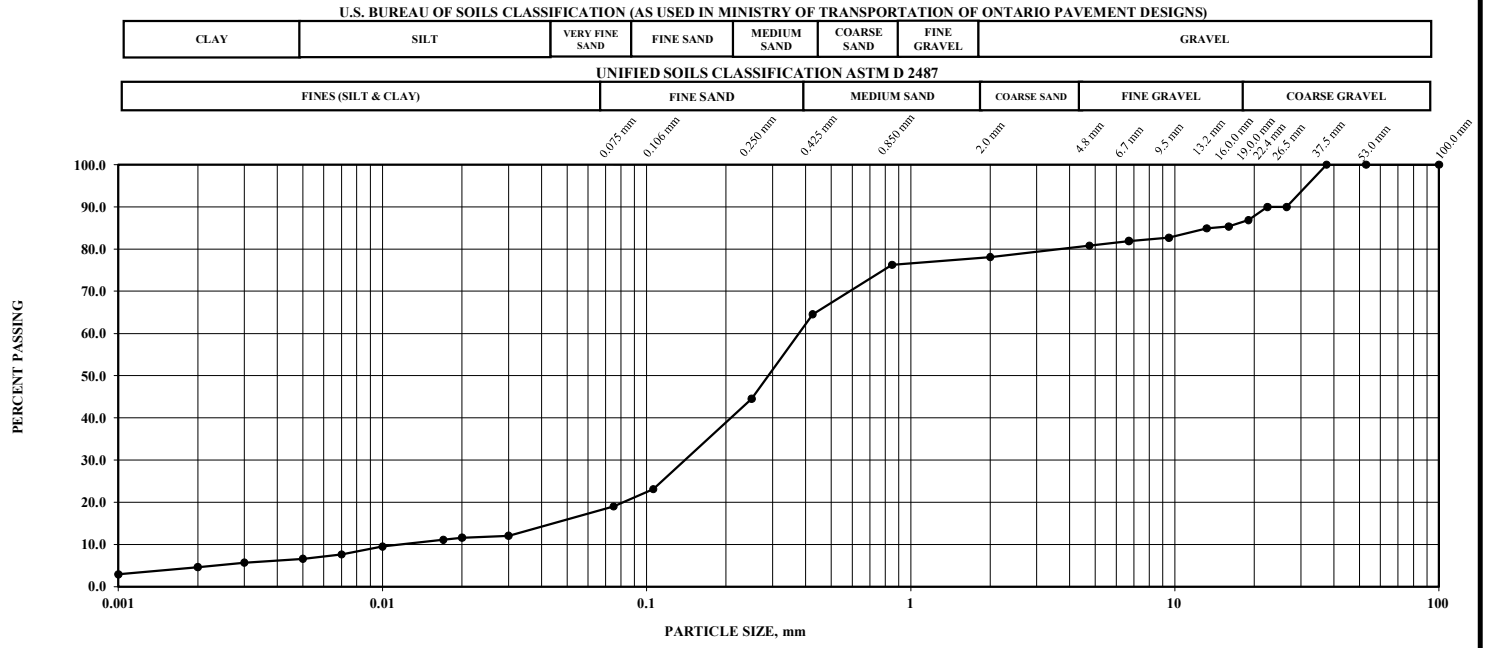
TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-515	**SAMPLE ID:**	Test Pit 12-22, Sample #2	**SAMPLE DEPTH:**	1.0m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

PARTICLE SIZE DISTRIBUTION, MTO LS-702



COEFFICIENTS									
D60	0.385	**D30**	0.152	**D10**	0.012	**Cc**	4.968	**Cu**	31.76

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	12.1
37.5	100.0	0.020	11.6
26.5	90.0	0.017	11.1
22.4	90.0	0.010	9.5
19	86.8	0.007	7.6
16	85.3	0.005	6.6
13.2	84.9	0.002	4.6
9.5	82.7	0.001	2.9
6.7	81.9	**ATTERBERG LIMITS**	
4.75	80.8		
2.00	78.1	Liquid Limit	
0.850	76.2		
0.425	64.5	Plastic Limit	
0.250	44.5		
0.106	23.1	Plastic Index	
0.075	19.0		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	19.2
% SAND (75 µm to 4.75 mm):	61.8
% SILT (2 µm to 75 µm):	14.4
% CLAY (<2 µm):	4.6
SOIL DESCRIPTION:	SAND, some Gravel, some Silt, trace Clay

REMARKS

Figure: 12

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 2021052

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, West End of Property Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the soils gradation distribution graph representing the sample provided is attached.

Our Fee in Total:	$300.00
HST 894069806	$ 39.00
Total	**$339.00**

Please make cheques Payable to: D R Free

Please call to arrange for e-transfer payment

Payment Due on Receipt of Invoice

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 2021049

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, West End of Property, Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the distribution graph representing the sample provided is attached.

Based on the testing of the materials as provided for testing, It is our opinion that the **Percolation Rate is T = 8 min/cm.** The drainage characteristics of the soil for septic system appears to be suitable for an in-ground leeching bed system.

The Laboratory Classification of the soils SM – Gravelly Sands, with low fines content <12% specifically 3.94% of soil passing the No #200 sieve.

The Coefficient of Uniformity = NA
Coefficient of Curvature = NA

I trust this meets with your requirements for the soil sample provided.

Yours Truly,

D Free

CERTIFIED ENGINEERING TECHNOLOGIST
OACETT
ONTARIO
DAVID R. FREE
No 15185

D. R. Free, MBA, CPA, CET
BCIN 109582

Encls

NORFOLK SOILS ANALYSIS

Sieve Analysis Data Sheet

ASTM D422-63(2007)

Project Name:	SA2021049	**Tested By:**	DRF	**Date:**	2021-03-30
Location:	25 Baker Street, West End of Property, Windham Centre ON Norfolk County	**Checked By:**	DRF BCIN 109582	**Date:**	2021-03-30
Client	Lloyd Wood Trucking & Excavating 800 Brantford Rd, LaSalette ON N0E 1H0	**Property Owner**	Lloyd Wood		
Boring No:	1	**Test Number:**	1		
Sample Depth:	NA	**Gnd Elev.:**	NA		

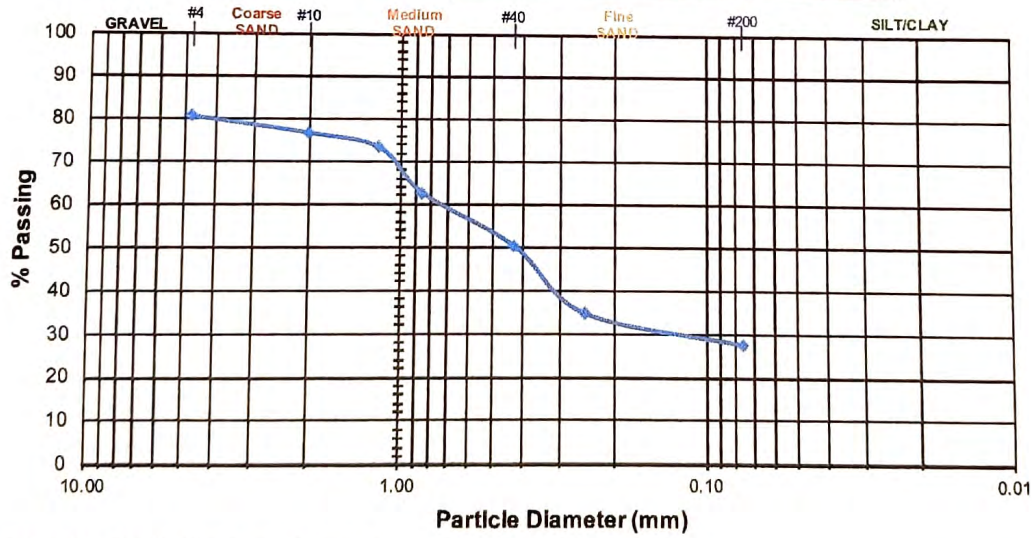
USCS Soil Classification: SM – Silty Gravelly Sands, fines <12%

AASHTO Soil Classification: A-1-a

Weight of Container (g): 76.0 **Weight of Container & Soil (g):** 568.3

Weight of Dry Sample (g): 444.3 **Moisture Content %** 9.8%

Sieve Number	Diameter (mm)	Mass of Sieve (g)	Mass of Sieve & Soil (g)	Soil Retained (g)	Soil Retained (%)	Soil Passing (%)
#4	4.75	749.6	836.3	86.7	19.5	80.5
#10	2.00	670.0	774.1	104.1	23.4	76.6
#16	1.18	653.0	685.5	32.5	7.3	73.2
#30	0.85	582.6	630.0	47.4	10.7	62.5
#50	0.43	561.6	616.5	54.9	12.4	50.1
#100	0.25	529.2	598.1	68.9	15.5	34.6
#200	0.075	513.1	545.4	32.3	7.3	27.4
Pan		283.1	300.6	17.5	3.9	0.0
			TOTAL:	**444.3**	**100.0**	



Grain Size Distribution Curve Results:

% Gravel:	19.500	D_{10}:	NA	C_u:	#VALUE!
% Sand:	76.561	D_{30}:	NA	C_c:	#VALUE!
% Fines:	3.939	D_{60}:	NA		
	100.000				

CERTIFIED ENGINEERING TECHNOLOGIST OACETT ONTARIO DAVID FREE No. 15165

Notice to Reader & Limitations:

These test results are unique to this soil sample and for the client as identified on the date for which the tests were performed. These test results cannot be used by any other party other than the client stated above within the text of this report without the consultants prior written approval.

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 2021049

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, West End of Property, Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the soils gradation distribution graph representing the sample provided is attached.

Our Fee in Total:	$300.00
HST 894069806	$ 39.00
Total	**$339.00**

Please make cheques Payable to: D R Free

Please call to arrange for e-transfer payment

Payment Due on Receipt of Invoice

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 20210450

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, Behind the School, Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the distribution graph representing the sample provided is attached.

Based on the testing of the materials as provided for testing, It is our opinion that the **Percolation Rate is T = 8 min/cm.** The drainage characteristics of the soil for septic system appears to be suitable for an in-ground leeching bed system.

The Laboratory Classification of the soils SP – Poorly Graded Sands, with low fines content <12% specifically 3.40% of soil passing the No #200 sieve.

The Coefficient of Uniformity = 5.00
Coefficient of Curvature = 0.67

I trust this meets with your requirements for the soil sample provided.

Yours Truly,

D Free

CERTIFIED ENGINEERING TECHNOLOGIST
OACETT
ONTARIO
DAVID R FREE
N° 15185

D. R. Free, MBA, CPA, CET
BCIN 109582

Encls

NORFOLK SOILS ANALYSIS

Sieve Analysis Data Sheet

ASTM D422-63(2007)

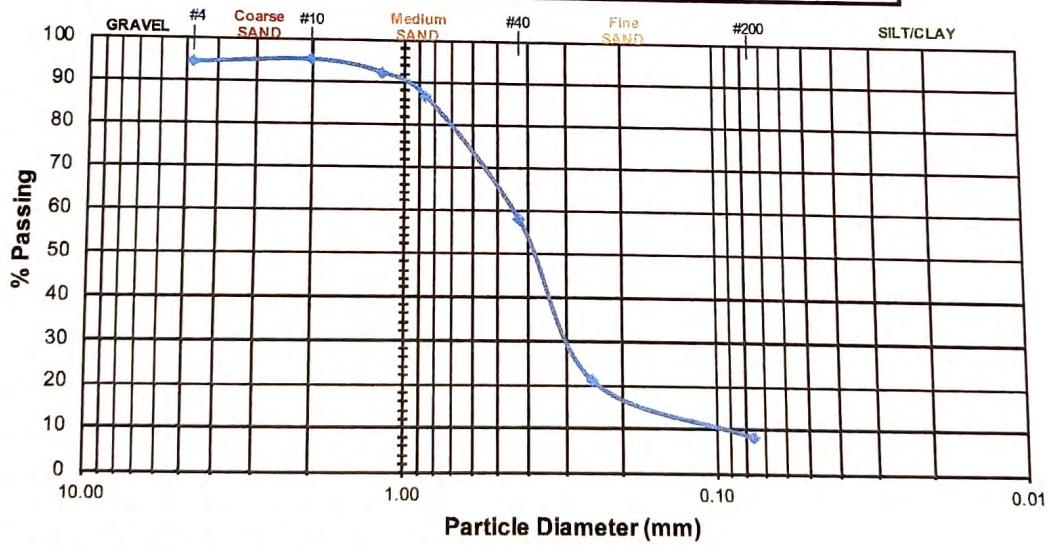
Project Name:	SA2021050	**Tested By:**	DRF	**Date:**	2021-03-30
Location:	25 Baker Street, Behind School, Windham Centre ON Norfolk County	**Checked By:**	DRF BCIN 109582	**Date:**	2021-03-30
Client	Lloyd Wood Trucking & Excavating 800 Brantford Rd, LaSalette ON N0E 1H0	**Property Owner**	Lloyd Wood		
Boring No:	2	**Test Number:**	1		
Sample Depth:	NA	**Gnd Elev.:**	NA		

USCS Soil Classification: SM – Silty Gravelly Sands, fines <12%

AASHTO Soil Classification: A-1-a

Weight of Container (g): 76.0
Weight of Dry Sample (g): 406.4
Weight of Container & Soil (g): 529.5
Moisture Content % 10.4%

Sieve Number	Diameter (mm)	Mass of Sieve (g)	Mass of Sieve & Soil (g)	Soil Retained (g)	Soil Retained (%)	Soil Passing (%)
#4	4.75	749.6	772.8	23.2	5.7	94.3
#10	2.00	670.0	689.4	19.4	4.8	95.2
#16	1.18	653.0	661.2	8.2	2.0	92.3
#30	0.85	582.6	605.7	23.1	5.7	86.6
#50	0.43	561.6	679.1	117.5	28.9	57.7
#100	0.25	529.2	677.9	148.7	36.6	21.1
#200	0.075	513.1	565.6	52.5	12.9	8.2
Pan		283.1	296.9	13.8	3.4	0.0
			TOTAL:	406.4	100.0	



Grain Size Distribution Curve Results:

% Gravel:	5.700	D_{10}:	0.090	C_u:	5.00
% Sand:	90.904	D_{30}:	0.300	C_c:	0.667
% Fines:	3.396	D_{60}:	0.450		
	100.000				

CERTIFIED ENGINEERING TECHNOLOGIST OACETT ONTARIO DAVID R FREE N 15165

Notice to Reader & Limitations:

These test results are unique to this soil sample and for the client as identified on the date for which the tests were performed. These test results cannot be used by any other party other than the client stated above within the text of this report without the consultants prior written approval.

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 2021050

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, Behind the School, Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the soils gradation distribution graph representing the sample provided is attached.

Our Fee in Total:	$300.00
HST 894069806	$ 39.00
Total	**$339.00**

Please make cheques Payable to: D R Free

Please call to arrange for e-transfer payment

Payment Due on Receipt of Invoice

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 2021051

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, West Side of Property/End of Doyle, Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the distribution graph representing the sample provided is attached.

Based on the testing of the materials as provided for testing, It is our opinion that the **Percolation Rate is T = 10 /cm.** The drainage characteristics of the soil for septic system appears to be suitable for an in-ground leeching bed system.

The Laboratory Classification of the soils SP – Poorly Graded Sands, with low fines content <12% specifically 5.19% of soil passing the No #200 sieve.

The Coefficient of Uniformity = 2.11
Coefficient of Curvature = 1.60

I trust this meets with your requirements for the soil sample provided.

Yours Truly,

D Free

CERTIFIED ENGINEERING TECHNOLOGIST
OACETT
ONTARIO
DAVID R. FREE
No 15185

D. R. Free, MBA, CPA, CET
BCIN 109582

Encls

NORFOLK SOILS ANALYSIS

Sieve Analysis Data Sheet

ASTM D422-63(2007)

Project Name: SA2021051

Location: 25 Baker Street, West Side of Property/End of Doyle, Windham Centre ON Norfolk County

Client: Lloyd Wood Trucking & Excavating, 800 Brantford Rd, LaSalette ON N0E 1H0

Boring No: 3

Sample Depth: NA

Tested By: DRF

Checked By: DRF BCIN 109582

Date: 2021-03-30

Date: 2021-03-30

Property Owner Lloyd Wood

Test Number: 1

Gnd Elev.: NA

USCS Soil Classification: SP – Poorl Graded Sands, fines <12%

AASHTO Soil Classification: A-1-a

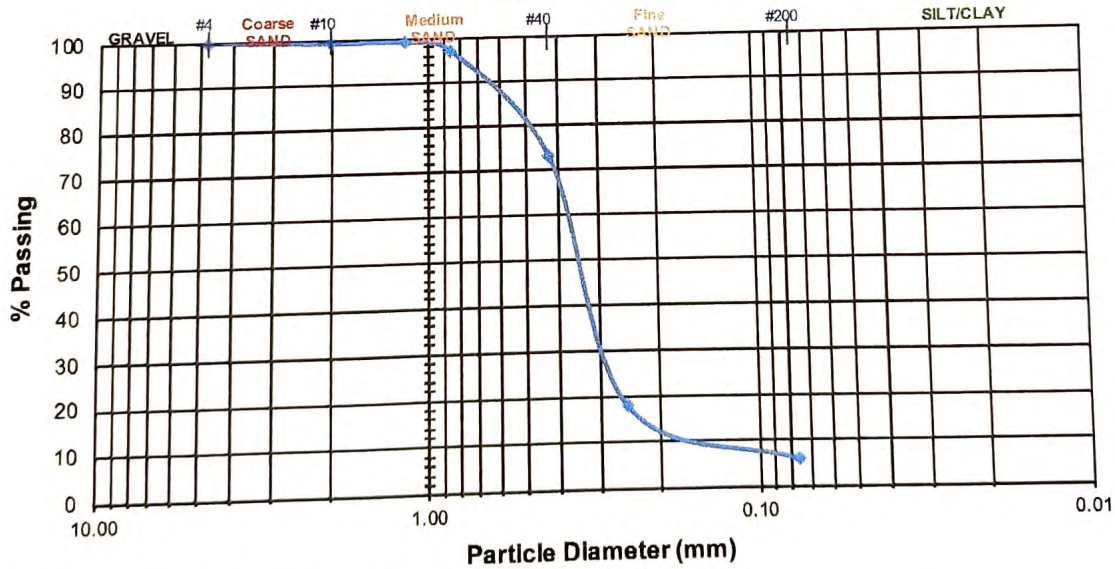
Weight of Container (g): 76.0

Weight of Dry Sample (g): 435.6

Weight of Container & Soil (g): 557.8

Moisture Content % 9.6%

Sieve Number	Diameter (mm)	Mass of Sieve (g)	Mass of Sieve & Soil (g)	Soil Retained (g)	Soil Retained (%)	Soil Passing (%)
#4	4.75	749.6	749.6	0.0	0.0	100.0
#10	2.00	670.0	673.0	3.0	0.7	99.3
#16	1.18	653.0	656.3	3.3	0.8	99.2
#30	0.85	582.6	592.2	9.6	2.2	97.0
#50	0.43	561.6	667.2	105.6	24.2	72.8
#100	0.25	529.2	769.0	239.8	55.1	17.7
#200	0.075	513.1	564.8	51.7	11.9	5.9
Pan		283.1	305.7	22.6	5.2	0.0
			TOTAL:	435.6	100.0	



Grain Size Distribution Curve Results:

% Gravel: 5.700

% Sand: 89.112

% Fines: 5.188

100.000

D_{10}: 0.180

D_{30}: 0.300

D_{60}: 0.380

C_u: 2.11

C_c: 1.579

CERTIFIED ENGINEERING TECHNOLOGIST OACETT ONTARIO DAVID R FREE 15185

Notice to Reader & Limitations:

These test results are unique to this soil sample and for the client as identified on the date for which the tests were performed. These test results cannot be used by any other party other than the client stated above within the text of this report without the consultants prior written approval.

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 2021051

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, West Side of Property/End of Doyle, Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the soils gradation distribution graph representing the sample provided is attached.

Our Fee in Total:	$300.00
HST 894069806	$ 39.00
Total	**$339.00**

Please make cheques Payable to: D R Free

Please call to arrange for e-transfer payment

Payment Due on Receipt of Invoice

NORFOLK SOILS ANALYSIS

(a division of 002068251 Ontario Inc.)
55 Gibson Drive, Simcoe ON N3Y3L1, 519 410 6111, email: norfolksoils@gmail.com

March 30, 2021

Invoice #: 2021052

To: Lloyd Wood Trucking & Excavating
800 Brantford Rd,
LaSalette ON N0E 1H0

Project: Soils Analysis Properties of Lloyd Wood, 25 Baker St, West End of Property Windham Centre ON Norfolk County

Soils analysis in accordance with Section 8.2.1.2 of the Ontario Building Code, The Unified soil Classification System, and ASTM D6913 of which the distribution graph representing the sample provided is attached.

Based on the testing of the materials as provided for testing, It is our opinion that the **Percolation Rate is T = 8 min/cm.** The drainage characteristics of the soil for septic system appears to be suitable for an in-ground leeching bed system.

The Laboratory Classification of the soils SM – Gravelly Sands, with low fines content <12% specifically 1.94% of soil passing the No #200 sieve.

The Coefficient of Uniformity = NA
Coefficient of Curvature = NA

I trust this meets with your requirements for the soil sample provided.

Yours Truly,

D Free

CERTIFIED ENGINEERING TECHNOLOGIST
OACETT
ONTARIO
DAVID R. FREE
No 15185

D. R. Free, MBA, CPA, CET
BCIN 109582

Encls

NORFOLK SOILS ANALYSIS

Sieve Analysis Data Sheet

ASTM D422-63(2007)

Project Name:	SA2021052	**Tested By:**	DRF	**Date:**	2021-03-30
Location:	25 Baker Street, West End of Property, Windham Centre ON Norfolk County	**Checked By:**	DRF BCIN 109582	**Date:**	2021-03-30
Client	Lloyd Wood Trucking & Excavating 800 Brantford Rd, LaSalette ON N0E 1H0	**Property Owner**	Lloyd Wood		
Boring No:	4	**Test Number:**	1		
Sample Depth:	NA	**Gnd Elev.:**	NA		

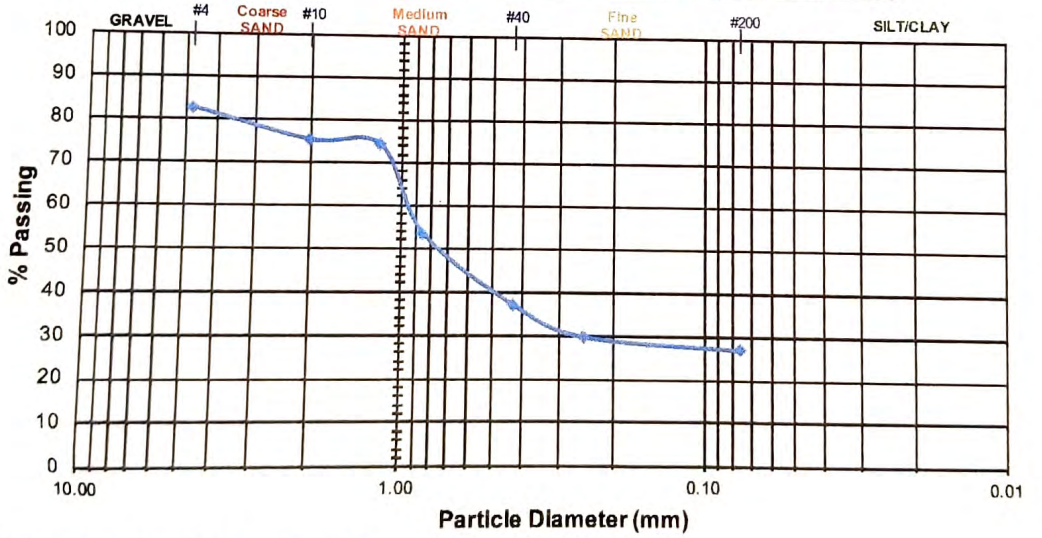
USCS Soil Classification: SM – Gravelly Sands, with fines content <12%

AASHTO Soil Classification: A-1-a

Weight of Container (g): 76.4 **Weight of Container & Soil (g):** 733.2

Weight of Dry Sample (g): 603.6 **Moisture Content %** 8.1%

Sieve Number	Diameter (mm)	Mass of Sieve (g)	Mass of Sieve & Soil (g)	Soil Retained (g)	Soil Retained (%)	Soil Passing (%)
#4	4.75	749.6	854.5	104.9	17.4	82.6
#10	2.00	670.0	819.2	149.2	24.7	75.3
#16	1.18	653.0	703.9	50.9	8.4	74.2
#30	0.85	582.6	707.3	124.7	20.7	53.5
#50	0.43	561.6	662.0	100.4	16.6	36.9
#100	0.25	529.2	573.1	43.9	7.3	29.6
#200	0.075	513.1	531.0	17.9	3.0	26.7
Pan		283.1	294.8	11.7	1.9	0.0
			TOTAL:	603.6	100.0	



Grain Size Distribution Curve Results:

% Gravel:	17.400	D_{10}:	NA	C_u:	#VALUE!
% Sand:	80.662	D_{30}:	NA	C_c:	#VALUE!
% Fines:	1.938	D_{60}:	NA		
	100.000				

CERTIFIED ENGINEERING TECHNOLOGIST OACETT ONTARIO

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PLANNING JUSTIFICATION REPORT

DRAFT PLAN OF SUBDIVISION APPLICATION

25 Baker's Lane
Windham Centre, Norfolk County

February 2023

LandPro Planning Solutions Inc.
204 -110 James Street
St. Catharines, ON L7R 7E8

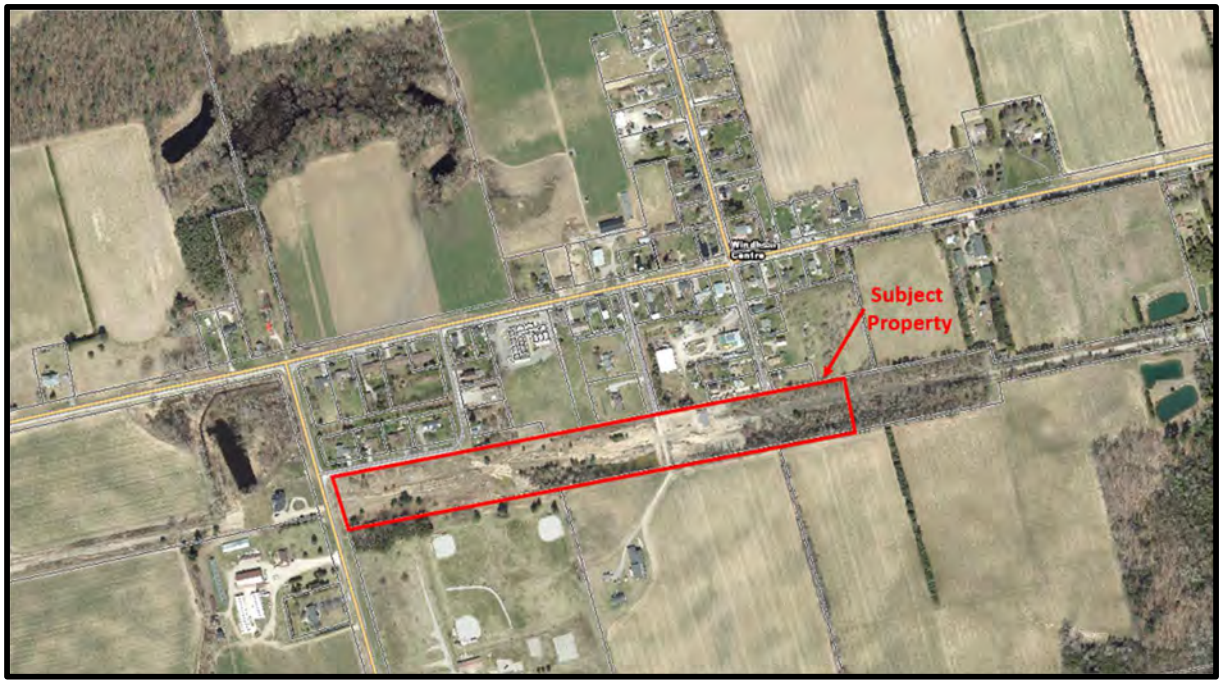
28 Colborne St. N.
Simcoe, ON, N3Y 3T9

1 INTRODUCTION

LandPro Planning Solutions Inc. (LandPro) was retained by the property owner, Mr. Lloyd Wood ("the Owner"), to assist with developing a nine (9) lot subdivision. This letter provides justification for a Draft Plan of Subdivision application for the subject property at 25 Baker's Lane, Windham Centre. The application proposes to create nine (9) new lots suitable for future low-density residential development in the form of single detached dwellings.

The subject property is located on the west side of Baker's Lane, south of Baker Street and Windham Lane, and east of Nixon Road. See **Figure 1** below.

Figure 1 - Location of 25 Baker's Lane



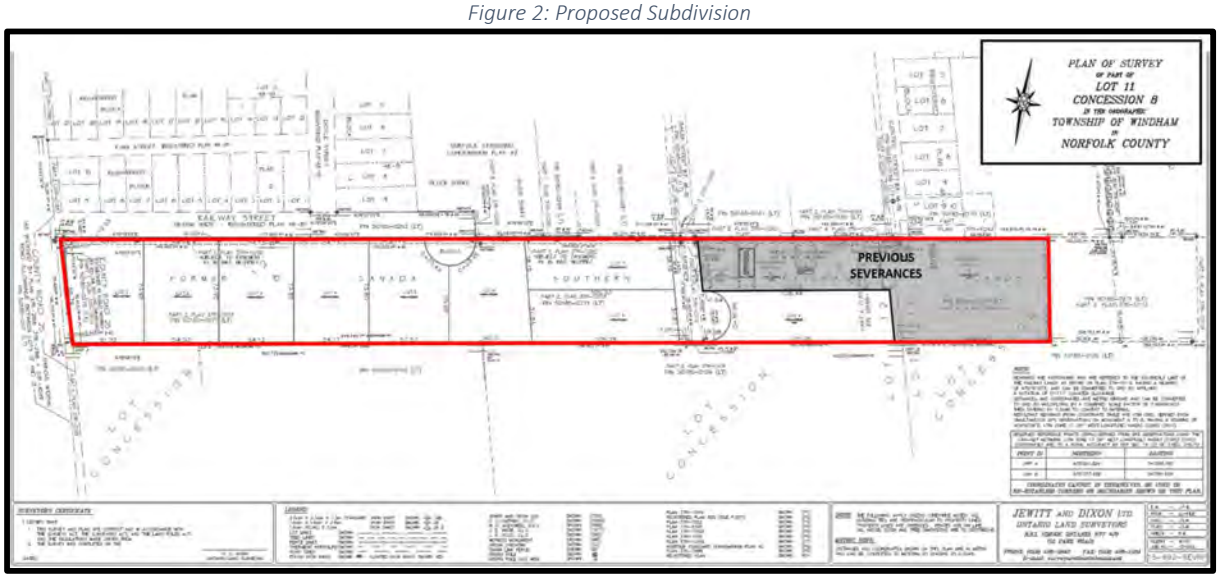
2 PROPOSED DEVELOPMENT

The proposed application at 25 Baker's Lane proposes to create nine (9) new residential lots. This application follows two (2) severance applications to sever two (2) lots from the east end of the subject property; one (1) with the existing dwelling and one (1) vacant lot further to the east. The Draft Plan of Subdivision application looks to develop the remainder of the subject property and ROW.

Lots 1 through 6 are proposed to have frontage and access to Railway Street. While Baker Street (PART 3, PLAN 37R-10119) appears to extend through the subject property and is to be used to access Lot 7, Lot 8, Lot 9 and the previously severed "Severance Parcel A".

The subject property is located within the urban area of Windham Centre which formerly operated as a railway. This proposal provides a unique opportunity for infill development and to develop an underutilized property. The proposed Draft Plan of Subdivision is displayed in **Figure 2** below.

Figure 2: Proposed Subdivision



3 Land Use Planning Framework

In preparing this application, several policy and regulatory documents were reviewed that need to be addressed to demonstrate good planning. They include the following:

1. Planning Act, R.S.O 1990 c.P.13
2. Provincial Policy Statement (2020);
3. Norfolk County Official Plan (cons. 2021);
4. Norfolk County Zoning By-law 1-Z-2014

The proposed development was assessed against these regulations and associated policies. A detailed review is below.

3.1 Planning Act, R.S.O 1990 c.P.13

The Planning Act is the provincial legislation and provides the basis for land use planning in Ontario, identifying tools for managing how, where and when land use change occurs.

The purposes of the *Act* as outline in **Section 1.1** are **(a)** to promote sustainable economic development in a healthy natural environment, **(b)** to provide for a land use planning system led by provincial policy, **(c)** to integrate matters of provincial interest in provincial and municipal decisions, **(d)** to provide for planning processes that are fair, **(e)** to encourage co-operation and coordination among various interests, **(f)** to recognize the decision-making authority and accountability of municipal councils in planning.

The matters of Provincial Interest are outlined in Section 2 of the *Act*. This application *shall have regard* to the following matters*: c), e), f), g), h), j), l), m), n), o), p), q), and r).*

As for Section 51(24), this application meets the following criteria: *a), b), c), d), e), f), h), i), j), k), l), and m).*

3.2 Provincial Policy Statement, 2020 (PPS)

The PPS provides policy direction on matters of provincial interest for all land use development throughout Ontario. It provides direction for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. This policy is based on three overlying principles: *1) Building Strong Healthy Communities; 2) Wise Use and Management of Resources; and 3) Protecting Public Health and Safety.*

The subject property is in the Hamlet of Windham Centre, defined as a *Settlement Area* by the PPS.

The PPS provides policy direction for Settlement Areas to focus the growth and development to the urban areas (1.1.3.1), to ensure efficient and mixed land use patterns (1.1.3.2), to promote municipal public transit, housing options, and utilization of existing infrastructure (1.1.3.3), to meet appropriate development standards (1.1.3.4), and to provide a range and mix of housing options (1.4.3).

The proposed application follows two (2) previous severance applications. This application intends to make efficient use of the subject property by creating a nine (9) lot subdivision on the decommissioned railway lands. This proposal represents the efficient use of lands and infill development within the Hamlet as it allows for new single detached dwellings to be constructed. This application will provide additional housing by introducing up to nine (9) new single detached homes to the housing stock each with the potential for Additional Dwelling Units (ADUs) to further provide a mix of housing options in the area. The proposed development will utilize existing municipal infrastructure.

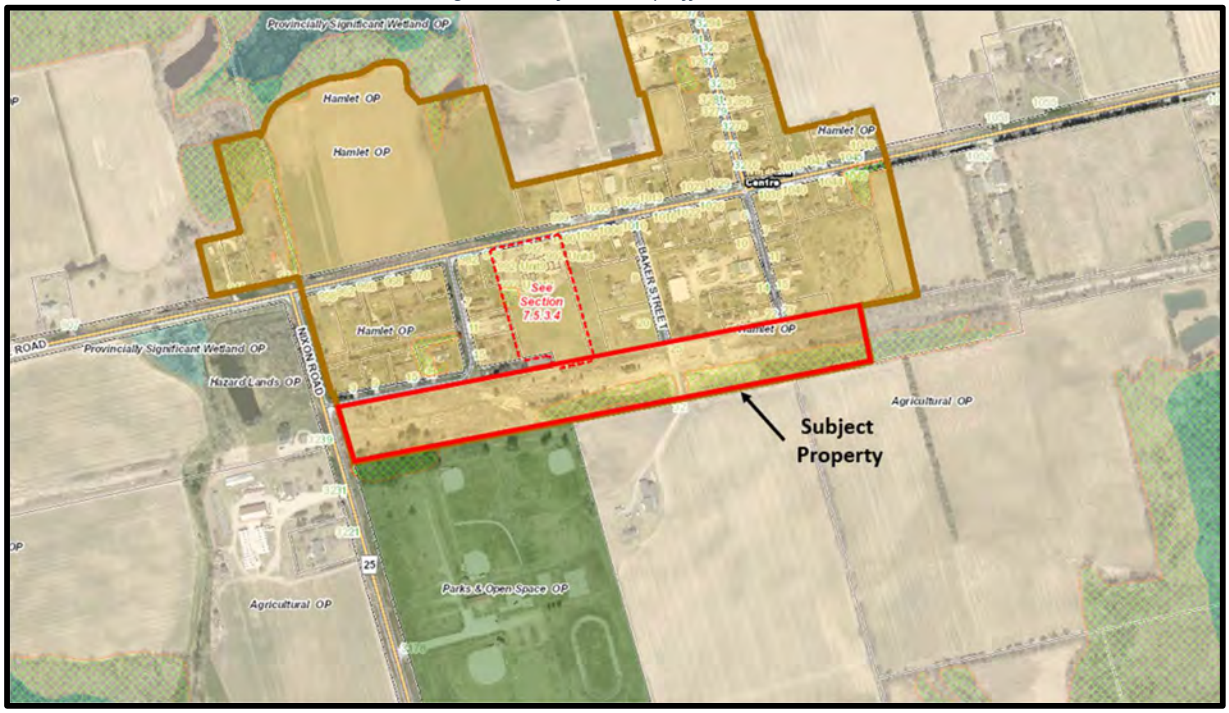
This application is consistent with the Provincial Policy Statement.

3.3 Norfolk County Official Plan

The Norfolk County Official Plan (NCOP) contains objectives, policies and mapping that describe the County's vision for the next 20+ years, including their approach to managing growth, growing the economy, protecting the natural environment, resources, and agricultural land, and providing sustainable infrastructure.

The property is located within the Hamlet of Windham Centre, and the NCOP designates the property as "*Hamlet*". Figure 3, below, shows the property designation.

Figure 3: Norfolk County Official Plan



Draft Plan of Subdivision applications are permitted under 9.6.4 of the NCOP. In accordance with the policies in this section, the land use designations and policies must be complied with **(9.6.4.a)**.

The County shall also confirm the availability of adequate servicing infrastructure **(9.6.4.b)** and shall be considered premature if not available **(9.6.4.c)**. All plans of subdivision shall be subject to a subdivision agreement between the County and the developer **(9.6.4.h)**. All lots within a plan of subdivision shall have frontage on a public road maintained on a year-round basis, constructed to an acceptable County standard **(9.6.4.e)**.

Upon the approval of this application, the proposed road allowances will be brought up to County standards and assumed by the County. The proposed lots all have frontage to a year-round maintained public road (Railway Street & Baker Street) and are intended to be serviced through private servicing. The lots are of sufficient area to accommodate private septic systems and water supply.

The subject property also has Significant Woodlands along the southern boundary. As the Pre-Consultation notes suggest, the property does not meet the size criteria to require an EIS, it has no interior forest habitat, and it is highly unlikely that it contains any rare, threatened or endangered wildlife of plant species. Additionally, the subject property is heavily disturbed albeit the woodland area contains some relatively mature trees of around 40 years old.

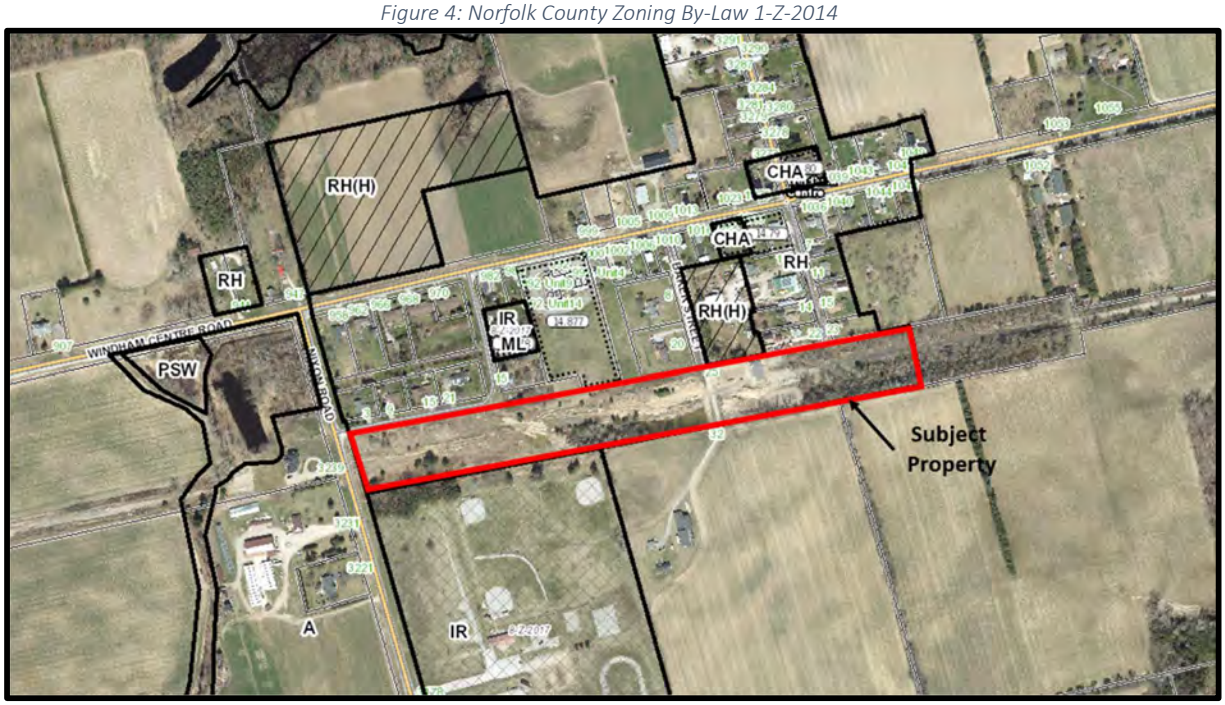
The proposed application ensures an efficient development pattern through infilling an underutilized lot in the Hamlet to provide new single detached dwellings.

This application conforms with the Norfolk County Official Plan.

3.4 Norfolk County Zoning By-law 1-Z-2014

Norfolk County Zoning By-Law 1-Z-2014 regulates the subject property. The current zoning of the property is *Hamlet Residential (RH),* as presented in **Figure 4** below.

Figure 4: Norfolk County Zoning By-Law 1-Z-2014



The Norfolk County Zoning By-law (ZBL) has been developed to implement the policy direction of the NCOP. The existing zoning permits single detached dwellings on the property which is the intended use of each lot.

The subject lands are currently zoned appropriately with no zoning deficiencies. Single detached dwellings are a permitted use in the *Hamlet Residential* zone.

The proposed Draft Plan of Subdivision is compatible with the RH zoning. Please see RH zone provisions below in **Table 1**.

Table 1: Norfolk County Zoning By-Law 1-Z-2014 – RH Zone Provisions

Zone Provisions	Required	Proposed	Comment
Min. Lot Area	4000m^2	4000m^2 to 4457m^2	Complies
Min. Lot Frontage	30m	37.97m to 54.17m	Complies
Min. Front Yard	6m	-	At future Building Permit stage
Min Exterior Side Yard	6m	-	At future Building Permit stage
Min. Interior Side Yard	3m & 1.2m	-	At future Building Permit stage
Min. Rear Yard	9m	-	At future Building Permit stage
Max. Building Height	11m	-	At future Building Permit stage

As shown in Table 1 above, the proposed lots intend to facilitate the construction of new single detached dwellings entirely built within the setbacks and provisions outlined the zoning by-law.

The proposed subdivision and lot configuration conforms to Norfolk County Zoning By-Law.

4 ANALYSIS

Based on our review of the existing context, the proposed plan and applicable policy, it is our opinion that the proposed Draft Plan of Subdivision application is appropriate for the subject property.

This proposal is intended to create nine (9) new lots each on private servicing with access and frontage on a year-round, maintained public road. The proposed application represents the efficient use of land and infill development within the Hamlet.

This application has regard for Section 1.1, Section 2 and Section 51(24) of the Planning Act. The matters of Provincial Interest that this application has regard to are: *c), e), f), g), h), j), l), m), n), o), p), q), and r).* For Section 51(24), this application meets the following criteria: *a), b), c), d), e), f), h), i), j), k), l), and m).*

This proposal is consistent with the Provincial Policy Statement which encourages infill development within the settlement area boundaries. This application will facilitate the construction of up to nine (9) new single detached dwellings which further adds to the housing stock. This application focuses growth and development within the settlement area through the ensuring the efficient use of land and by utilizing existing infrastructure.

This proposed Draft Plan of Subdivision application conforms with the Norfolk County Official Plan designates the property as *Hamlet*. The proposed application ensures an efficient development pattern through infilling an underutilized lot in the Hamlet to provide new single detached dwellings. Additionally, the proposed lots all have frontage to a year-round maintained public road (Railway Street & Baker Street).

The proposal conforms to the Norfolk County Zoning By-Law as the property is zoned as *Hamlet Residential.* The future dwellings will be designed to fit the existing and future character of the neighbourhood. Single detached dwellings are a permitted use in the RH zone and intends to meet all other provisions set out by the zoning by-law.

This application is consistent with the Provincial Policy Statement, conforms with the Norfolk County Official Plan, conforms with the Norfolk County Zoning By-Law and represents good planning.

5 CLOSING

The application is consistent with the Planning Act and Provincial Policy Statement, and conforms to the Norfolk County Official Plan and the Norfolk County Zoning By-Law.

It is our opinion that the applications represent good planning and should be approved.

LandPro Planning Solutions Inc.

Mitchell Baker, BES
Planner

289-680-6134
mitchell@landproplan.ca
landproplan.ca

Michael Sullivan, M.Pl., RPP, MCIP
President

289-687-3730
mike@landproplan.ca

LandPro Planning Solutions Inc.
110 James St., Suite 204 St. Catharines, ON L2R 7E8
28 Colborne St. N. Simcoe, ON, N3Y 3T9

March 2, 2023

Mr. Mohammad Alam
185 Robinson Street,
Simcoe, ON N3Y 5L6
Mohammad.Alam@norfolkcounty.ca

Re: Draft Plan of Subdivision
25 Baker's Street, Windham Centre
Norfolk County

LandPro Planning Solutions Inc. ("Agent") has been retained by Mr. Lloyd Wood ("Owner") to assist in obtaining the required approvals for the proposed nine (9) lot Draft Plan of Subdivision.

This letter introduces the submission of this applications which comprises of the following:

1. County Application Form, commissioned
2. Planning Justification Brief (LandPro Planning Solutions, February 2023)
3. Survey - Draft Plan of Subdivision (Jewitt & Dixon, February 2022)
4. Functional Servicing Report (J.H Cohoon Engineering Ltd., February 2023)
5. Traffic Brief (J.H Cohoon Engineering Ltd., February 2023)
6. Lot Grading Plans (J.H Cohoon Engineering Ltd., February 2023)
7. Geotechnical Brief (Englobe Corp., February 2022)
8. Soils Analysis (Norfolk Soils Analysis, March 2022)
9. All associated application fees ($10,058.00 plus $75 per lot; TOTAL = $10,733.00)

The fees for the application are to be paid directly by the property owner(s). We trust this submission fulfills the County's requirements for a complete application and look forward to receiving confirmation of the same.

You are welcome to call our office at 289-687-3730 or by email at mitchell@landproplan.ca with any questions or concerns.

LANDPRO PLANNING SOLUTIONS Inc.

Mitchell Baker, BES
Planner
289-680-3164
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Michael Sullivan, M.Pl., RPP, MCIP
President
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mike@landproplan.ca
landproplan.ca

FUNCTIONAL SERVICING REPORT
PROPOSED RESIDENTIAL DEVELOPMENT
LLOYD WOOD SUBDIVISION
Windham Centre
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: 15640

Feb 2023

INTRODUCTION

The following Functional Servicing Report was prepared by J.H. Cohoon Engineering Limited for Mr. L. Wood in support of future planning applications relating to the site located at MN 32 Nixon Road, 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 residential single-family development that will consist of 9 residential lots as illustrated on the draft plan of subdivision included within Appendix 'A' of this report.

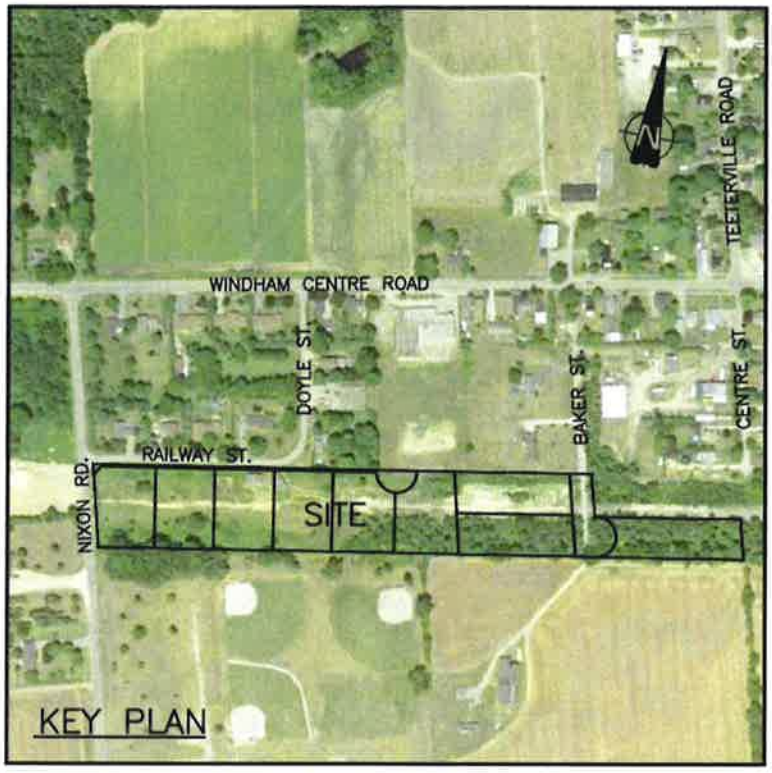
The site is located on the south side of Railway Street in Windham Centre, on the southeast corner of the intersection of Railway Street and Nixon Road in Norfolk County. The overall subdivision area is 3.968 Ha in size with the parcel of land being proposed to be made up of 0.322 ha of Roads and 3.646 Hectares of residential lots.

The objective of this report is to document the servicing strategy to be utilized for the site in a proposed initial development. Full services will be installed (i.e., sanitary, storm and water) within the development and connected to the existing municipal system in the existing municipal road allowances or abutting the subject lot. 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 Railway Street and an extension of Barker Street in the Town of Windham Centre. As indicated the parcel of land is some 3.968 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 townhouses of various styles with a total of approximately 86 units with future development to occur on this site. 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 individual private services. 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 the following assumptions for the design of the system

Typical Building Residence

Three Bedroom Ranch Style House with 20 fixture Units

Soils

As per Englobe Report dated Aug 17, 2022 (refer to Appendix 'D' of this report).

WATER SERVICING AND FIRE PROTECTION

The provision of water to the proposed residences will be provided through the provision of individual wells located on 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 6.0km of the Teeterville Fire Station located at Mn 186 Teeter Street, Teeterville.

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.

Pre-development Condition

The site presently drains in a south westly direction towards the Podolak Drain. We have included the overall plan as provided by Norfolk County with respect to the Pololak Drain that shows that although the subject lands are outside of the contributing area, it is our opinion that the site is directed in that direction.

The runoff characteristics of this site are determined utilizing the "MIDUSS" stormwater management computer simulation program. In accordance with the Norfolk County Standards, the following design storms are being utilized within this proposed development.

Design Storm

Chicago Storm – 3 Hour Duration
Design Storms

$I = A / (t + B) ** C$

Where:	Design Strom Event	A	B	C
	5 Year Storm	771.901	6.241	0.786
	100 Year Storm	1274.631	7.540	0.796

The runoff characteristics of the various storm events and input parameters are included in Appendix 'F'.

The results of the stormwater management analysis can be summarized as follows:

Design Storm Event	Peak Discharge Rate (cms)
5	0.159
100	0.448

As indicated, the proposed scheme is intended to reduce the rate of runoff to below the pre-development rate for all storm events up to and including the 100-year storm event.

Post-Development Condition

In this application, the proposed drainage scheme involves the grading of the property to direct the runoff into a series of infiltration galleries on the property.

The proposed development is anticipated to increase the percentage impervious surfaces to be approximately 10.0 %

In this application, we have determined that the following is representative of this particular site.

Smallest Lot Area	=	4,000 sq. m.
Total Area	=	4,000 sq.

Impervious Surfaces			
House	=	200	sq.
Driveway (15m x 6m)	=	90	sq.
Total Impervious Surfaces			
	=	290	sq.

This result in an impervious area of approximately 7.3 %. We note that this relates to the smallest lot within the subdivision. Other lots within the subdivision exceed 4,500 sq. m. which would result in the % impervious being even lower. However, for the purposes of this analysis, the % impervious was taken at 10% for the residential lots.

The overland flow from this site is directed towards the Pololak Drain. However, the inclusion of the end of the line, infiltration gallery which has been sized for collecting the required volume to reduce the runoff rate (overall) to the pre-development runoff rates.

The runoff characteristics of the developed site were determined utilizing the "MIDUSS" stormwater management computer simulation program. The runoff characteristics of the post development condition is shown within "Appendix 'G'" of this report.

The sizing of the infiltration gallery was completed as follows:

Volume of Water to be Storey (during the 100 year storm event)
= 44.292 cu.m.
Size of Infiltration Gallery
= 15.0m x 5m x 1.5m
= 112.5 cu.m.
Void Ratio = 0.4
Volume Stored in Gallery
= 15 x 5 x 1.5 x 0.4
= 45 cu.m.
(No allowance for infiltration has been included in the analysis.

The results of the analysis can be summarized as follows:

Design Storm Event	Pre-Development Runoff Results (cms)	Overall Post-Development Runoff Results (cms) Without SWM	With SWM
5	0.048	0.140	0.042
100	0.380	0.533	0.380

These results indicate that restriction of the runoff has resulted in the discharge rates being equal to and below the pre-development runoff rates for all storm events.

In addition, quality controls are proposed in accordance with the MOE guidelines as published by the Ministry of the Environment. We are proposing a grassed swale to be constructed as an overland flow route on the site. During the 5-year storm event, the velocity in the flat bottom swale is estimated to be approximately 0.5 m/s with a flow distance of greater than 90m.

During construction a siltation and erosion control strategy is proposed. The erosion control measures should be in place and maintained by the contractor until a complete vegetation cover is in place.

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

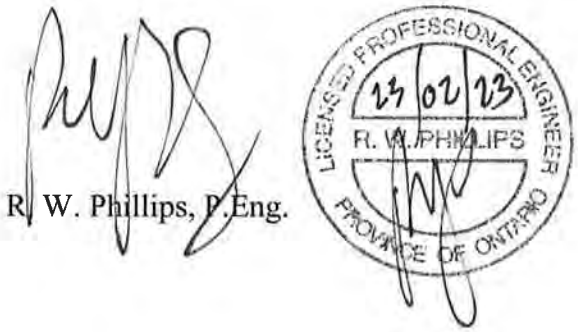
Coordination of these services will be required with Union Gas, the hydro utility, Bell, and the local cable tv provider (if available)

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

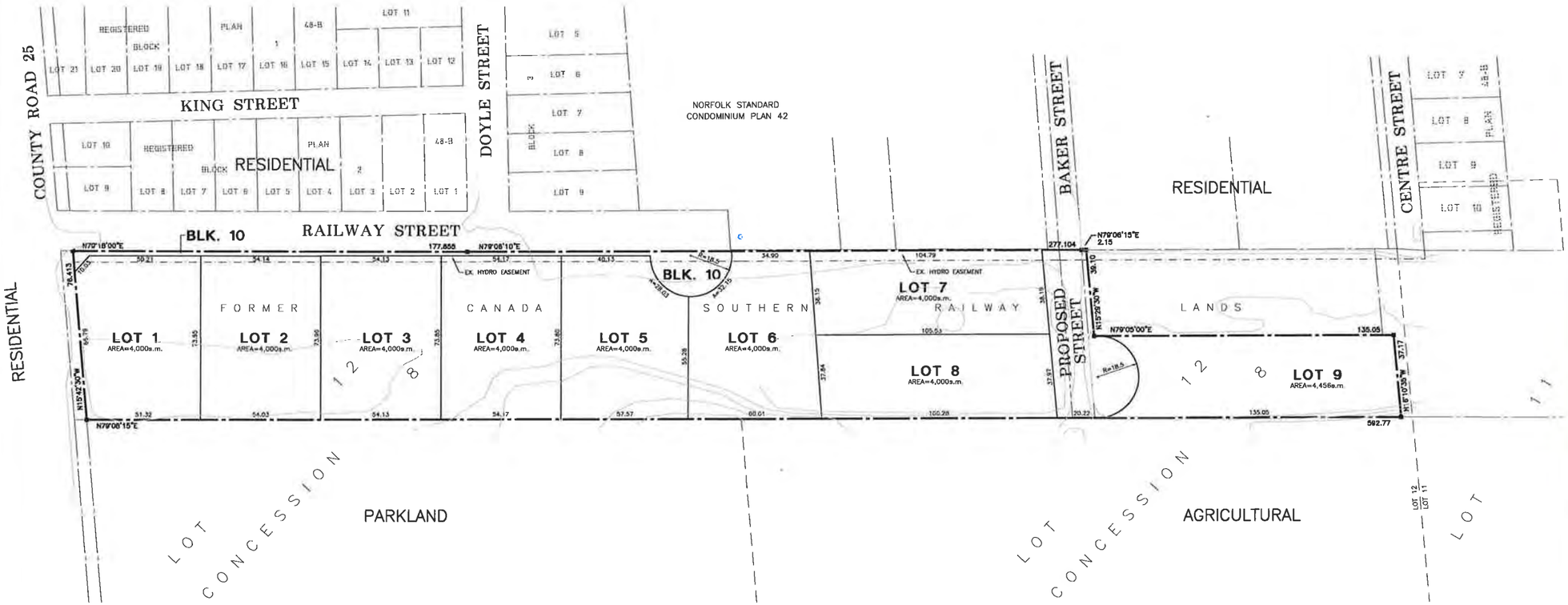


R. W. Phillips, P.Eng.

Appendix 'A'
Proposed Draft Plan of Subdivision – Job 15640 – DP1
As prepared by J H Cohoon Engineering Limited

DRAFT PLAN OF SUBDIVISION

PART OF LOT 12
CONCESSION 8
GEOGRAPHIC TOWNSHIP OF WINDHAM
NORFOLK COUNTY



KEY PLAN
SCALE= 1:10,000

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

KIM HUSTED, O.L.S.
JEWITT AND DIXON 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

LLOYD WOOD

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

A – SEE PLAN
B – SEE PLAN
C – SEE PLAN
D – RESIDENTIAL–SINGLE FAMILY
E – SEE PLAN
F – SEE PLAN
G – SEE PLAN
H – INDIVIDUAL WELLS
I – SAND & GRAVEL
J – SEE PLAN
K – INDIVIDUAL SEPTIC SYSTEMS
L – SEE PLAN

AREA SCHEDULE

LOTS = 3.646 ha
ROADS = 0.322 ha
TOTAL = 3.968 ha

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
440 HARDY ROAD, UNIT #1, BRANTFORD – ONTARIO, N3T 5L8
TEL. (519) 753-2658 FAX (519) 753-4263 www.cohooneng.com

DESIGN: R.W.P.	JOB No: 15640
DRAWN: K.P.B.	
SCALE: 1:1000	DWG No: DP1
DATE: OCT. 4/22	

Appendix 'B'
Proposed Residential Development Engineering Plans as originally prepared by MC Engineering and Modified by J H Cohoon Engineering Limited

CONCESSION VII

CONCESSION VII

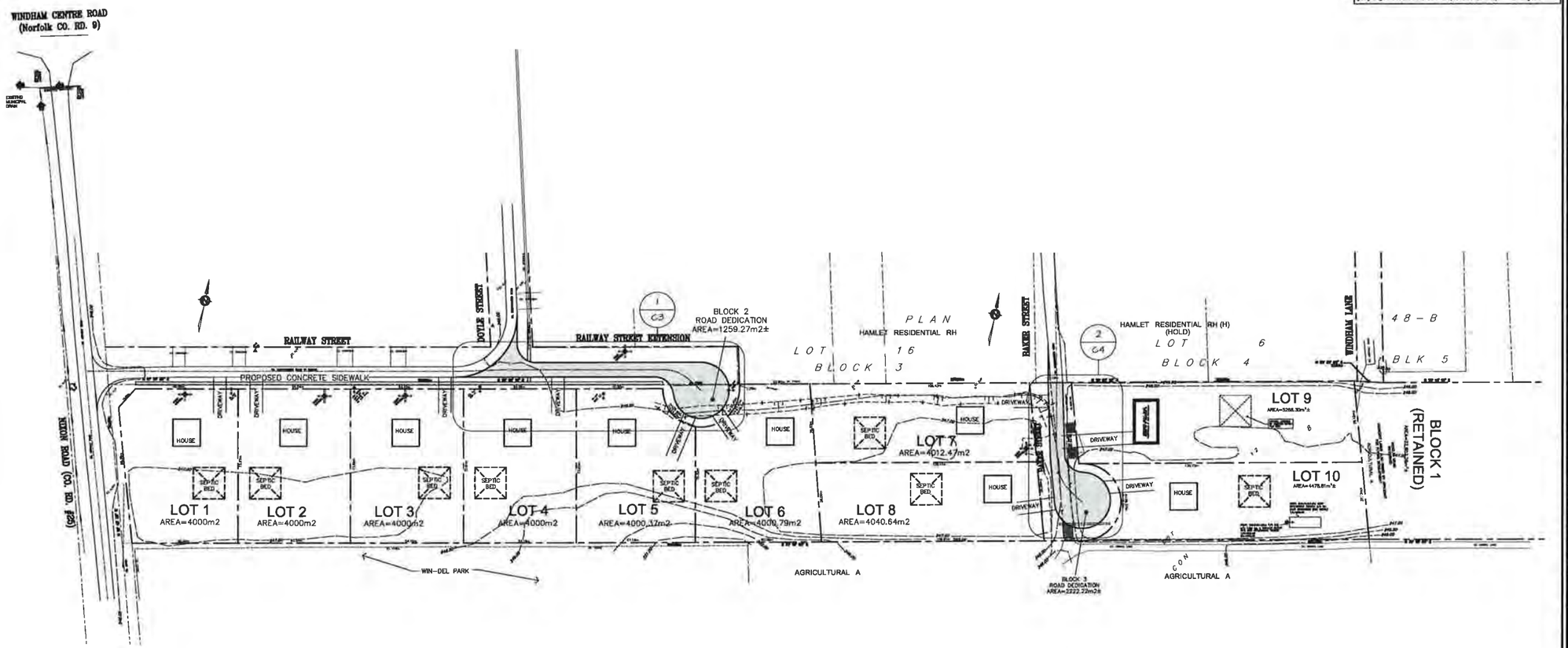
CONCESSION IX

NOTE - DIVERGION
1" = 10 ch. or 660'

PLAN SHOWING THE
PODOLAK DRAIN
TOWNSHIP OF WINDHAM
COUNTY OF NORFOLK
SCALE
1" = 10 ch. or 660'

JOHN B. DODD LTD.
ONTARIO LAND SURVEYOR
59 QUEENSWAY WEST
SIMCOE ONTARIO P.O. BOX 454

MAIL No. D-260



1/C1 OVERALL SITE PLAN / DRAINAGE
SCALE= 1:1000 (METRIC)

IMPORTANT

PLEASE READ THE FOLLOWING NOTES IN CONJUNCTION WITH ALL SITE DRAWINGS

SITE LIGHTING:
REFER TO ELECTRICAL DRAWINGS FOR ALL SITE LIGHTING, LIGHT FIXTURE TYPES, WIRING, UTILITY POLES ETC., LOCATIONS AND SPECIFICATIONS. ALL EXTERIOR LIGHT FIXTURES TO BE DARK-SKY COMPLIANT; NO EXTERIOR LIGHTING ARRAY TO BE DIRECTED OFF PROPERTY TO ROAD ALLOWANCE OR ADJACENT PROPERTIES. ALL LIGHTING ARRAY DIRECTIONS TO SHINE INTERNALLY TOWARD SUBJECT PROPERTY.

GARBAGE / REFUSE STORAGE:
REFUSE STORAGE (GARBAGE) TO BE INSIDE THE PROPOSED BUILDINGS.

BUILDING / ARCHITECTURAL:
REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL BUILDING EXTERIOR AND INTERIOR DIMENSIONS, INTERIOR ROOM LAYOUT AND ROOM NAMES, WALL TYPES AND CONSTRUCTION AND SPECIFICATIONS.

FROST PROTECTION:
RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2M.

ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

SILTATION CONTROLS:
PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS, REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:
ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT
DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF 1m___MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE DRYWELL DETAIL ON THE DESIGN DRAWING.

SITE STATISTICS

ITEM	VALUE
PROPOSED ZONING	HAMLET RESIDENTIAL (RH)
TOTAL LOT AREA	47,183.35m²
LOT AREA (PER PROPOSED LOT)	0.4 ha (MIN)
LOT FRONTAGE (PER INTERIOR PROPOSED LOT)	30m (MIN)
LOT FRONTAGE (PER CORNER PROPOSED LOT)	36m (MIN)
FRONT YARD SET BACK	6m (MIN)
	ATTACHED GARAGE 1.2m EACH SIDE (MIN)
	DETACHED GARAGE 3m AND 1.2m
REAR YARD SET BACK	8m (MIN)
MAX. BUILDING HEIGHT	11m
PARKING	(2) PARKING SPACES 3m x 5.8m PER DWELLING

LICENSED PROFESSIONAL ENGINEER
23/02/23
R.W.PARTLOW
PROVINCE OF ONTARIO

GENERAL NOTES:

1. PRIMARY UNITS ARE METRIC. DIMENSIONS ARE METERS.
2. PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. (REFER TO TO OPSD 219.130)
3. ANY DISCREPANCY(S) BETWEEN INFORMATION ON THIS SITE DRAWING AND ACTUAL FIELD CONDITIONS, WHICH MAY IMPACT ON THE PROPOSED DEVELOPMENT, ARE TO BE REPORTED TO THE SENIOR CONSULTANT / P.ENG.
4. REQUIRED SERVICES & SERVICE CONNECTIONS NOT SHOWN ON DRAWING TO BE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER.
5. ALL NECESSARY RELOCATIONS OR REMOVALS OF EXISTING PHYSICAL SITE FEATURES INCLUDING U/G SERVICES TO BE THE RESPONSIBILITY OF THE CONTRACTOR/OWNER.
6. EXACT LOCATIONS & ELEVATIONS OF ALL EXISTING SERVICES (SANITARY SEWER, WATER, GAS, BELL, ETC.), GRADES, MATERIAL LENGTHS, ELEVATIONS, INVERTS, ETC. TO BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCEMENT OF ANY SITEWORK.
7. ANY FILL PLACED ON SITE MUST BE COMPACTED TO TO A MIN 98% STANDARD PROCTER DENSITY.
8. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S BONDED CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
   - ROAD CUT PERMITS
   - SEWER PERMITS
   - RELOCATION OF SERVICES
9. THIS DRAWING TO BE READ IN CONJUNCTION WITH ANY AND ALL OTHER DOCUMENTS SUBMITTED FOR MUNICIPAL APPROVAL(S).
10. RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2m
11. ALL EXCESS EXCAVATED MATERIAL WILL BE REMOVED FROM THE SITE.
12. THE EXISTING DRAINAGE PATTERN WILL BE MAINTAINED EXCEPT WHERE NOTED. PROPOSED ELEVATIONS SHOW GENERAL INTENT OF GRADING PLAN.
13. ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF NORFOLK COUNTY

LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS
- PROPOSED TREE PLANTING. REFER TO PLANTING SCHEDULE ON C8 AND PLANTING DETAIL AND NOTES A.50 ON C8.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES — EXISTING GRADES TO REMAIN 249.00 — PROPOSED GRADES 250.00 — PROPOSED SWALE GRADES 250.00
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C8
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180 (CD)
- PROPOSED GRASSED EARTH BERM MAX. SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS. (NEW LT EX. H/P)

WINDHAM CENTRE
SUBJECT LANDS
KEY PLAN: N.T.S.

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

- CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 06 A8921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	MON. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 26th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 30th 2018	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT.	AUG. 9th 2018	A.D.

DO NOT SCALE DRAWINGS. THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-8750 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

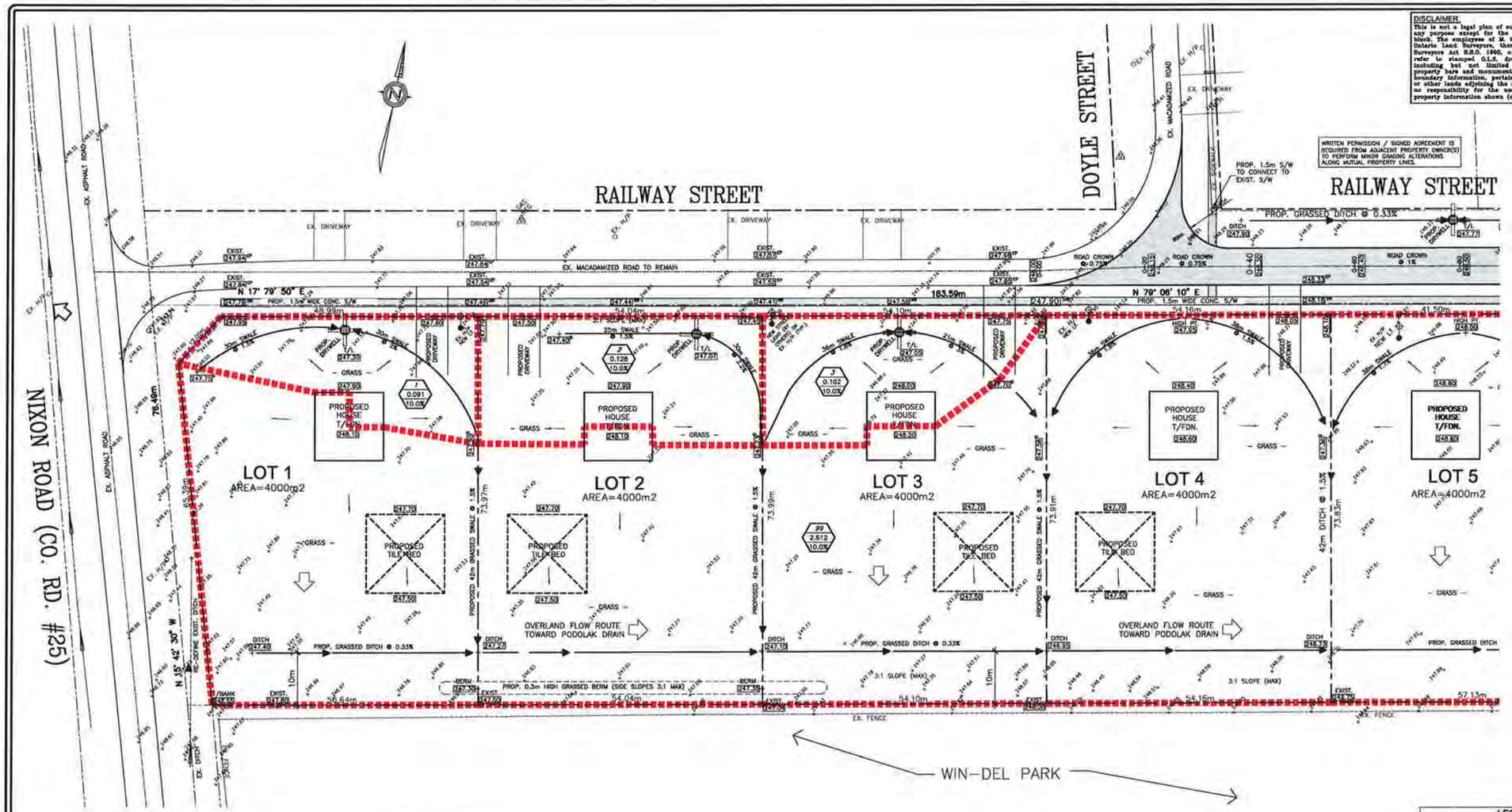
J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
OVERALL CONCEPT LOT LAYOUT AND OVERALL FLOW ROUTE

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C1
REV. NO.: 4



GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICE WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF MC ENGINEERING.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
3. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON SITE AT ALL TIMES.
4. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
5. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
6. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED AND MAINTAINED TO THE SATISFACTION AND TO THE REQUIREMENTS OF MC ENGINEERING.
7. ALL AREAS OF WORK WHICH WILL REMAIN DISTURBED FOR A PERIOD OF THIRTY DAYS OR MORE MUST BE STABILIZED TO THE SATISFACTION OF MC ENGINEERING.
8. ALL MATERIAL STOCKPILES ARE TO BE LOCATED WITHIN THE BOUNDARY OF THE INDICATED SILT FENCE. ADDITIONAL SILT FENCE IS TO BE ERECTED AROUND ANY PROPOSED STOCKPILES.
9. CATCH BASINS TO HAVE SILT TRAPS INSTALLED FOR THE DURATION OF CONSTRUCTION. REFERENCE DETAIL ON THIS PAGE.
10. SILT FENCE AS PER OPSD 219.130
11. ALL EROSION CONTROL DEVICES ARE TO BE INSPECTED AND MAINTAINED WEEKLY AND AFTER EACH RAINFALL.
12. OWNER IS RESPONSIBLE FOR INSPECTIONS AND MAINTENANCE OF STORMCEPTOR AS PER MANUFACTURER'S INSTRUCTIONS. ALL EROSION AND SEDIMENTATION CONTROL DEVICES MUST BE IN PLACE PRIOR TO ANY EARTH - MOVING/CONSTRUCTION ACTIVITIES AND MUST BE MAINTAINED UNTIL FINAL COVER IS ESTABLISHED.

SILT FENCE NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 1.5m BEYOND TOE OF SLOPE, 3m PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
4. SILT FENCE AS PER OPSD 219.130
5. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED.
6. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
9. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
10. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

1 / C2 SITE GRADING PLAN
SCALE= 1:400 (METRIC)

SILTATION CONTROLS:

PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:

ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT

DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF T=___MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE DRYWELL DETAIL ON THE DESIGN DRAWING.

LICENSED PROFESSIONAL ENGINEER 23/02/23 R. W. PASMA 100148 PROVINCE OF ONTARIO

LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS
- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C8 AND PLANTING DETAIL AND NOTES ALSO ON C8.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES (EXISTING GRADES TO REMAIN 200.00; PROPOSED GRADES 200.00; PROPOSED SWALE GRADES 200.00)
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C8
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180
- PROPOSED GRASSED EARTH BERM MAX SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS (NEW L.F. / EX. H/P)
- POST STORM DRAINAGE AREA (0.071 / 65.0% — DRAINAGE AREA NUMBER; DRAINAGE AREA IN HECTARES; COEFFICIENT OF RUNOFF (% IMPERVIOUS))

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WRITTEN PERMISSION / SIGNED AGREEMENT IS REQUIRED FROM ADJACENT PROPERTY OWNER(S) TO PERFORM MINOR GRADING ALTERATIONS ALONG MUTUAL PROPERTY LINES.

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
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- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 06 A8921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 29th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2018	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 6th 2018	A.D.

DO NOT SCALE DRAWINGS: THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6700 Fax: 519-428-8960
E-mail: mail@mcengineering.net
A DIVISION OF 3825A1 ALBERTA LTD.

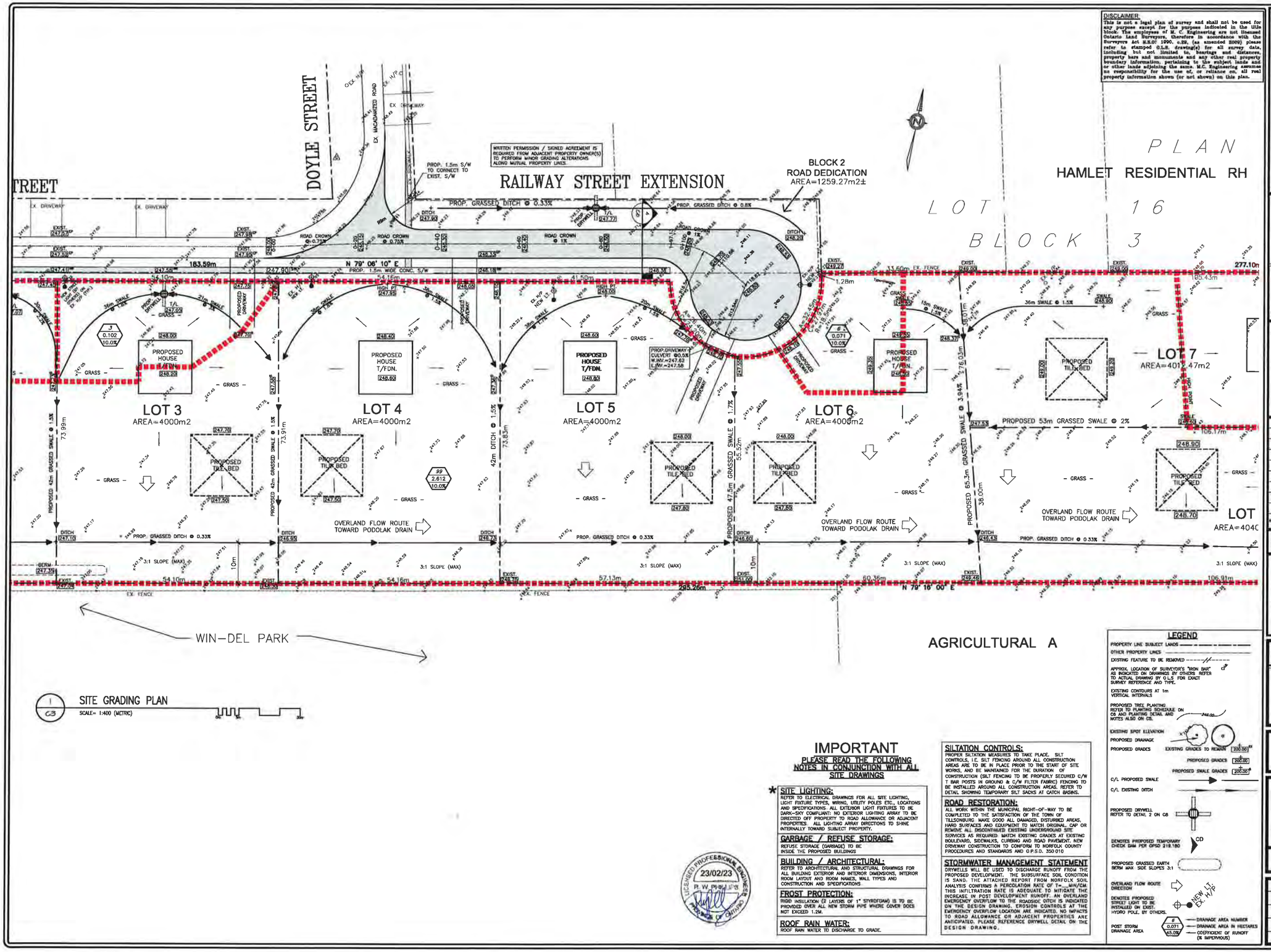
J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
CONCEPT GRADING AT (WEST AREA) AND NIXON ROAD CULVERT

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG NO.: C2
REV. NO.: 4



SITE GRADING PLAN

SCALE= 1:400 (METRIC)

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- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 OB A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	REVISION / DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 28th 2018	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2010	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 9th 2018	A.S.

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PROJECT NORTH

M C ENGINEERING P.O Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-426-5790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
CONCEPT LOT SITE GRADING
(MIDDLE AREA)

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C3
REV. NO.: 4

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO

IMPORTANT

PLEASE READ THE FOLLOWING NOTES IN CONJUNCTION WITH ALL SITE DRAWINGS

*** SITE LIGHTING:**
REFER TO ELECTRICAL DRAWINGS FOR ALL SITE LIGHTING, LIGHT FIXTURE TYPES, WIRING, UTILITY POLES ETC., LOCATIONS AND SPECIFICATIONS. ALL EXTERIOR LIGHT FIXTURES TO BE DARK-SKY COMPLIANT. NO EXTERIOR LIGHTING ARRAY TO BE DIRECTED OFF PROPERTY TO ROAD ALLOWANCE OR ADJACENT PROPERTIES. ALL LIGHTING ARRAY DIRECTIONS TO SHINE INTERNALLY TOWARD SUBJECT PROPERTY.

GARBAGE / REFUSE STORAGE:
REFUSE STORAGE (GARBAGE) TO BE INSIDE THE PROPOSED BUILDINGS

BUILDING / ARCHITECTURAL:
REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL BUILDING EXTERIOR AND INTERIOR DIMENSIONS, INTERIOR ROOM LAYOUT AND ROOM NAMES, WALL TYPES AND CONSTRUCTION AND SPECIFICATIONS

FROST PROTECTION:
RIGID INSULATION (2 LAYERS OF 1" STYROFOAM) IS TO BE PROVIDED OVER ALL NEW STORM PIPE WHERE COVER DOES NOT EXCEED 1.2M.

ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

SILTATION CONTROLS:
PROPER SILTATION MEASURES TO TAKE PLACE. SILT CONTROLS, I.E. SILT FENCING AROUND ALL CONSTRUCTION AREAS ARE TO BE IN PLACE PRIOR TO THE START OF SITE WORKS, AND BE MAINTAINED FOR THE DURATION OF CONSTRUCTION (SILT FENCING TO BE PROPERLY SECURED C/W T BAR POSTS IN GROUND & C/W FILTER FABRIC) FENCING TO BE INSTALLED AROUND ALL CONSTRUCTION AREAS. REFER TO DETAIL SHOWING TEMPORARY SILT SACKS AT CATCH BASINS.

ROAD RESTORATION:
ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT
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LEGEND

- PROPERTY LINE SUBJECT LANDS
- OTHER PROPERTY LINES
- EXISTING FEATURE TO BE REMOVED
- APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS REFER TO ACTUAL DRAWING BY O.L.S FOR EXACT SURVEY REFERENCE AND TYPE.
- EXISTING CONTOURS AT 1m VERTICAL INTERVALS
- PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C8 AND PLANTING DETAIL AND NOTES ALSO ON C8.
- EXISTING SPOT ELEVATION
- PROPOSED DRAINAGE
- PROPOSED GRADES (EXISTING GRADES TO REMAIN 200.00 / PROPOSED GRADES 200.00 / PROPOSED SWALE GRADES 200.00)
- C/L PROPOSED SWALE
- C/L EXISTING DITCH
- PROPOSED DRYWELL REFER TO DETAIL 2 ON C8
- DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 218.180
- PROPOSED GRASSED EARTH BERM MAX SIDE SLOPES 3:1
- OVERLAND FLOW ROUTE DIRECTION
- DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS.
- POST STORM DRAINAGE AREA (6 / 0.071 / 45.0% — DRAINAGE AREA NUMBER / DRAINAGE AREA IN HECTARES / COEFFICIENT OF RUNOFF (% IMPERVIOUS))

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- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 ON A9021 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 28th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2018	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 9th 2018	A.G.

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PROJECT NORTH

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Tel: 519-426-6780 Fax: 519-426-6960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE: CONCEPT LOT SITE GRADING (EAST AREA)

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C4 | REV. NO.: 4

PLAN
HAMLET RESIDENTIAL RH
LOT 16
BLOCK 3

HAMLET RESIDENTIAL RH (H)
(HOLD)
LOT 6
BLOCK 4

BAKER STREET
EX. MACADAMIZED ROAD
WINDHAM LANE
EX. ASPHALT ROAD

WRITTEN PERMISSION / SIGNED AGREEMENT IS REQUIRED FROM ADJACENT PROPERTY OWNER(S) TO PERFORM MINOR GRADING ALTERATIONS ALONG MUTUAL PROPERTY LINES.

N 79° 06' 10" E 277.10m
N 79° 06' 10" E 142.29m
N 80° 50' 00" E 12.54m
N 79° 16' 00" E 106.91m
302.70m

LOT 7
AREA=4012.47m2

LOT 8
AREA=4040.64m2

LOT 9
AREA=5268.30m²±

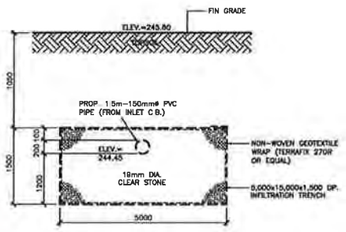
LOT 10
AREA=4478.81m²±

BLOCK 3
ROAD DEDICATION
AREA=2222.22m²±

PROPOSED 53m GRASSED SWALE @ 2%
PROPOSED 65.3m GRASSED SWALE @ 3.94%
PROPOSED DITCH @1%
PROP. GRASSED DITCH @ 0.33%
PROP. 24m - 750mmø C.S.P. CULVERT @0.3% W.INV.=246.10 E.INV.=246.03
PROP. 5.0x15.0x1.5m DEEP INFILTRATION TRENCH c/w CB INLET STRUCTURE (SEE DETAIL) T/G=245.80
PROP. 0.6x0.6x1.52m P/C C.B. s/w 1.5m Lg. x 150mmø OUTLET PIPE INTO INFILTRATION TRENCH T/G=245.80 INV.=244.45
OVERLAND FLOW ROUTE TOWARD PODOLAK DRAIN
PODOLAK DRAIN WATERSHED
ADJACENT LANDS ALSO OWNED BY APPLICANT FOR FUTURE DEVELOPMENT
AGRICULTURAL A
EXISTING FARM ACCESS
EX GRAVEL LANE
APPROX. LOCATION OF EXISTING SEPTIC TILE BED

AGRICULTURAL A

1 / C4 SITE GRADING PLAN
SCALE= 1:400 (METRIC)



INFILTRATION TRENCH DETAIL
N.T.S.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PEARCE
PROVINCE OF ONTARIO

IMPORTANT
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GARBAGE / REFUSE STORAGE:
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ROOF RAIN WATER:
ROOF RAIN WATER TO DISCHARGE TO GRADE.

SILTATION CONTROLS:
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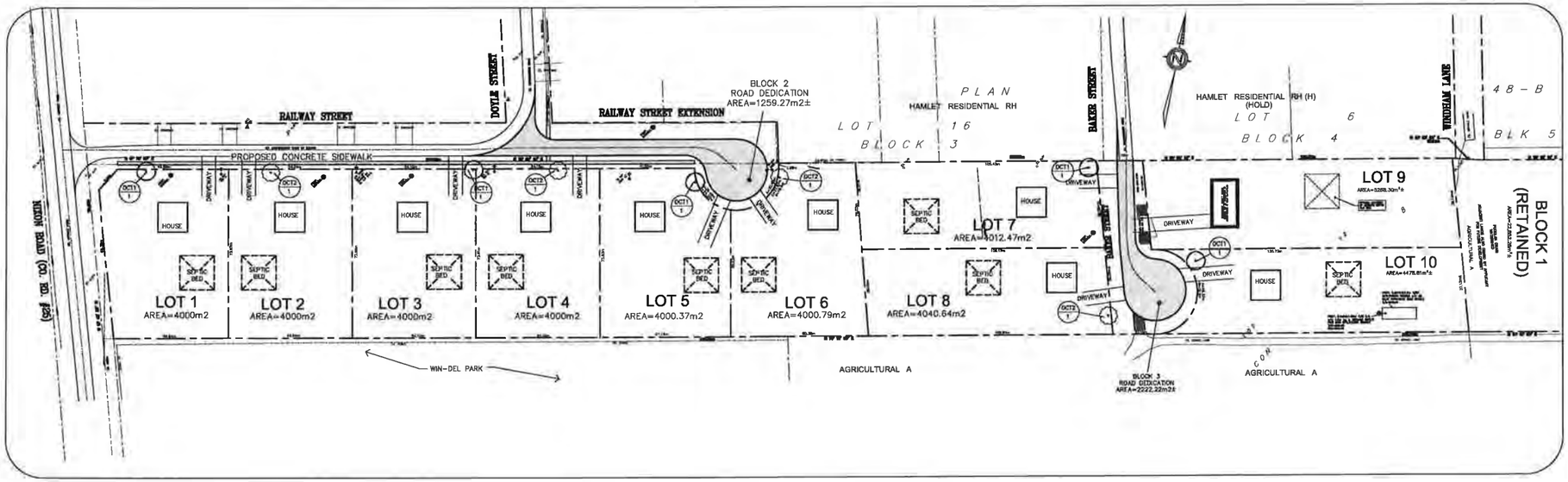
ALL WORK WITHIN THE MUNICIPAL RIGHT-OF-WAY TO BE COMPLETED TO THE SATISFACTION OF THE TOWN OF TILLSONBURG. MAKE GOOD ALL DAMAGED, DISTURBED AREAS, HARD SURFACES AND EQUIPMENT TO MATCH ORIGINAL. CAP OR REMOVE ALL DISCONTINUED EXISTING UNDERGROUND SITE SERVICES AS REQUIRED. MATCH EXISTING GRADES AT EXISTING BOULEVARD, SIDEWALKS, CURBING AND ROAD PAVEMENT. NEW DRIVEWAY CONSTRUCTION TO CONFORM TO NORFOLK COUNTY PROCEDURES AND STANDARDS AND O.P.S.D. 350.010

STORMWATER MANAGEMENT STATEMENT
DRYWELLS WILL BE USED TO DISCHARGE RUNOFF FROM THE PROPOSED DEVELOPMENT. THE SUBSURFACE SOIL CONDITION IS SAND. THE ATTACHED REPORT FROM NORFOLK SOIL ANALYSIS CONFIRMS A PERCOLATION RATE OF T=__MIN/CM. THIS INFILTRATION RATE IS ADEQUATE TO MITIGATE THE INCREASE IN POST DEVELOPMENT RUNOFF. AN OVERLAND EMERGENCY OVERFLOW TO THE ROADSIDE DITCH IS INDICATED ON THE DESIGN DRAWING. EROSION CONTROLS AT THE EMERGENCY OVERFLOW LOCATION ARE INDICATED. NO IMPACTS TO ROAD ALLOWANCE OR ADJACENT PROPERTIES ARE ANTICIPATED. PLEASE REFERENCE DRYWELL DETAIL ON THE DESIGN DRAWING.

LEGEND
PROPERTY LINE SUBJECT LANDS
OTHER PROPERTY LINES
EXISTING FEATURE TO BE REMOVED
APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S FOR EXACT SURVEY REFERENCE AND TYPE.
EXISTING CONTOURS AT 1m VERTICAL INTERVALS
PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C6.
EXISTING SPOT ELEVATION
PROPOSED DRAINAGE
PROPOSED GRADES (EXISTING GRADES TO REMAIN 260.00; PROPOSED GRADES 260.00; PROPOSED SWALE GRADES 260.00)
C/L PROPOSED SWALE
C/L EXISTING DITCH
PROPOSED DRYWELL REFER TO DETAIL 2 ON C8
DENOTES PROPOSED TEMPORARY CHECK DAM PER OPSD 219.180
PROPOSED GRASSED EARTH BERM MAX SIDE SLOPES 3:1
OVERLAND FLOW ROUTE DIRECTION
DENOTES PROPOSED STREET LIGHT TO BE INSTALLED ON EXIST. HYDRO POLE, BY OTHERS.
POST STORM DRAINAGE AREA (6 / 0.071 / 65.0%) — DRAINAGE AREA NUMBER; DRAINAGE AREA IN HECTARES; COEFFICIENT OF RUNOFF (% IMPERVIOUS)



1 / C5 OVERALL SITE PLAN / DRAINAGE

SCALE= 1:1000 (METRIC)

DISCLAIMER:
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THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION 8,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 OB A8921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B
3	ISSUED FOR CLIENT REVIEW	APRIL 28th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2018	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG 8th 2018	A.D.

DO NOT SCALE DRAWINGS; THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-426-8790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
PLANTING PLAN

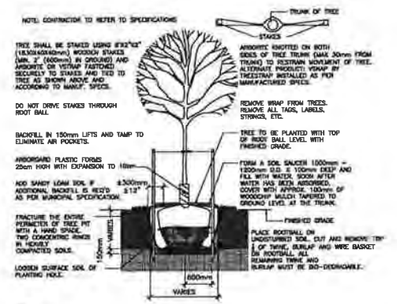
SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG. NO.: C5 REV. NO.: 4

PLANTING SCHEDULE

KEY	COMMON NAME	BOTANICAL NAME	QUANT	CONDITION	PROPERTIES	SIZE
		TREES				
DCT1	APOLLO SUGAR MAPLE	ACER SACCHARUM 'BARRETT COLT'	9	(B&B) W/B	F, FC, NT	7.2m HT
DCT2	RED EMPEROR JAPANESE MAPLE	ACER PALMATUM 'RED EMPEROR'	4	(B&B) W/B	FL, FC, NT	4.8m HT

* FOR TYP. PLANTING DETAIL AND NOTES REFER TO PAGE 5/4



NOTE:
1. TREES ARE SUBJECT TO ACCEPTANCE BY THE CITY. REJECTED TREES SHALL BE REMOVED FROM WORK SITE.
2. TREES SHALL BE REJECTED FOR ANY ONE OF THE FOLLOWING CRITERIA: DOUBLE LEADERS, DAMAGED ROOT BALLS, TRUNK DAMAGE, SPECIES NON-CONFORMING TO SPECS, GIRDLED TRUNKS, POORLY DEVELOPED CROWN, ROOT BALL NOT SIZED ACCORDING TO CANADIAN NURSERIES TRADE ASSOCIATION (C.N.T.A.), EXCESSIVELY DRIED LEAVES.

2 / C5 TYP. TREE PLANTING

SCALE: NTS

PLANT MATERIALS:

1. ALL TREE PITS SHALL BE AT LEAST 2 FT. (600MM) WIDER THAN BALL OF THE TREE TO BE PLANTED AND SHALL BE DEEP ENOUGH SO THAT THE TOP OF BALL IS AT THE SAME LEVEL AS SURROUNDING GRADE. A MINIMUM OF 6" (150MM) OF BACKFILL SHALL BE PLACED UNDER BALL. TREE PITS ARE NOT TO BE LEFT OPEN OVER NIGHT.
2. SHRUB BEDS SHALL BE EXCAVATED TO A DEPTH OF 18" (450MM) AND FILLED WITH APPROVED BACKFILL MATERIAL.
3. ALL TREES SHALL HAVE AN EARTH SAUCER AT ITS BASE WITH A DIAMETER AS LARGE AS EXCAVATED AREA TO SHAPE TO RETAIN WATER. SEE DETAIL. EARTH SAUCER TO HAVE APPROVED MULCH INSTALLED TO A MINIMUM DEPTH OR 2.5" (63MM).
4. ALL BURLAP SHALL BE CUT AND BURIED BELOW SURFACE DURING PLANTING.
5. ALL EVERGREENS ARE TO WRAPPED THE FIRST WINTER

LANDSCAPE NOTES:

1. ANY PLANT MATERIAL REQUIRES THE APPROVAL OF THE CITY OF NORFOLK COUNTY.
2. PLANT MATERIAL OR FENCING SHALL BE MINIMUM TO BE PROVIDED BY THE OWNER. ANY ADDITIONS MUST COMPLY WITH THE ZONING BY-LAW.
3. ANY SODDING, PLANTING, OR WORK ON LANDS ABUTTING THE PROPERTY FROM THE LOT LINES TO SIDEWALK AND CURBING, SHALL BE TO THE SATISFACTION OF THE CITY.
4. ALL LANDSCAPING SHALL BE INSTALLED PRIOR TO THE END OF THE FIRST GROWING SEASON FOLLOWING OCCUPANCY OF THE DEVELOPMENT.
5. UNLESS OTHERWISE SPECIFIED ALL LANDSCAPED AREAS TO BE SODDED.
6. UNLESS OTHERWISE SPECIFIED ALL UNDEVELOPED AREAS SHALL BE UNDISTURBED AND KEPT FREE AND CLEAR OF DEBRIS AND MAINTAINED.
7. ALL PLANTING BEDS TO BE PROPERLY MULCHED.

GENERAL PLANTING NOTES:

TOPSOIL:

ALL SHRUB BEDS AND TREES TO BE BACKFILLED WITH GOOD QUALITY TOPSOIL SCARIFIED FREE OF ALL STONES, ROOTS, BRANCHES LARGER THAN 1" (25MM) AND COMPACTED TO 85% S.P.D.

ALL SUBSOIL TO BE SCARIFIED TO A DEPTH OF 6" (150 MM) PRIOR TO THE INSTALLATION OF TOPSOIL TO ENSURE NO HARDPAN CONDITIONS

DIRECT ALL RAIN LEADERS AND SUMP LEADERS AWAY FROM PLANTING BEDS AND TO THE DESIGNATED SWALES.

MULCH:

ALL TREE PITS, SHRUB PITS AND PLANTING AREAS ARE TO BE MULCHED WITH MIN. 75MM OF MEDIUM MULCH, UNLESS OTHERWISE NOTED.

PLANTING MATERIAL:
CONTRACTOR TO VERIFY ALL PLANT MATERIAL ON DRAWING(S) AND PLANT MATERIAL LIST(S). REPORT ALL DISCREPANCIES

PLANTINGS MAY BE ADJUSTED TO SUIT UTILITIES STRUCTURES AND AESTHETIC CONCERNS.

DO NOT INSTALL PLANT MATERIAL IN DRAINAGE SWALES.
ALL TREES TO BE PROPERLY STAKED WITH HOSE COATED WIRE. REMOVE ALL GUY WIRES AFTER 2 FULL GROWING SEASONS.

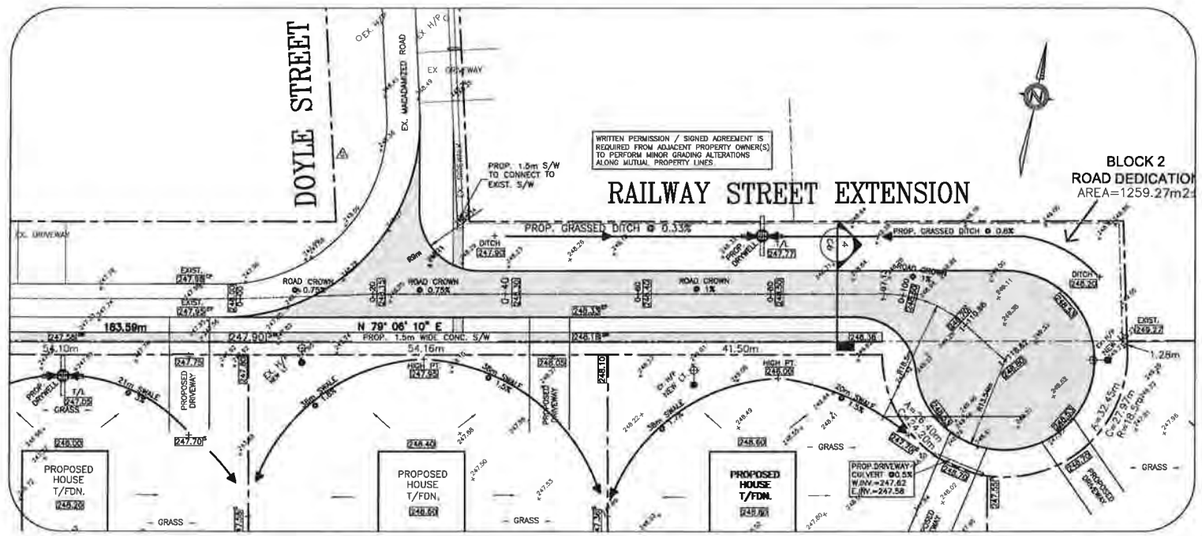
SOD:

UPON INSTALLATION AREAS SHOULD BE WATERED SO AS TO SATURATE SOD AND THE UPPER 4" (100MM) OF BACKFILL TOPSOIL. AFTER SOD AND SOIL HAVE DRIED SUFFICIENTLY TO PREVENT DAMAGE, IT SHALL BE ROLLED WITH A ROLLER

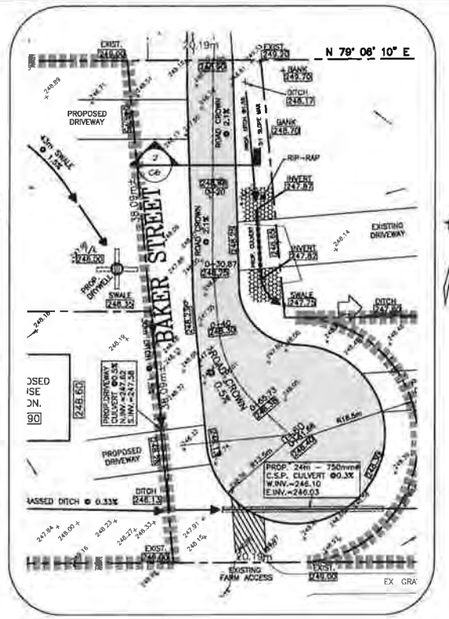
LEGEND

PROPERTY LINE SUBJECT LANDS
OTHER PROPERTY LINES
EXISTING FEATURE TO BE REMOVED
APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE.
EXISTING CONTOURS AT 1m VERTICAL INTERVALS
PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C5 AND PLANTING DETAIL AND NOTES ALSO ON C5.

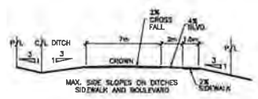
LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PASTUCH
PROVINCE OF ONTARIO



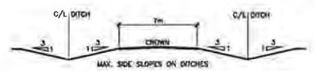
1 / C6 SITE GRADING PLAN
SCALE= 1:400 (METRIC)



3 / C6 SITE GRADING PLAN
SCALE= 1:400 (METRIC)



2 / C6 TYPICAL DRIVEWAY CROSS-SECTION
SCALE: N.T.S.



4 / C6 TYPICAL DRIVEWAY CROSS-SECTION
SCALE: N.T.S.

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- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 08 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 28th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2019	R.M.
1	ISSUED FOR CLIENT PRE-CONSULT	AUG. 8th 2019	A.D.

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PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-428-6780 Fax: 519-428-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

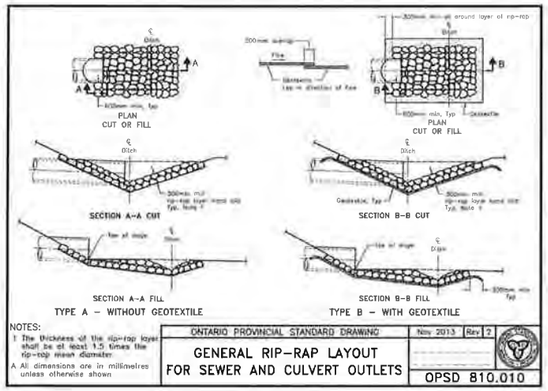
PROJECT NAME:
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
132 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
PLAN & PROFILE – RAILWAY STREET AND BAKER STREET EXTENSION

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

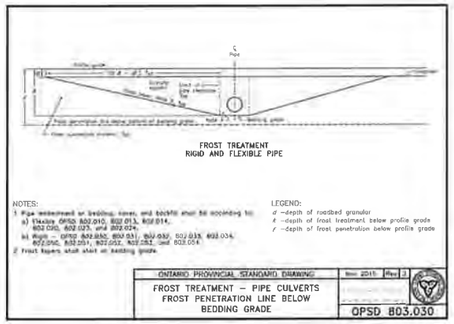
PROJECT NO.: 15640/7251
DWG NO.: C6
REV. NO.: 4

LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO
23/02/23
R. W. PEPPLER



NOTES:
1 The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.
A All dimensions are in millimetres unless otherwise shown

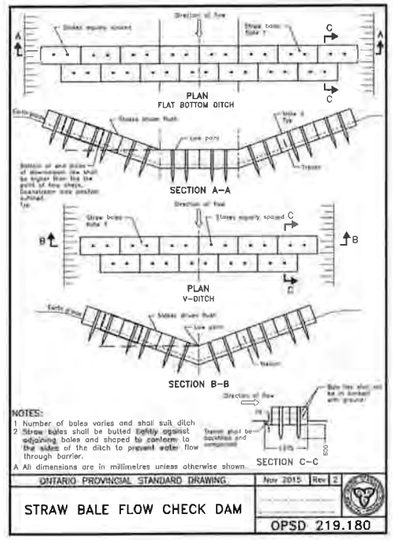
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev 2
GENERAL RIP–RAP LAYOUT FOR SEWER AND CULVERT OUTLETS		OPSD 810.010



NOTES:
1 Pipe embedment or bedding, sides, and backfill shall be according to:
a) Flexible: OPSD 802.010, 802.013, 802.014, 802.030, 802.031, and 802.034.
b) Rigid – OPSD 802.030, 802.031, 802.032, 802.035, 802.036, 802.050, 802.051, 802.052, 802.053, and 803.054.
2 Frost tapers shall start at bedding grade.

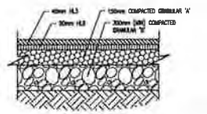
LEGEND:
d –depth of crushed granular
f –depth of frost treatment below profile grade
/ –depth of frost penetration below profile grade

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
FROST TREATMENT – PIPE CULVERTS FROST PENETRATION LINE BELOW BEDDING GRADE		OPSD 803.030

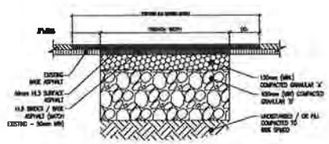


NOTES:
1 Number of bales varies and shall suit ditch
2 Straw bales shall be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
STRAW BALE FLOW CHECK DAM		OPSD 219.180



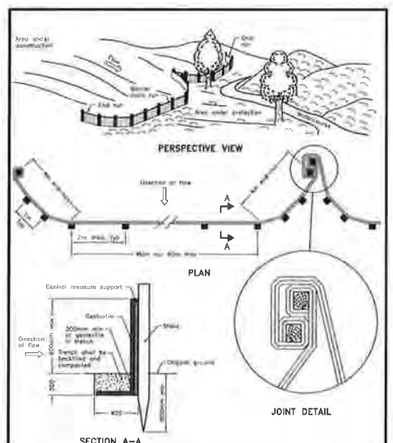
5 / C7 TYPICAL ASPHALT DETAIL
SCALE= N.T.S.



ROADWAY RESTORATION NOTES:

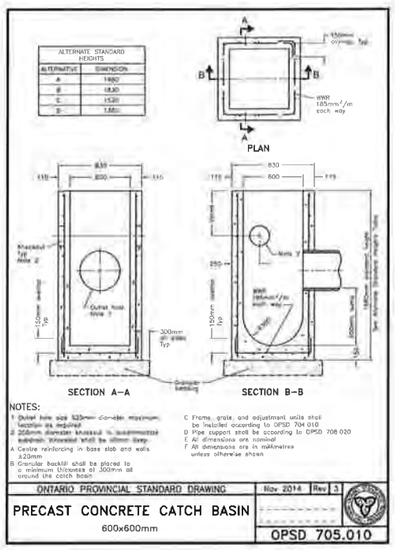
1. CONTRACTOR TO OBTAIN ALL NECESSARY ROAD CUT PERMITS PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO MAINTAIN A MINIMUM OF ONE LANE OF TRAFFIC AT ALL TIMES. IF TEMPORARY ROAD CLOSURES ARE NECESSARY, THEN CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS WITH NORFOLK COUNTY.
3. CONTRACTOR SHALL LOCATE AND PROTECT ALL UTILITIES.
4. ALL CUTS TO EXISTING ASPHALT AND CONCRETE SHALL BE CLEAN SAW CUTS ONLY.
5. BACKFILL FOR ALL SERVICE TRENCHES FROM EDGE OF ASPHALT TO BACK OF SIDEWALK SHALL BE GRANULAR 'B'
6. BACKFILL FOR ALL SERVICE TRENCHES FROM BACK OF SIDEWALK TO STREET LINE SHALL BE SELECT NATIVE MATERIAL.
7. ALL BEDDING AND BACKFILL SHALL BE COMPACTED TO MIN 95% SPMDD
8. CURBS AND SUBDRAINS SHALL BE RESTORED TO MATCH EXISTING CONDITIONS TO THE SATISFACTION OF NORFOLK COUNTY.
9. BOULEVARDS, SHALL BE RESTORED WITH NO 1 NURSERY SOD ON MINIMUM 100mm IMPORTED TOPSOIL TO THE SATISFACTION OF NORFOLK COUNTY.

4 / C7 TYPICAL ROAD RESTORATION DETAIL
SCALE= N.T.S.



NOTE:
A All dimensions are in millimetres unless otherwise shown.

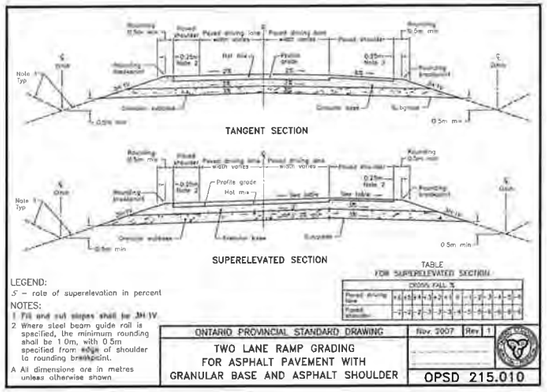
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
HEAVY–DUTY SILT FENCE BARRIER		OPSD 219.130



ALTERNATIVE	DIMENSION
A	1980
B	1830
C	1520
D	1380

NOTES:
1 Outlet hole size 525mm diameter maximum. Section as required.
2 200mm diameter knockout is recommended. Knockout shall be 40mm deep.
A Centre reinforcing in base slab and walls ±20mm.
B Granular backfill shall be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD 704.010
D Pipe support slab to be according to OPSD 708.020
E All dimensions are nominal
F All dimensions are in millimetres unless otherwise shown

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
PRECAST CONCRETE CATCH BASIN 600x600mm		OPSD 705.010



LEGEND:
S = rate of superelevation in percent

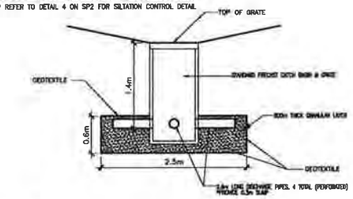
NOTES:
1 Fill and cut slopes shall be 3H:1V
2 Where steel beam guide rail is specified, the minimum rounding shall be 1.0m, with 0.5m specified from edge of shoulder to rounding breakpoint.
A All dimensions are in metres unless otherwise shown.

TABLE FOR SUPERELEVATED SECTION

CROSS FALL %												
Paved driving lane	4	3.5	3	2.5	2	1.5	1	0	-1	-2	-3	-4	-5
Paved shoulder	-2	-2	-2	-3	-3	-3	-4	-5	-5	-5	-6	-6	-6

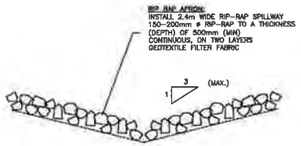
ONTARIO PROVINCIAL STANDARD DRAWING	Nov. 2007	Rev 1
TWO LANE RAMP GRADING FOR ASPHALT PAVEMENT WITH GRANULAR BASE AND ASPHALT SHOULDER		OPSD 215.010

1 / C7 TYPICAL ROAD CROSS–SECTION
SCALE= N.T.S.



PROPOSED CATCH BASIN AND DRYWELL:
–TOP OF GRATE AT ELEVATION AS PER DRAWING
–EXCAVATE AREA, REMOVE EXISTING SOIL AND REPLACE WITH GRAVEL LAYER AS INDICATED.
–INSTALL 2.5m x 2.5m x 0.6m GRAVEL LAYER (USE GRAN 'B', C/W FILTER CLOTH
–TOTAL THICKNESS OF BURIED GRAVEL TO BE 0.6m
–BOTTOM OF GRANULAR LAYER, 2m BELOW TOP OF GRATE. (TOTAL THICKNESS is 0.6m)
–INSTALL (4) – 0.6m LONG 150mm DIA. PERFORATED HDPE DISCHARGE PIPES. INVERT ELEVATION FOR ALL 4 DISCHARGE PIPES TO BE 1.4m BELOW GRATE
–FILTER CLOTH REQUIRED AROUND ENTIRE AREA OF GRANULAR
* REFER TO DETAIL 4 ON SP2 FOR SEDIATION CONTROL DETAIL

2 / C7 TYPICAL DRYWELL DETAIL
SCALE= N.T.S.



3 / C7 TYPICAL RIP–RAP DETAIL
SCALE= N.T.S.

LICENSED PROFESSIONAL ENGINEER
23/02/23
R. W. PHILLIPS
PROVINCE OF ONTARIO

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

CONTRACTOR WUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.

- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION 8,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 08 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD. ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 248.21
TOP OF SOUTH–WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

REVISION	DESCRIPTION	DATE	BY
4	ISSUED FOR SUBMISSION	NOV. 3rd 2022	K.P.B.
3	ISSUED FOR CLIENT REVIEW	APR. 28th 2019	R.M.
2	ISSUED FOR DRAFT PLAN SUBMISSION	OCT. 20th 2018	R.M.
1	ISSUED FOR CLIENT PRE–CONSULT	AUG. 9th 2018	A.D.

DO NOT SCALE DRAWINGS; THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

A.D. PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519–428–6700 Fax: 519–426–8960
E–mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

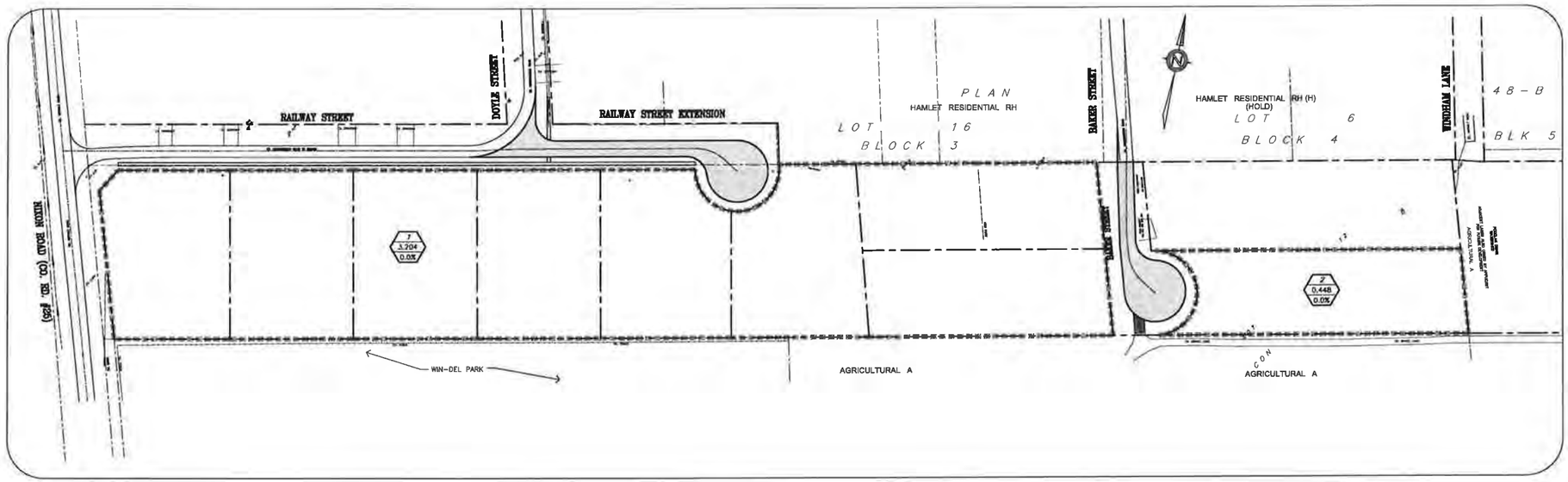
J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
DETAIL PAGE

SCALE:	AS SHOWN
DRAWN BY:	K.P.B./R.M.
CHECKED BY:	R.W.P./Z.L.
DATE:	MAY 2017
FILE NAME:	7251.dwg

PROJECT NO.: 15640/7251
DWG NO.: C7
REV. NO.: 4



1 / C5 PRE-DEVELOPMENT STORM DRAINAGE AREAS

SCALE= 1:1000 (METRIC)

DISCLAIMER:
This is not a legal plan of survey and shall not be used for any purpose except for the purpose indicated in the title block. The employees of M. C. Engineering are not licensed Ontario Land Surveyors, therefore in accordance with the Surveyors Act R.S.O. 1990, c.S9, (as amended 2006) please refer to stamped O.L.S. drawing(s) for all survey data, including but not limited to, bearings and distances, property bars and monuments and any other real property boundary information, pertaining to the subject lands and or other lands adjoining the same. M.C. Engineering assumes no responsibility for the use of, or reliance on, all real property information shown (or not shown) on this plan.

THE FOLLOWING DRAWINGS AND NOTES TO BE CONSIDERED AS PART OF THE CONSTRUCTION DRAWINGS:

- CONTRACTOR MUST VERIFY ALL JOB DIMENSIONS, ALL DRAWINGS, DETAILS AND SPECIFICATIONS, AND REPORT ANY DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ANY DISCREPANCY BETWEEN THIS DRAWING AND ACTUAL FIELD CONDITIONS WHICH MAY IMPACT WORK IS TO BE REPORTED TO P.ENGINEER.
- ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF M C ENGINEERING OR CONSULTANTS WHICH MUST BE RETURNED AT THE COMPLETION OF THE WORK.
- THE DRAWINGS AND SPECIFICATIONS ARE TO BE USED ONLY FOR THE PROJECT SO NOTED. REPRODUCTION OF THE DOCUMENTS IN PART OR IN WHOLE FOR ANY OTHER PURPOSE, OTHER THAN THIS PROJECT, WITHOUT THE WRITTEN CONSENT OF M C ENGINEERING IS PROHIBITED. DRAWINGS ISSUED FOR GENERAL PURPOSE, NEGOTIATION, LEASE ETC. CARRY ALL THE ABOVE COPYRIGHT PROTECTION.
- PRIMARY DIMENSIONS ARE METRIC.

KEY PLAN: N.T.S.

PROPERTY DESCRIPTION:
PART OF LOT 12
CONCESSION B,
GEO. WINDHAM TOWNSHIP
NORFOLK COUNTY

LEGAL PROPERTY BOUNDARY INFORMATION:
THE LEGAL PROPERTY BOUNDARY INFORMATION FOR THIS DRAWING WAS BASED ON A SURVEY SKETCH P17 08 A9921 PREPARED AND PROVIDED BY JEWITT AND DIXON LTD., ONTARIO LAND SURVEYORS.

SITE BENCHMARK: ELEV. 249.21
TOP OF SOUTH-WEST CORNER OF EXISTING CONCRETE SIDEWALK EAST SIDE OF DOYLE STREET.

NO.	REVISION	DATE	BY

DO NOT SCALE DRAWINGS; THESE DRAWINGS SHOW INTENT OF THE DESIGN ONLY OR EXISTING CONDITIONS AND MAY NOT REFLECT EXACT LOCATIONS.

PROJECT NORTH

M C ENGINEERING P.O. Box 1002, Simcoe, Ont. N3Y 5B3
Tel: 519-426-5790 Fax: 519-426-8960
E-mail: mail@mcengineering.net
A DIVISION OF 392583 ALBERTA LTD.

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

PROJECT NAME:
PROPOSED SUBDIVISION
FOR
LLOYD WOOD
#32 NIXON ROAD (NORFOLK COUNTY ROAD 25)
WINDHAM CENTRE

SHEET TITLE:
PRE-DEVELOPMENT STORM DRAINAGE AREAS

SCALE:	AS SHOWN
DRAWN BY:	K.P.B.
CHECKED BY:	R.W.P.
DATE:	FEB 2023
FILE NAME:	7251.dwg

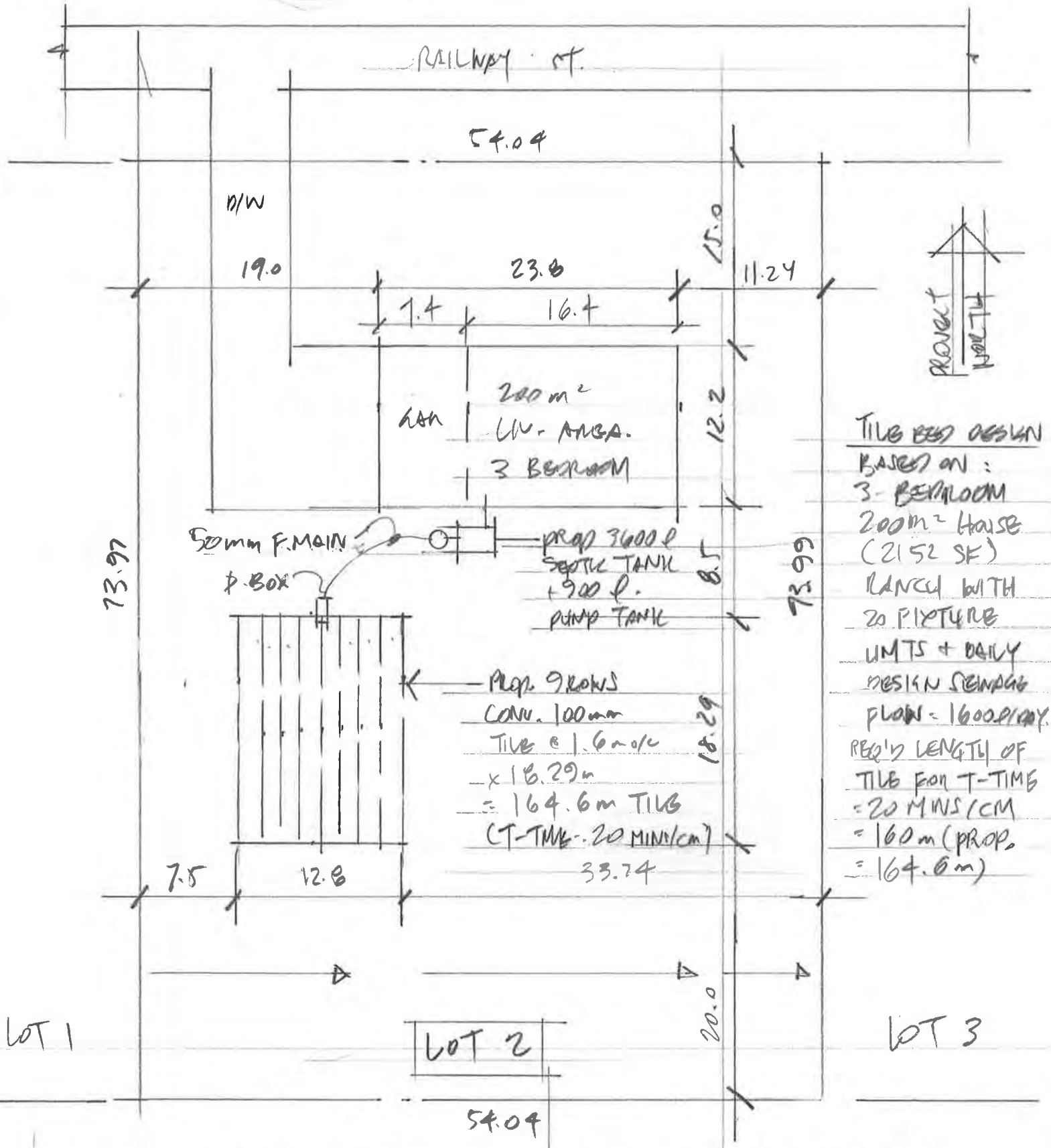
PROJECT NO.: 15640/7251
DWG NO.: C8
REV. NO.: 0

LEGEND

PROPERTY LINE SUBJECT LANDS
OTHER PROPERTY LINES
EXISTING FEATURE TO BE REMOVED
APPROX. LOCATION OF SURVEYOR'S "IRON BAR" AS INDICATED ON DRAWINGS BY OTHERS. REFER TO ACTUAL DRAWING BY O.L.S. FOR EXACT SURVEY REFERENCE AND TYPE. (I/B)
EXISTING CONTOURS AT 1m VERTICAL INTERVALS
PROPOSED TREE PLANTING REFER TO PLANTING SCHEDULE ON C6 AND PLANTING DETAIL AND NOTES ALSO ON C5.
PRE STORM DRAINAGE AREA — A, 0.071, 45.0% — DRAINAGE AREA NUMBER; DRAINAGE AREA IN HECTARES; COEFFICIENT OF RUNOFF (% IMPERVIOUS)

LICENSED PROFESSIONAL ENGINEER — 23/02/23 — R. W. PEWTRESS — PROVINCE OF ONTARIO

Appendix 'C'
Typical Lot and Septic Designs for Lot 2 and Lot 5
As prepared by J H Cohoon Engineering Limited



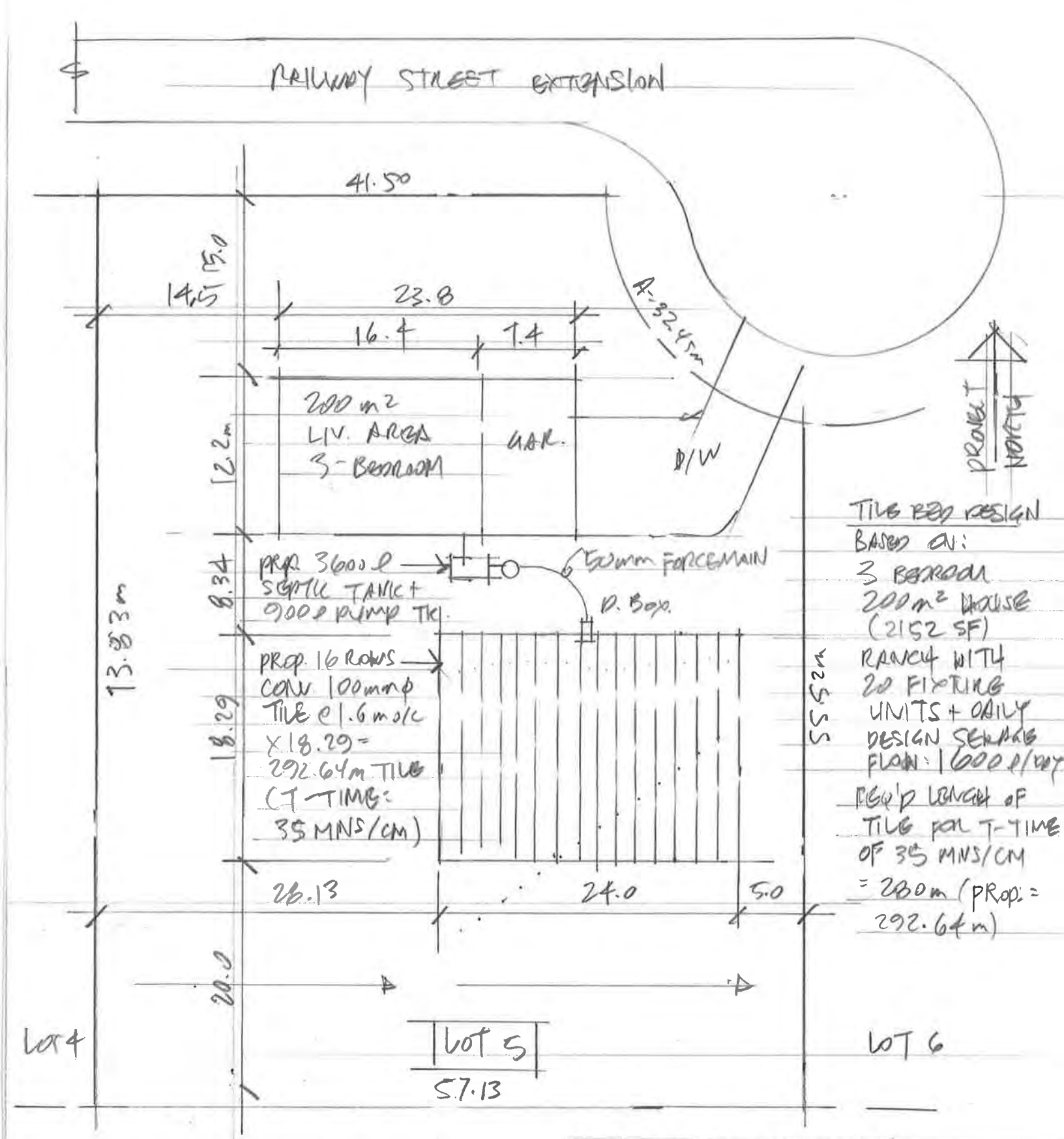
TILE BED DESIGN
BASED ON:
3-BEDROOM
200m² HOUSE
(2152 SF)
RANCH WITH
20 FIXTURE
UNITS + DAILY
DESIGN SEWAGE
FLOW = 1600 ℓ/DAY.
REQ'D LENGTH OF
TILE FOR T-TIME
= 20 MINS/CM
= 160m (PROP.
= 164.6m)

SEPTIC SYSTEM PLAN
LOT 2 RATIO 1:400M

LLOYD WOOD SUBDIVISION
NIXON ROAD - WINDHAM CENTRE

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

OCT 26/22 - DWG. NO. 15640-L2



TILE BED DESIGN

BASED ON:

3 BEDROOM 200 m² HOUSE (2152 SF)

RANCH WITH 20 FIXTURE UNITS + DAILY DESIGN SEWAGE FLOW: 1600 ℓ/DAY

REQ'D LENGTH OF TILE FOR T-TIME OF 35 MNS/CM = 280m (PROP.: = 292.64m)

SEPTIC SYSTEM PLAN

LOT 5 - RATIO: 1:400m

LLOYD WOOD SUBDIVISION

NIXON ROAD - WINDHAM CENTRE

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

OCT. 26/22

DWG. NO. 15640-LS

Appendix 'D'
Proposed Geotechnical Investigation
T-Time and Infiltration Analysis
as prepared by Englobe Inc. dated August 17, 2022

eNGLOBe

August 17, 2022

Lloyd Wood
C/O Landpro Planning Solutions
707 E Main Street
Welland, Ontario, N3T 5L8

Subject: **Lot Severance - T-Time and Infiltration Assessment**
25 Bakers Street, Windham Centre, ON
Englobe reference: OC.04-02205818-GE-L-0001-01

Dear Sir:

Englobe Corp. (Englobe) is pleased to provide this letter with the results of percolation time and infiltration assessment for the proposed lot severance at 25 Bakers Street in Windham Centre, ON. The project involves the severance of a property and creating ten new residential lots. Each new lot will be serviced with a private onsite sewage system and lots 1 to 3 will have infiltration galleries.

The purpose of the geotechnical investigation is to determine the subsurface soil and groundwater conditions at the proposed septic bed and infiltration gallery locations and provide recommended T times for use in designing the on site sewage system at each new lot and estimated infiltration rates for use in designing the infiltration galleries.

The fieldwork for the assignment was carried out on June 27, 2022 and involved the excavation of twelve test pits (Test Pit TP-01-22 and TP-12-22) to depths of 1.8 to 3.0 m at the locations shown on Drawing 1, appended.

1. Fieldwork

The test pits were advanced with a tracked hydraulic excavator supplied by Mr. Lloyd Wood. Soil samples were recovered from the test pit at select intervals. Groundwater observations were carried out in the open test pits during and upon completion of excavating. The observations are provided on the test pit logs, appended. Upon completion of excavating, the test pits were backfilled with on-site soil.

The fieldwork was monitored by an experienced Engineering Technician who was also responsible for sampling.

The test pits locations and ground surface elevations were surveyed by Englobe. The test pit locations were provided in the field by Mr. Lloyd Wood and it is understood that the locations represent the location of the proposed septic beds and infiltration galleries. The ground surface elevations are referred to the following temporary benchmark (TBM):

TBM: Nail set in the asphalt at the intersection of Nixon Road and Railway Street.

Elevation 100.00 m (local datum).

2. Summarized Conditions

The soil conditions, at the proposed septic beds and infiltration galleries (Test Pit TP-01-22 to TP-12-22) typically comprise a surficial layer of fill overlying native sand and silt deposits that range in composition from sand with trace to some silt and gravel to silt and sand with trace to some gravel and clay. The fill extended to the termination depth of test pits TP-11-22 and TP-12-22.

Groundwater was encountered in test pits TP-02-22, TP-05-22 and TP-10-22 at depths of 1.2 to 1.4 m. It is noteworthy that the soils were observed to be wet in most test pits at depths of 1.5 to 2.5 m. The groundwater conditions at the site may vary locally due to seasonal fluctuations, groundwater regimes at the site or as a consequence of construction activities at the site or adjacent sites.

Twelve soil samples from the test pits excavated were submitted to Englobe's laboratory for particle size analyses and the results are provided on Figures 1 to 12, appended and summarized in Table 1:

Table 1: Summary of Granular Particle Size Analyses

Test Pit Number	Depth (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
TP-01-22 (Sa1)	1.6	0.8	83.2	8.2	7.8
TP-02-22 (Sa1)	0.2	1.0	44.8	39.9	14.3
TP-03-22 (Sa3)	1.5	17.9	38.5	33.1	10.5
TP-04-22 (Sa1)	0.8	0	56.5	35.5	8.0
TP-05-22 (Sa1)	0.7	14	64.1	18.1	3.8
TP-06-22 (Sa2)	1.6	17.9	45.3	33.2	3.6
TP-07-22 (Sa3)	1.5	0	50.9	36.1	13.0
TP-08-22 (Sa2)	0.9	2.0	36.1	53.9	8.0
TP-09-22 (Sa2)	1.3	7.8	44.1	42.2	5.9
TP10-22 (Sa3)	1.6	2.7	53.3	40.4	3.6
TP-11-22 (Sa2)	1.0	14.3	44.8	34.1	6.8
TP-12-22 (Sa2)	1.0	19.2	61.8	14.4	4.6

3. Recommendations

The house lots at this site will be serviced by individual on-site sewage systems. The subgrade soil within the proposed septic beds as shown on Drawing 1, will comprise native sand and silt. The results of nine particle size analyses carried out on samples of the native sand and silt are plotted on Figures 4 to 12, Appended and summarized in Table 1.

The percolation rate of the soil deposits at the tile bed locations were assessed based on the physical characteristics encountered during the subsurface investigation (i.e. structure, density, organics, etc.); and the soil type as described by the Unified Soil Classification System in Supplementary Standard SB-6 of the OBC. Soil classifications and recommended 'T'-times for leaching bed design based on the subsurface conditions encountered are provided in the following table:

Table 2: Soil Classifications and 'T'-Times

Test Pit Number	Location	Sample Depth (m)	Soil Classification	Percolation Time Range (min/cm)	Recommended 'T'-Time (min/cm)
TP-04-22	Lot 1	0.8	SM-SC	8-50	25
TP-05-22	Lot 2	0.7	SM	8-20	20
TP-06-22	Lot 3	1.6	SM-SC	8-50	25
TP-07-22	Lot 4	1.5	SM-SC	8-50	30
TP-08-22	Lot 5	0.9	ML	20-50	35
TP-09-22	Lot 6	1.3	SM-SC	8-50	35
TP-10-22	Lot 7	1.6	SM-SC	8-50	35
TP-11-22	Lot 8	1.0	SM-SC	8-50	30
TP-12-22	Lot 10	1.0	SM	8-20	20

Infiltration galleries are proposed for the front of lots 1 to 3 (TP-01-22 to TP-03-22). The hydraulic conductivities of the grain size distribution sample was assessed using those of the 15 available methods implemented in the spreadsheet "HydrogeoSieveXL ver. 2.2", J.F. Devlin, University of Kansas, 2015, for which the samples in question met acceptance criteria. The calculated hydraulic conductivity of samples 1 to 3 is 10^{-3} to 10^{-4} cm/sec, corresponding to a factored infiltration rate of 20 to 30 mm/hr. It is noteworthy that groundwater seepage was encountered at a depth of 1.2 m in test pit TP-02-22 and this will impact the ability of the soil to infiltrate.

The estimated design infiltration rates are based on recommendations found in "Low Impact Development Stormwater Management Planning and Design Guide, Appendix C" published by the Toronto and Region Conservation Authority (TRCA) and the Credit Valley Conservation Authority (CVC), and the approximate relationship between hydraulic conductivity and infiltration rate. It should be noted that hydraulic conductivity and infiltration rate are distinct concepts and such, unit conversion does not apply.

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

It is the responsibility of the designer to and to carry out field inspections at the time of sewage system and infiltration gallery installation to confirm that the soil and groundwater conditions are consistent with the design assumptions.

We trust that this information is suitable for your immediate requirements. If you have any questions regarding the information presented, please do not hesitate to contact our office.

Yours very truly,

Yours very truly,

Englobe Corp.

Thom Staples, C.E.T.

Senior Project Manager

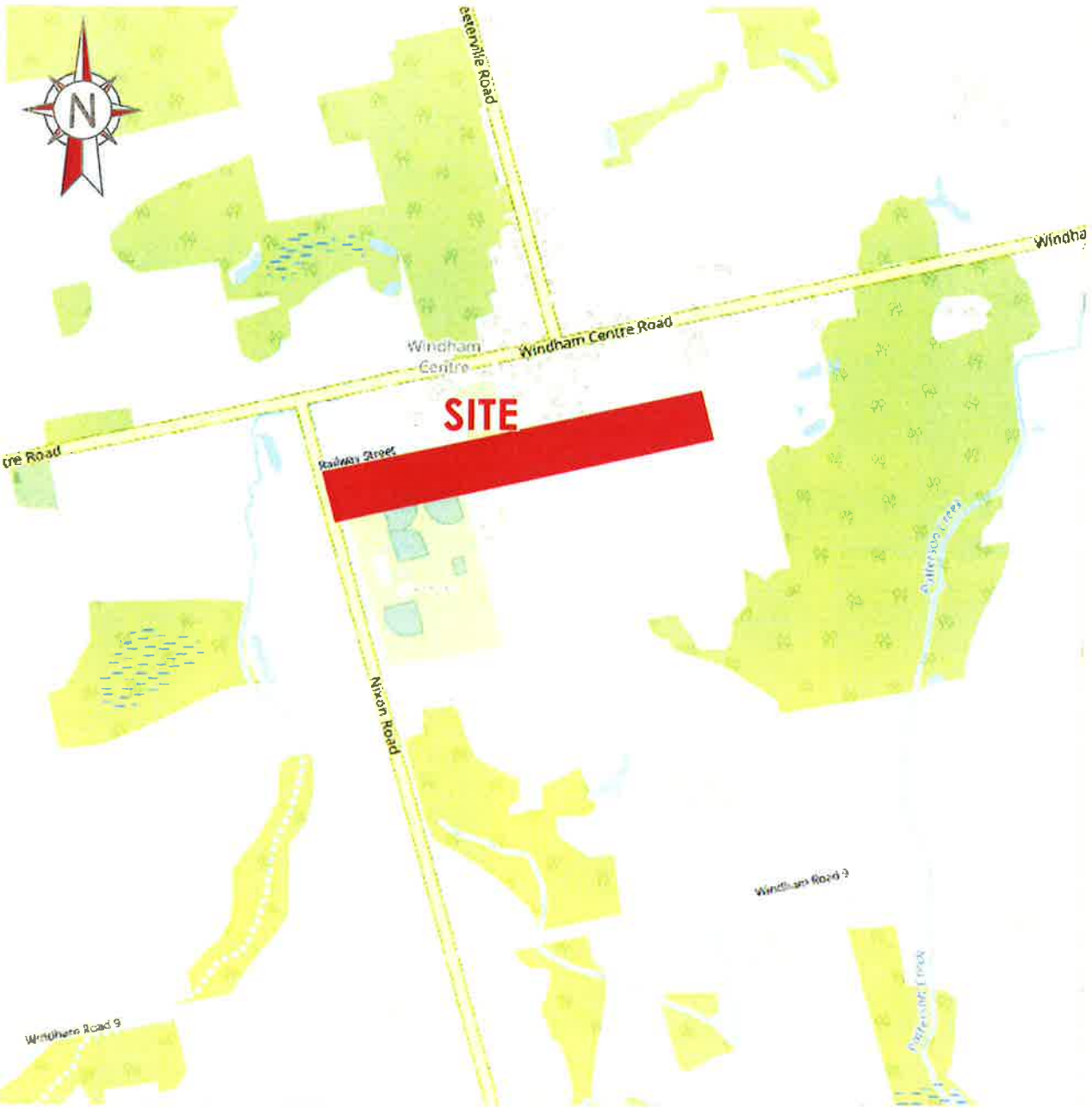
Brantford Area Manager

Rob Helwig, P.Geo., QP.

Senior Geoscientist

London Operations

Encl. Test Pit Plan
Encl. Drawing 1 - Test Pit Location Plan
Encl. Test Pit Log - TP-01-22 to TP-12-22
Encl. Figures 1 to 12 - Particle Size Analyses



NOTES:

1-REFERENCE: © OpenStreetMap contributors (2022).

2-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

0 100 200 300 400 500 m

SCALE 1:15000

P:\160\2022 (BRANTFORD-KITCHENER-LONDON)\02205818.000 - NINE LOT DEVELOPMENT, 25 BAKERS STREET, WINDHAM CENTRE\ZA_CAD\DWG\001.DWG

Project

Nine Lot Development

25 Bakers St, Windham Centre

Title

LOCATION PLAN

ENGLOBE

440, Hardy Road, Unit 3
Brantford (Ontario) N3T 5L8
Telephone : 519.720.0078
Fax : 519.720.0976

Prepared	E.Nimer	Discipline	GEOTECHNICAL
Drawn	E.Nimer	Scale	1 : 15000
Checked	T.Staples	Date	2022-08-03

Project manager: T.Staples

Sequence no.: 01 of 02

M. dept.	Project	Disc.	Dwg no.	Rev.
04	02205818.000	GE	001	00

LOG OF BOREHOLE No. TP-01-22

Englobe

Project No. 02205818.000 DRAWING No. 01

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH
		FILL Sand, trace silt and clay, with rootlets Brown, moist	99.06	0
		SAND Sand, some silt and gravel Moist	97.46	1
		Silty seams Mottled brown to grey, wet	97.26	2
		Terminated at 3.0 m	96.06	3

Standard Penetration Test N Value (20 40 60 80)
Shear Strength (50 100 150 200 kPa)
Natural Moisture Content % Atterberg Limits (% Dry Weight) (20 40 60)

SAMPLES: SS-01, SS-02, SS-03

Sample No.

Natural Unit Weight kN/m³

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

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-02-22

Englobe

Project No. 02205818.000

DRAWING No. 02

Project: Nine Lot Development

Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	ELEV m	DEPTH
		TOPSOIL	98.52	0
		SAND Sand and silt, some clay trace of gravel Rusty brown	98.32	
		SAND AND GRAVEL Trace of silt Brown, saturated	97.42	1
		Terminated at 1.8 m	96.72	

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES: Sample No. — SS-01, SS-02

Natural Unit Weight kN/m³

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	1.1	1.2

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-03-22

Englobe

Project No. 02205818.000 DRAWING No. 03

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some silt, trace gravel Brown, moist	98.91	0	20 40 60 80 50 100 150 200	20 40 60		SS-01	
		SAND Sand, some silt, trace of gravel Rusty brown, moist	98.01	1				SS-02	
		Silty sand, some gravel, some clay with silt seams Moist	97.41	2				SS-03	
		Wet	96.61					SS-04	
		Terminated at 3.8 m	96.11	3					

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

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-04-22

Englobe

Project No. 02205818.000 DRAWING No. 04

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample ⊠
Auger Sample □
SPT (N) Value ●
Dynamic Cone Test —
Shelby Tube ■
Shear Strength by Vane Test S

Natural Moisture Content ×
Atterberg Limits ⊢—○
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH
		FILL Sand, some silt, trace gravel Brown	99.10	0
		SAND Silty sand, trace gravel Rusty brown, very moist	98.30	1
		Some gravel Mottled brown to grey, very moist	97.40	2
		Silty sand, some gravel Wet	96.60	
		Terminated at 3.0 m	96.40	3

Standard Penetration Test N Value: 20 40 60 80
Shear Strength kPa: 50 100 150 200
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES: SS-01, SS-02, SS-03

Sample No.

Natural Unit Weight kN/m³

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

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-05-22

Englobe

Project No. 02205818.000 DRAWING No. 05

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample ⊠
Auger Sample □
SPT (N) Value ●
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test S

Natural Moisture Content ×
Atterberg Limits ⊢—○
Undrained Triaxial at % Strain at Failure 0 5 10 15
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH
		FILL Sand, some silt, trace to some gravel Brown	98.70	0
		SAND Some silt and organics, some gravel, trace of clay brown to grey, wet	97.80	1
		Brown to grey, saturated	97.10	
		Terminated at 2.0 m	96.70	2

Standard Penetration Test N Value: 20 40 60 80
Shear Strength kPa: 50 100 150 200
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES: SS-01, SS-02

Sample No.

Natural Unit Weight kN/m³

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	1.6	1.6

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-06-22

Englobe

Project No. 02205818.000 DRAWING No. 06

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample	⊠	Natural Moisture Content	×
Auger Sample	□	Atterberg Limits	⊢○
SPT (N) Value	●	Undrained Triaxial at % Strain at Failure	9 / 15 ⊕ 5 / 10
Dynamic Cone Test	——	Shear Strength by Penetrometer Test	▲
Shelby Tube	■		
Shear Strength by Vane Test	✤S		

GWL	SYMBOL	SOIL DESCRIPTION	ELEV, m	DEPTH
		FILL Sand, some silt, some gravel Dark brown	98.72	0
		SAND Sand, some silt, trace gravel Brown, moist	98.17	
		Silty sand, some gravel, trace of clay Mottled Brown to grey	97.12	1
		Sand, some silt Brown, moist	96.82	
		Dilatant, wet	96.42	2
		Terminated at 2.8 m	95.92	

Standard Penetration Test N Value: 20 40 60 80

Shear Strength kPa: 50 100 150 200

Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES	Sample No	Natural Unit Weight kN/m³
✋	SS-01	
✋	SS-02	
✋	SS-03	
✋	SS-04	

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

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-07-22

Englobe

Project No. 02205818.000 DRAWING No. 07

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand Dark Brown, moist	98.93	0				SS-01	
		SAND Sand, some silt to silty sand Rusty brown to grey, very moist	98.43	1				SS-02	
		Some gravel and clay	97.43	2				SS-03	
		SAND AND GRAVEL Some silt Brown, moist	96.83					SS-04	
		Terminated at 2.8 m	96.13						

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

CLASSIFICATION LOG 02205818 GPJ LOG A GWGL02 GDT 8/3/22

LOG OF BOREHOLE No. TP-08-22

Englobe

Project No. 02205818.000 DRAWING No. 08

Project: Nine Lot Development Sheet No 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

SOIL DESCRIPTION	ELEV. m	DEPTH
FILL Sand, some gravel, some silt Brown, moist	99.41	0
SILT Sand, trace of gravel and clay Grey, Very moist	98.71	1
SAND AND SILT Some gravel Wet	97.21	2
Terminated at 3.0 m	96.41	3

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES: SS-01, SS-02, SS-03

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

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

LOG OF BOREHOLE No. TP-09-22

Englobe

Project No 02205818.000 DRAWING No. 09

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Sample No.	Natural Unit Weight kN/m³
FILL Sand , some silt	99.62	0				SS-01	
TOPSOIL Grey and black, moist	98.62	1					
SAND Sand, silt, trace of gravel and clay Brown	98.32					SS-02	
Wet	97.32	2				SS-03	
Terminated at 3.0 m	96.62	3					

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

CLASSIFICATION LOG 02205818 GPJ LOG A GWGL02 GDT 8/3/22

LOG OF BOREHOLE No. TP-10-22

Englobe

Project No 02205818.000

DRAWING No. 10

Project: Nine Lot Development

Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample ☒
Auger Sample □
SPT (N) Value ●
Dynamic Cone Test —
Shelby Tube ■
Shear Strength by Vane Test S

Natural Moisture Content ×
Atterberg Limits ⊢○
Undrained Triaxial at % Strain at Failure 0 / 15 ⊕ 5 / 10
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value (20 40 60 80) / Shear Strength kPa (50 100 150 200)	Natural Moisture Content % / Atterberg Limits (% Dry Weight) (20 40 60)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some gravel, some silt Moist	99.25	0				SS-01	
		Grey to black, some organics Moist	98.25	1				SS-02	
		SAND Silty sand, trace of gravel and clay Brown, very moist	97.65					SS-03	
		Sand, some gravel, some silt Brown	97.05	2				SS-04	
		Terminated at 3.0 m	96.25	3					

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	2.4	none

LOG OF BOREHOLE No. TP-11-22

Englobe

Project No. 02205818.000 DRAWING No. 11

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

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

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH
		FILL Sand, some silt, trace of gravel Brown, moist	99.45	0
		Sand, some gravel, trace of clay Dark brown, moist	98.75	1
		Gravel and cobbles, with rootlets Greyish, very moist	97.15	2
		Terminated at 3.0 m	96.45	3

Standard Penetration Test N Value: 20 40 60 80
Shear Strength kPa: 50 100 150 200
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES: SS-01, SS-02, SS-03

Sample No.

Natural Unit Weight kN/m³

CLASSIFICATION LOG 02205818.GPJ LOG A GWGL02.GDT 8/3/22

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

LOG OF BOREHOLE No. TP-12-22

Englobe

Project No. 02205818.000 DRAWING No. 12

Project: Nine Lot Development Sheet No. 1 of 1

Location: 25 Bakers Street, Windham Centre

Date Drilled: 6/27/2022

Drill Type:

Datum: CL Intersection of Nixon Rd and Railway St

Split Spoon Sample ☒
Auger Sample □
SPT (N) Value ●
Dynamic Cone Test —
Shelby Tube ■
Shear Strength by Vane Test S

Natural Moisture Content ×
Atterberg Limits ⊢—○
Undrained Triaxial at % Strain at Failure 0 / 5 / 10 / 15
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	ELEV. m	DEPTH	Standard Penetration Test N Value (20 40 60 80) / Shear Strength kPa (50 100 150 200)	Natural Moisture Content % / Atterberg Limits (% Dry Weight) (20 40 60)	SAMPLES	Sample No	Natural Unit Weight kN/m³
		FILL Sand, some silt, trace to some gravel Moist	99.59	0				SS-01	
		Sand, some gravel, some silt, trace of clay Brown	98.49	1				SS-02	
		Greyish, very moist	97.89	2					
		With organics Grey	96.79					SS-03	
		Terminated at 3.0 m	96.59	3					

CLASSIFICATION LOG 02205818.GPJ LOG A.GWGL02.GDT 8/3/22

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

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-504	**SAMPLE ID:**	Test Pit 01-22, Sample#1	**SAMPLE DEPTH:**	1.6m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

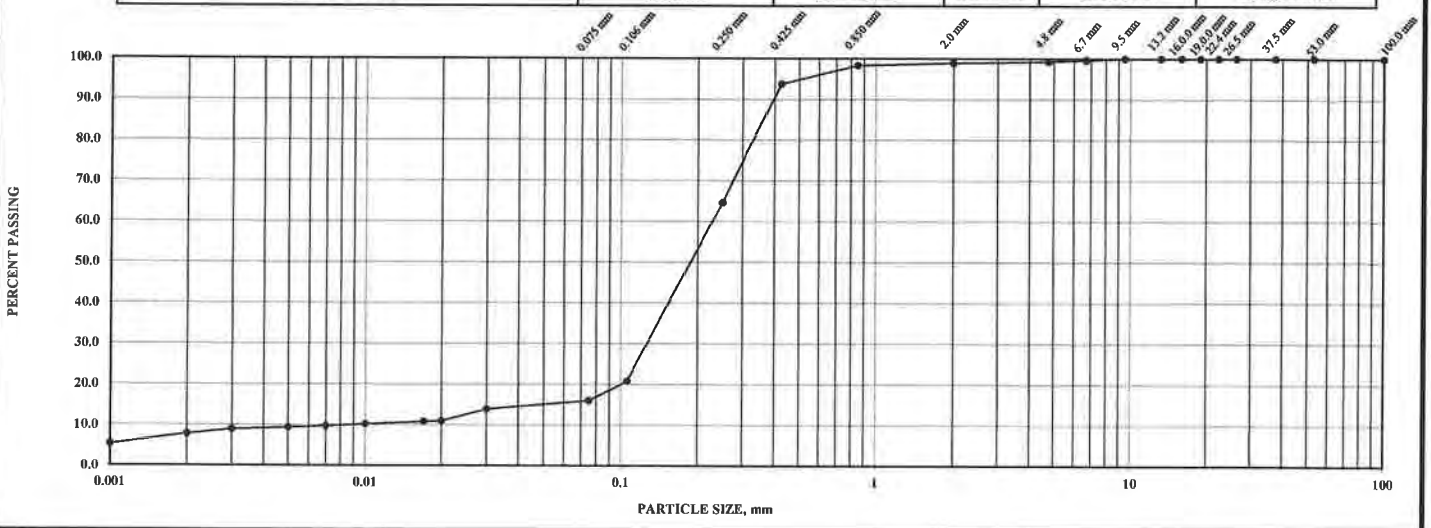
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.235	**D30**	0.136	**D10**	0.009	**Cc**	8.900	**Cu**	26.35

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	13.9
37.5	100.0	0.020	11.0
26.5	100.0	0.017	10.8
22.4	100.0	0.010	10.2
19	100.0	0.007	9.7
16	100.0	0.005	9.3
13.2	100.0	0.002	7.8
9.5	100.0	0.001	5.4
6.7	99.6	**ATTERBERG LIMITS**	
4.75	99.2		
2.00	98.9	Liquid Limit	
0.850	98.3		
0.425	93.8	Plastic Limit	
0.250	64.7		
0.106	20.7	Plastic Index	
0.075	16.0		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	0.8
% SAND (75 µm to 4.75 mm):	83.2
% SILT (2 µm to 75 µm):	8.2
% CLAY (<2 µm):	7.8
SOIL DESCRIPTION:	SAND, trace Silt, trace Clay

REMARKS

Figure: 1

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818 000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-505	**SAMPLE ID:**	Test Pit 02-22, Sample #1	**SAMPLE DEPTH:**	0.2m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

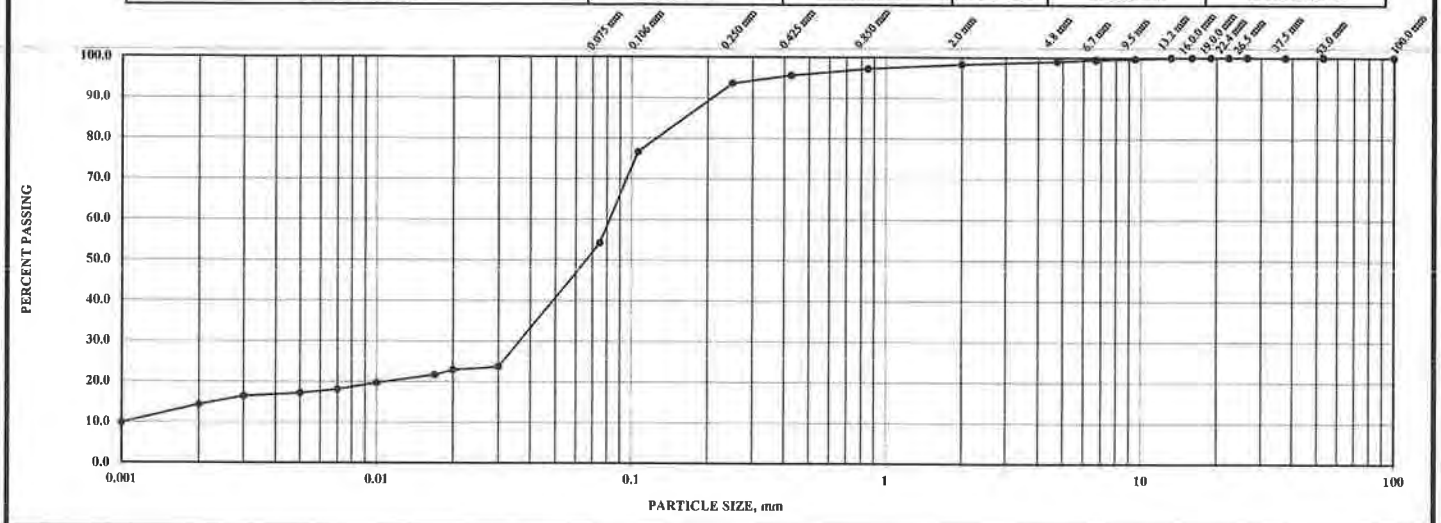
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.083	D30	0.039	D10	0.001	Cc	18.062	Cu	80.46

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	23.7
37.5	100.0	0.020	22.9
26.5	100.0	0.017	21.7
22.4	100.0	0.010	19.7
19	100.0	0.007	18.1
16	100.0	0.005	17.2
13.2	100.0	0.002	14.3
9.5	99.7	0.001	9.9
6.7	99.5	**ATTERBERG LIMITS**	
4.75	99.0		
2.00	98.3	Liquid Limit	
0.850	97.2		
0.425	95.5	Plastic Limit	
0.250	93.5		
0.106	76.6	Plastic Index	
0.075	54.2		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	1.0
% SAND (75 µm to 4.75 mm):	44.8
% SILT (2 µm to 75 µm):	39.9
% CLAY (<2 µm):	14.3
SOIL DESCRIPTION:	SAND and SILT, some Clay, trace Gravel

REMARKS

Figure: 2

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

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

PROJECT NUMBER:	04-02205818 000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc
LAB NUMBER:	S-506	**SAMPLE ID:**	Test Pit 03-22, Sample #3	**SAMPLE DEPTH:**	1.5m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

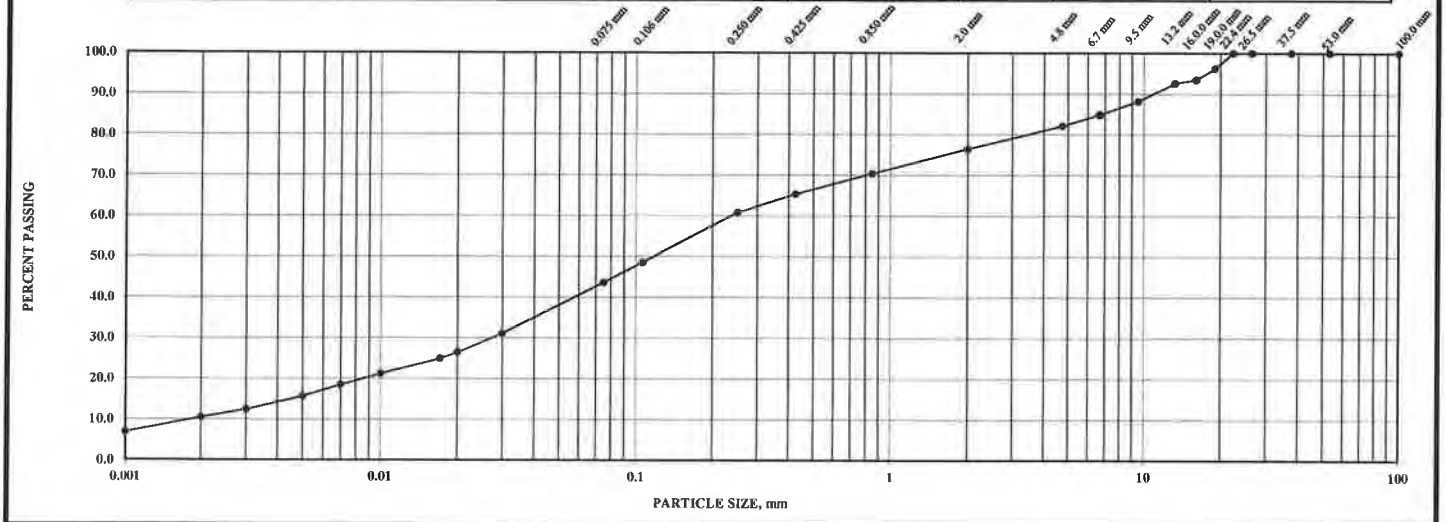
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.240	**D30**	0.028	**D10**	0.002	**Cc**	1.708	**Cu**	128.50

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	31.1
37.5	100.0	0.020	26.4
26.5	100.0	0.017	24.9
22.4	100.0	0.010	21.2
19	96.3	0.007	18.5
16	93.5	0.005	15.6
13.2	92.6	0.002	10.5
9.5	88.2	0.001	6.9
6.7	84.9	**ATTERBERG LIMITS**	
4.75	82.1		
2.00	76.5	Liquid Limit	
0.850	70.4		
0.425	65.3	Plastic Limit	
0.250	60.8		
0.106	48.6	Plastic Index	
0.075	43.6		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	17.9
% SAND (75 µm to 4.75 mm):	38.5
% SILT (2 µm to 75 µm):	33.1
% CLAY (<2 µm):	10.5
SOIL DESCRIPTION:	Silty SAND, some Gravel, some Clay

REMARKS

Figure: 3

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request

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

PROJECT NUMBER:	04-02205818 000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-507	**SAMPLE ID:**	Test Pit 04-22, Sample #1	**SAMPLE DEPTH:**	0.8m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

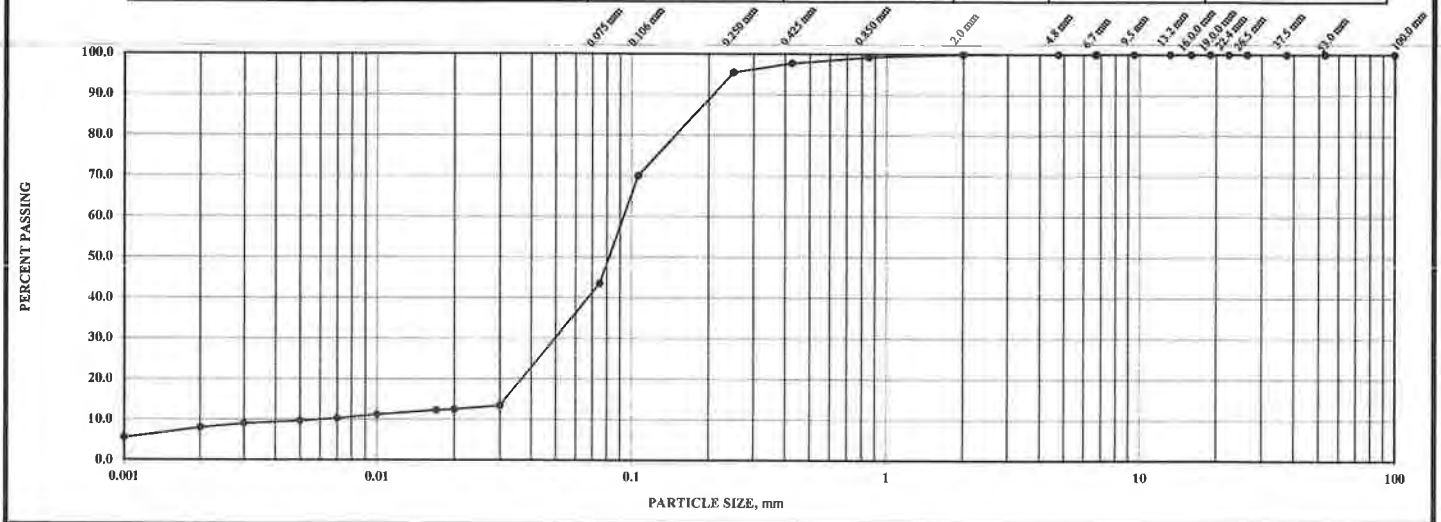
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.094	D30	0.055	D10	0.006	Cc	5.172	Cu	15.31

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	13.4
37.5	100.0	0.020	12.5
26.5	100.0	0.017	12.3
22.4	100.0	0.010	11.2
19	100.0	0.007	10.3
16	100.0	0.005	9.7
13.2	100.0	0.002	8.0
9.5	100.0	0.001	5.5
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	99.9	Liquid Limit	
0.850	99.2		
0.425	97.7	Plastic Limit	
0.250	95.3		
0.106	70.0	Plastic Index	
0.075	43.5		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	
% SAND (75 µm to 4.75 mm):	56.5
% SILT (2 µm to 75 µm):	35.5
% CLAY (<2 µm):	8.0
SOIL DESCRIPTION:	Silty SAND, trace Clay

REMARKS

Figure: 4

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

eNGLOBe

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-508	**SAMPLE ID:**	Test Pit 05-22, Sample #1	**SAMPLE DEPTH:**	0.7m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

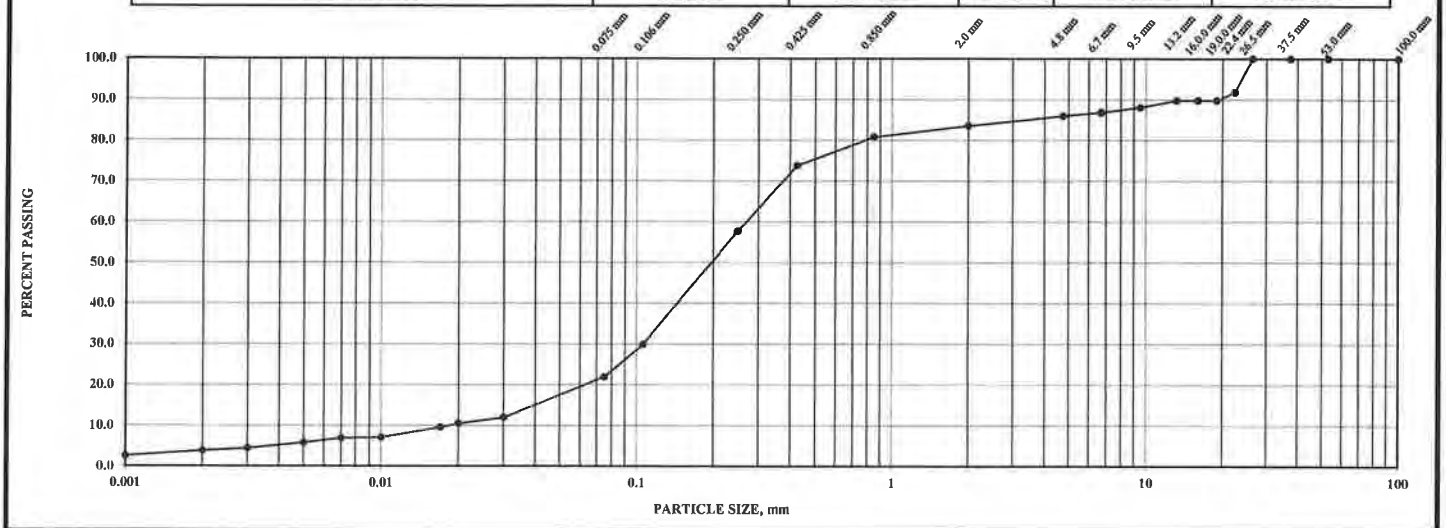
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.275	**D30**	0.107	**D10**	0.018	**Cc**	2.235	**Cu**	14.94

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	11.9
37.5	100.0	0.020	10.5
26.5	100.0	0.017	9.5
22.4	91.7	0.010	7.0
19	89.8	0.007	6.9
16	89.8	0.005	5.8
13.2	89.8	0.002	3.8
9.5	88.1	0.001	2.5
6.7	86.8	**ATTERBERG LIMITS**	
4.75	86.0		
2.00	83.5	Liquid Limit	
0.850	80.8		
0.425	73.8	Plastic Limit	
0.250	57.7		
0.106	29.9	Plastic Index	
0.075	21.9		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	14.0
% SAND (75 µm to 4.75 mm):	64.1
% SILT (2 µm to 75 µm):	18.1
% CLAY (<2 µm):	3.8
SOIL DESCRIPTION:	SAND, some Silt, some Gravel, trace Clay

REMARKS

Figure: 5

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-509	**SAMPLE ID:**	Test Pit 06-22, Sample #3	**SAMPLE DEPTH:**	1.6m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

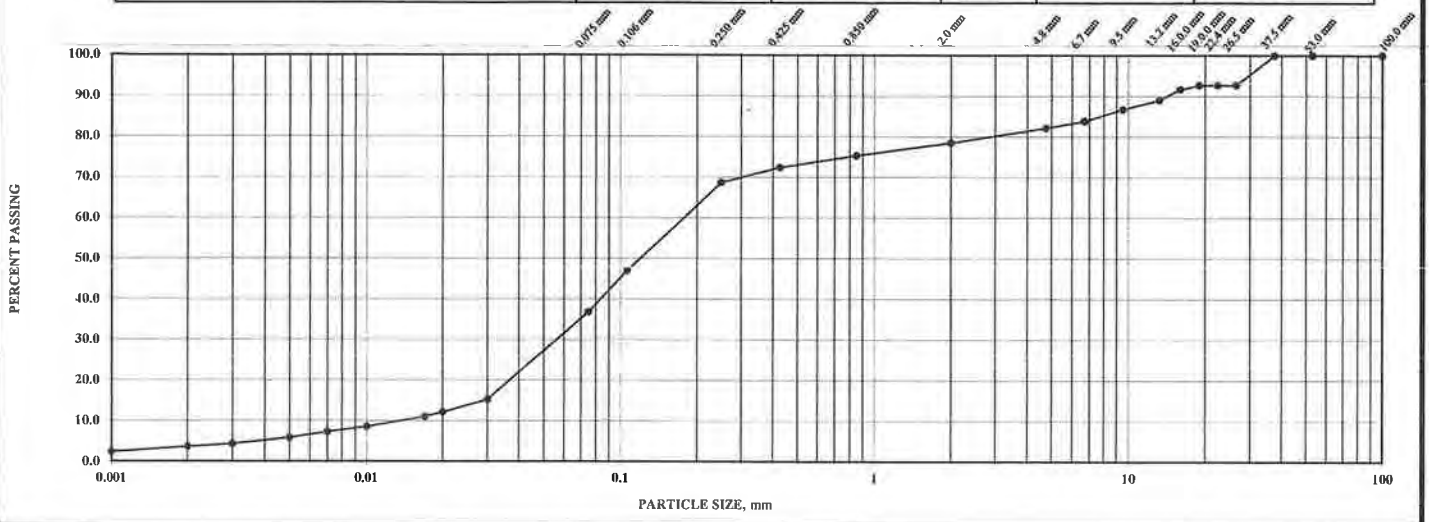
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.192	**D30**	0.061	**D10**	0.014	**Cc**	1.368	**Cu**	13.67

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	15.2
37.5	100.0	0.020	12.1
26.5	92.7	0.017	11.0
22.4	92.7	0.010	8.6
19	92.7	0.007	7.3
16	91.6	0.005	5.9
13.2	89.0	0.002	3.6
9.5	86.7	0.001	2.4
6.7	83.8	**ATTERBERG LIMITS**	
4.75	82.1		
2.00	78.5	Liquid Limit	
0.850	75.3		
0.425	72.4	Plastic Limit	
0.250	68.7		
0.106	47.0	Plastic Index	
0.075	36.8		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	17.9
% SAND (75 µm to 4.75 mm):	45.3
% SILT (2 µm to 75 µm):	33.2
% CLAY (<2 µm):	3.6
SOIL DESCRIPTION:	Silty SAND, some Gravel, trace Clay

REMARKS

Figure: 6

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

ENGLOBE

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-510	**SAMPLE ID:**	Test Pit 07-22, Sample #3	**SAMPLE DEPTH:**	1.5m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

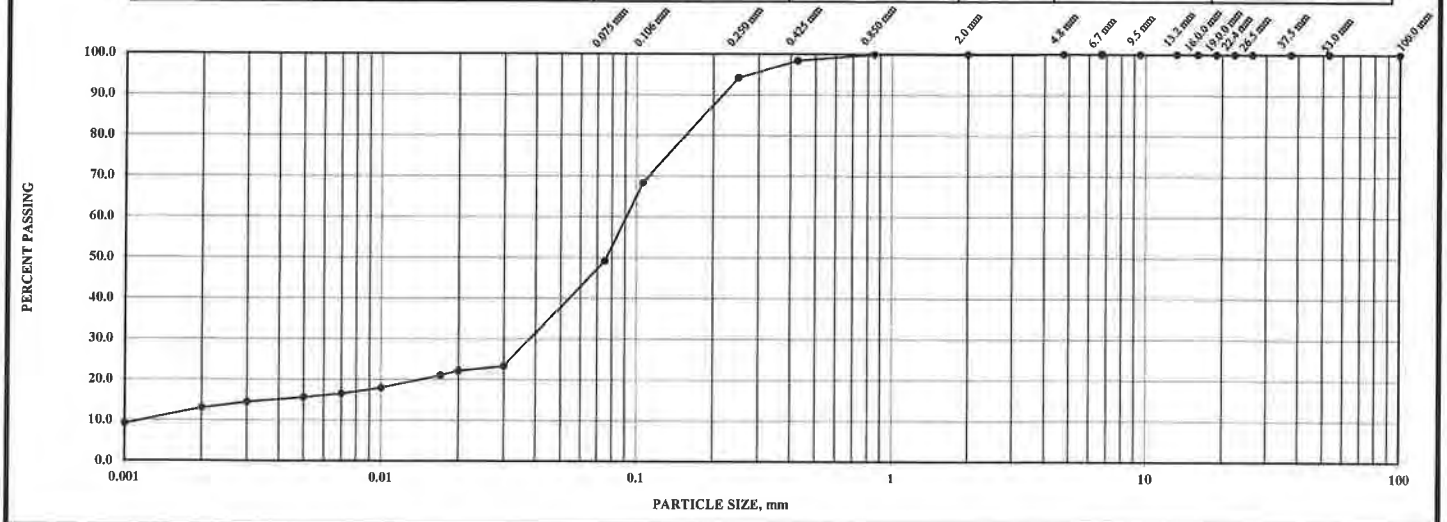
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.093	**D30**	0.042	**D10**	0.001	**Cc**	15.329	**Cu**	75.72

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	23.3
37.5	100.0	0.020	22.1
26.5	100.0	0.017	21.0
22.4	100.0	0.010	18.0
19	100.0	0.007	16.5
16	100.0	0.005	15.6
13.2	100.0	0.002	13.0
9.5	100.0	0.001	9.1
6.7	100.0	**ATTERBERG LIMITS**	
4.75	100.0		
2.00	99.9	Liquid Limit	
0.850	99.9		
0.425	98.4	Plastic Limit	
0.250	94.1		
0.106	68.3	Plastic Index	
0.075	49.1		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	
% SAND (75 µm to 4.75 mm):	50.9
% SILT (2 µm to 75 µm):	36.1
% CLAY (<2 µm):	13.0
SOIL DESCRIPTION:	Silty SAND, some Clay

REMARKS

Figure: 7

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

eNGLOBe

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-511	**SAMPLE ID:**	Test Pit 08-22, Sample #2	**SAMPLE DEPTH:**	0.9m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

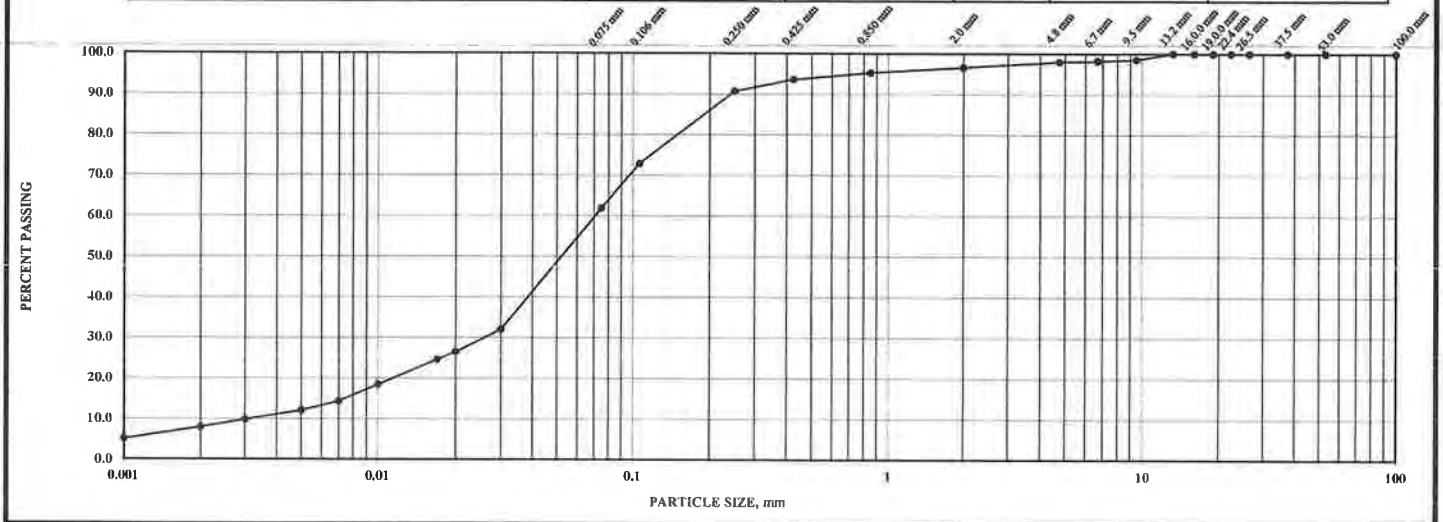
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.072	D30	0.026	D10	0.003	Cc	3.063	Cu	22.80

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	32.0
37.5	100.0	0.020	26.4
26.5	100.0	0.017	24.6
22.4	100.0	0.010	18.4
19	100.0	0.007	14.3
16	100.0	0.005	12.0
13.2	100.0	0.002	8.0
9.5	98.5	0.001	5.1
6.7	98.2	**ATTERBERG LIMITS**	
4.75	98.0		
2.00	96.6	Liquid Limit	
0.850	95.3		
0.425	93.6	Plastic Limit	
0.250	90.7		
0.106	72.9	Plastic Index	
0.075	61.9		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	2.0
% SAND (75 µm to 4.75 mm):	36.1
% SILT (2 µm to 75 µm):	53.9
% CLAY (<2 µm):	8.0
SOIL DESCRIPTION:	Sandy SILT, trace Gravel, trace Clay

REMARKS

Figure: 8

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

eNGLOBe

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-512	**SAMPLE ID:**	Test Pit 09-22, Sample #2	**SAMPLE DEPTH:**	1.3m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 6, 2022

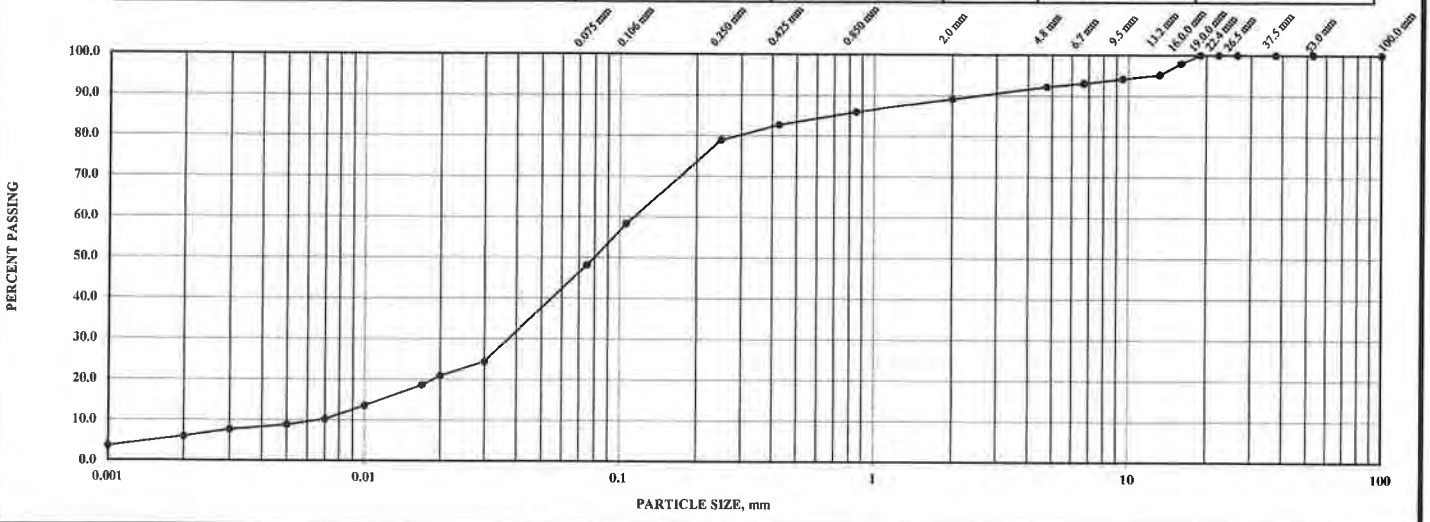
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.118	**D30**	0.041	**D10**	0.007	**Cc**	2.094	**Cu**	17.53

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	24.3
37.5	100.0	0.020	20.9
26.5	100.0	0.017	18.6
22.4	100.0	0.010	13.5
19	100.0	0.007	10.2
16	97.9	0.005	8.8
13.2	95.1	0.002	5.9
9.5	94.1	0.001	3.6
6.7	93.0	**ATTERBERG LIMITS**	
4.75	92.2		
2.00	89.1	Liquid Limit	
0.850	85.9		
0.425	82.7	Plastic Limit	
0.250	78.9		
0.106	58.3	Plastic Index	
0.075	48.1		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	7.8
% SAND (75 µm to 4.75 mm):	44.1
% SILT (2 µm to 75 µm):	42.2
% CLAY (<2 µm):	5.9
SOIL DESCRIPTION:	SAND and SILT, trace Gravel, trace Clay

REMARKS

Figure: 9

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc, Senior Laboratory Technician

eNGLOBe

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

PROJECT NUMBER:	04-02205818 000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-513	**SAMPLE ID:**	Test Pit 10-22, Sample #3	**SAMPLE DEPTH:**	1.6m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

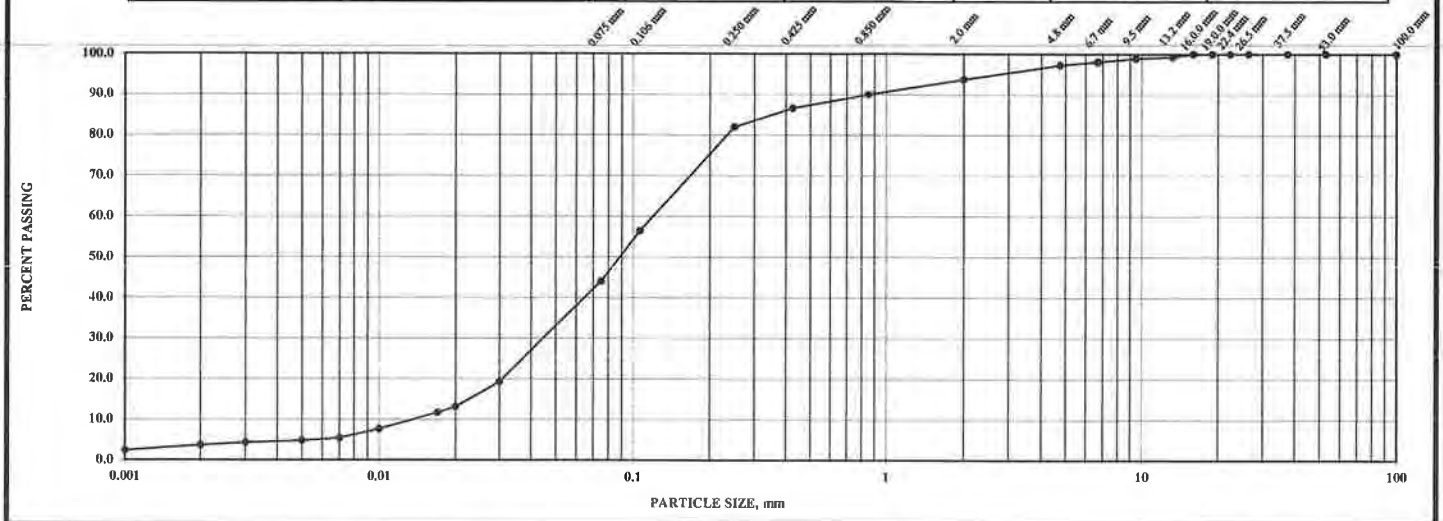
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.126	**D30**	0.049	**D10**	0.014	**Cc**	1.386	**Cu**	8.97

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	19.3
37.5	100.0	0.020	13.2
26.5	100.0	0.017	11.7
22.4	100.0	0.010	7.7
19	100.0	0.007	5.5
16	100.0	0.005	4.8
13.2	99.3	0.002	3.6
9.5	98.9	0.001	2.4
6.7	98.1	**ATTERBERG LIMITS**	
4.75	97.3		
2.00	93.7	Liquid Limit	
0.850	90.0		
0.425	86.7	Plastic Limit	
0.250	82.0		
0.106	56.5	Plastic Index	
0.075	44.0		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	2.7
% SAND (75 µm to 4.75 mm):	53.3
% SILT (2 µm to 75 µm):	40.4
% CLAY (<2 µm):	3.6
SOIL DESCRIPTION:	Silty SAND, trace Gravel, trace Clay

REMARKS

Figure: 10

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY Jason Taylor, B.A.Sc.
Senior Laboratory Technician

eNGLOBe

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-514	**SAMPLE ID:**	Test Pit 11-22, Sample #2	**SAMPLE DEPTH:**	1.0m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

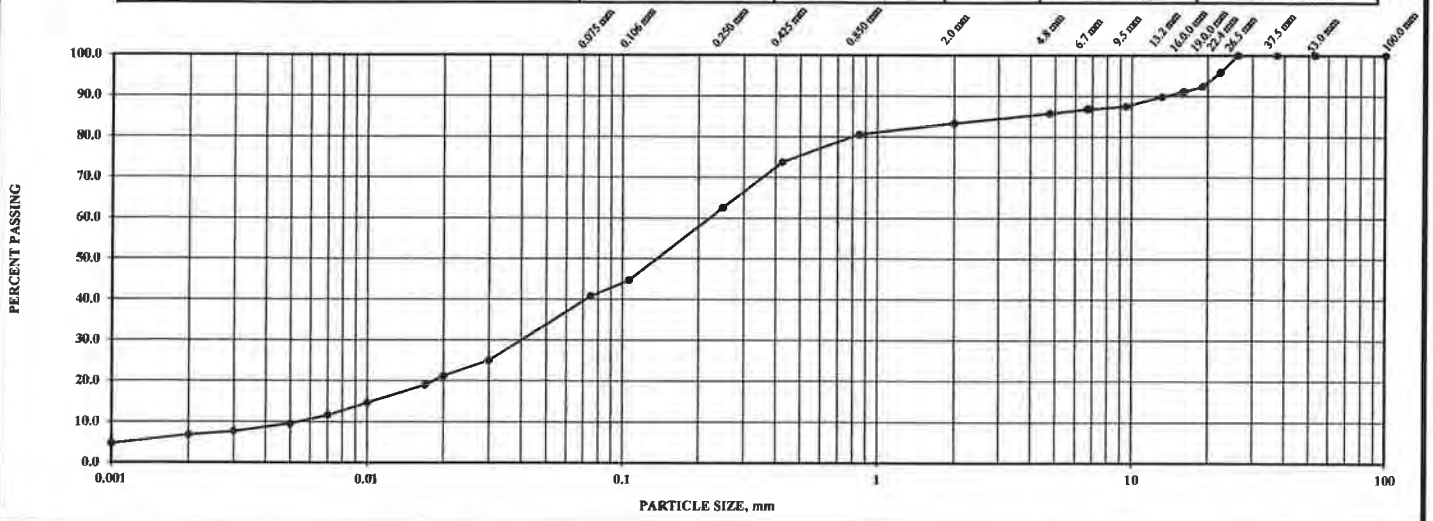
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.229	**D30**	0.044	**D10**	0.005	**Cc**	1.553	**Cu**	41.83

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	25.0
37.5	100.0	0.020	21.3
26.5	100.0	0.017	19.1
22.4	95.8	0.010	14.6
19	92.3	0.007	11.6
16	91.0	0.005	9.5
13.2	89.9	0.002	6.8
9.5	87.4	0.001	4.7
6.7	86.8	**ATTERBERG LIMITS**	
4.75	85.7		
2.00	83.3	Liquid Limit	
0.850	80.5		
0.425	73.7	Plastic Limit	
0.250	62.6		
0.106	44.7	Plastic Index	
0.075	40.9		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	14.3
% SAND (75 µm to 4.75 mm):	44.8
% SILT (2 µm to 75 µm):	34.1
% CLAY (<2 µm):	6.8
SOIL DESCRIPTION:	Silty SAND, some Gravel, trace Clay

REMARKS

Figure: 11

TESTED BY: Yuwei Gu, Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc., Senior Laboratory Technician

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.

eNGLOBe

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

PROJECT NUMBER:	04-02205818.000	**PROJECT NAME:**	Nine Lot Developments - 25 Bakers Street, Windham Centre	**CLIENT:**	Landpro Planning Solutions Inc.
LAB NUMBER:	S-515	**SAMPLE ID:**	Test Pit 12-22, Sample #2	**SAMPLE DEPTH:**	1.0m
SAMPLED BY:	Client	**DATE RECEIVED:**	June 29, 2022	**DATE COMPLETED:**	July 7, 2022

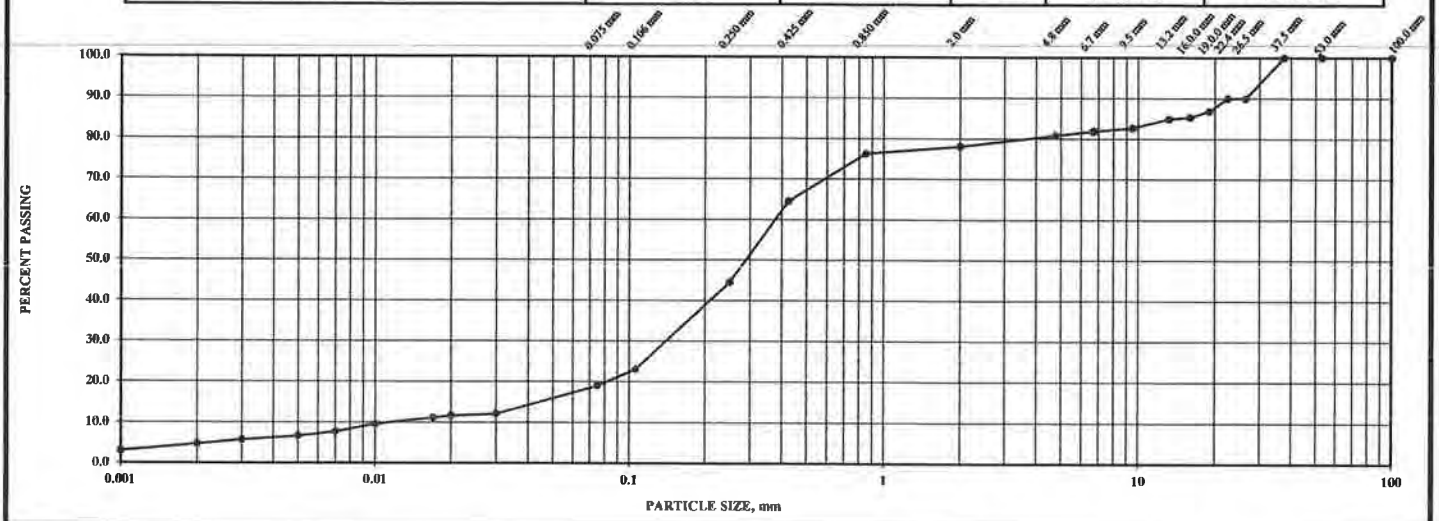
PARTICLE SIZE DISTRIBUTION, MTO LS-702

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	0.385	**D30**	0.152	**D10**	0.012	**Cc**	4.968	**Cu**	31.76

GRAIN SIZE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE mm	**% PASSING**	**DIAMETER mm**	**% PASSING**
53	100.0	0.030	12.1
37.5	100.0	0.020	11.6
26.5	90.0	0.017	11.1
22.4	90.0	0.010	9.5
19	86.8	0.007	7.6
16	85.3	0.005	6.6
13.2	84.9	0.002	4.6
9.5	82.7	0.001	2.9
6.7	81.9	**ATTERBERG LIMITS**	
4.75	80.8		
2.00	78.1	Liquid Limit	
0.850	76.2		
0.425	64.5	Plastic Limit	
0.250	44.5		
0.106	23.1	Plastic Index	
0.075	19.0		

GRAIN SIZE PROPORTIONS, %	
% GRAVEL (> 4.75 mm):	19.2
% SAND (75 µm to 4.75 mm):	61.8
% SILT (2 µm to 75 µm):	14.4
% CLAY (<2 µm):	4.6
SOIL DESCRIPTION:	SAND, some Gravel, some Silt, trace Clay

REMARKS

Figure: 12

TESTED BY: Yuwei Gu
Laboratory Technician

REVIEWED BY: Jason Taylor, B.A.Sc.
Senior Laboratory Technician

Appendix 'E'
Norfolk County Accreditation of Fire Protection
Shuttle Service

Fire Underwriters Survey™

June 21st, 2018

Terry Dicks
Fire Chief, CEMC
Norfolk County Fire Department
95 Culver Street
Simcoe, ON
N3Y 2V5

Re: Superior Tanker Shuttle Accreditation Effective June 15th, 2018

I am pleased to advise you that the Fire Underwriters Survey has evaluated your test results and application for accreditation to deliver Superior Tanker Shuttle Service and has determined that your fire protection district qualifies for accreditation.

Your fire protection district name has been added to the list of accredited agencies for the delivery of Superior Tanker Shuttle Services and the appropriate changes have been made to the Canadian Fire Insurance Grading Index.

Please find the enclosed certificate of accreditation and a brief letter of recognition.

As an accredited agency, constituents within your fire protection district who own detached dwellings and are within a qualifying road distance of the responding fire station (8 kilometres – DPG), are eligible to receive a significant cost reduction in their fire insurance rates from the majority of insurers in Canada. Insurers utilize the information provided by Fire Underwriters Survey in setting property insurance rates throughout Canada. Insurers are advised that Superior Tanker Shuttle Service (STSS) Accredited fire protection districts qualify for hydrant protected equivalency status, and may be rated as protected.

It should also be noted that insurers are under no obligation to accept this equivalency; however, the Fire Underwriters Survey recommends that they do so.

As the Surveyor for the province of Ontario, I must advise you that the Superior Tanker Shuttle Service (STSS) Accreditation and benefits associated with the accreditation are contingent upon the fire protection district being capable of continuously meeting the requirements of the Superior Tanker Shuttle Service delivery and being continuously able to provide evidence of such capacity upon request. Should the capacity of the fire protection district to deliver this level of service change at any time, notification should be made immediately to the offices of Fire Underwriters Survey. Fire Underwriters Survey retains the right to revoke Superior Tanker Shuttle Service (STSS) Accreditation at any time.

The accreditation period is 5 years from the date of this letter. To maintain accreditation, the fire department must document practice of Tanker Shuttle Service; this documentation must be available for review.

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

David Wilson
Public Fire Protection Specialist
Fire Underwriters Survey

Fire Underwriters Survey™

June 21st, 2018

RECOGNITION FOR FIRE INSURANCE GRADING RECEIVED

Norfolk County
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 below accredited Fire Stations. 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 and CGI; however, is now operated by SCM 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 June 16th, 2023 and is valid for the following fire stations:

- Waterford - F.S. #3 – 294 Main Street South, Waterford, ON N0E 1Y0
- Teeterville - F.S. #4 – 186 Teeter Street, Teeterville, ON N0E 1S0
- Delhi - F.S. #5 – 104 Argyle Avenue, Delhi, ON N4B 1J3
- Courtland - F.S. #6 – 272 Main Street, Courtland, ON N0J 1E0
- Langton - F.S. #7 – 18 Queen Street, Langton, ON N0E 1G0
- Fairground - F.S. #8 – 722 Regional Road 28, Clear Creek, ON N0E 1C0
- Port Rowan - F.S. #9 – 1035 Erie Avenue, Port Rowan, ON N0E 1M0
- St. Williams - F.S. #10 – 180 Townline Street, St. Williams, ON N0E 1P0
- Vittoria -F.S. #11 – 1375 Vittoria Road, Vittoria, ON N0E 1P0

Personal Lines Fire Insurance Classification – DPG 3B(S) – Flow Rate of 207 IGPM

David Wilson
Public Fire Protection Specialist
Fire Underwriters Survey

Appendix 'F'
Pre-Development Runoff Results

```
"               MIDUSS Output ------------------------------------------------>"
"               MIDUSS version                              Version 2.25  rev. 473"
"               MIDUSS created                                     February-07-10"
"          10   Units used:                                             ie METRIC"
"               Job folder:                                C:\swm\MIDUSS\15640"
"               Output filename:                                        pre5.out"
"               Licensee name:                                               Bob"
"               Company                                                        "
"               Date & Time last used:                  30/06/2022 at 10:36:09 AM"
" 31          TIME PARAMETERS"
"       10.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32          STORM Chicago storm"
"            1   Chicago storm"
"      771.901   Coefficient A"
"        6.241   Constant B"
"        0.786   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"             Maximum intensity            82.668    mm/hr"
"             Total depth                  38.054    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"
"        3.652   Total Area"
"       61.610   Flow length"
"        1.000   Overland Slope"
"        3.652   Pervious Area"
"       61.610   Pervious length"
"        1.000   Pervious slope"
"        0.000   Impervious Area"
"       61.610   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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"
"                     0.048     0.000     0.000     0.000 c.m/sec"
"             Catchment 101          Pervious   Impervious Total Area "
"             Surface Area           3.652      0.000      3.652      hectare"
"             Time of concentration  43.116     4.539      43.116     minutes"
"             Time to Centroid       98.028     0.000      98.028     minutes"
"             Rainfall depth         38.054     38.054     38.054     mm"
"             Rainfall volume        1389.74    0.00       1389.74    c.m"
"             Rainfall losses        34.651     38.054     34.651     mm"
"             Runoff depth           3.404      0.000      3.404      mm"
"             Runoff volume          124.30     0.00       124.30     c.m"
"             Runoff coefficient     0.089      0.000      0.089      "
```

```
"              Maximum flow          0.048      0.000      0.048      c.m/sec"
" 38           START/RE-START TOTALS "
"             3  Runoff Totals on EXIT"
"              Total Catchment area                        0.000    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\15640"
"               Output filename:                                       pre100.out"
"               Licensee name:                                                Bob"
"               Company                                                         "
"               Date & Time last used:                 30/06/2022 at 10:42:50 AM"
" 31          TIME PARAMETERS"
"       10.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32          STORM Chicago storm"
"           1   Chicago storm"
"     1274.631   Coefficient A"
"        7.540   Constant B"
"        0.796   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"             Maximum intensity           124.853    mm/hr"
"             Total depth                  59.309    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"
"        3.652   Total Area"
"       61.610   Flow length"
"        1.000   Overland Slope"
"        3.652   Pervious Area"
"       61.610   Pervious length"
"        1.000   Pervious slope"
"        0.000   Impervious Area"
"       61.610   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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"
"                    0.380     0.000     0.000     0.000 c.m/sec"
"             Catchment 101          Pervious   Impervious Total Area "
"             Surface Area           3.652      0.000      3.652      hectare"
"             Time of concentration  24.404     3.849      24.404     minutes"
"             Time to Centroid       91.008     87.856     91.008     minutes"
"             Rainfall depth         59.309     59.309     59.309     mm"
"             Rainfall volume        2165.97    0.00       2165.98    c.m"
"             Rainfall losses        42.814     2.000      42.814     mm"
"             Runoff depth           16.496     57.309     16.496     mm"
"             Runoff volume          602.42     0.00       602.42     c.m"
"             Runoff coefficient     0.278      0.000      0.278      "
```

```
"              Maximum flow          0.380      0.000      0.380      c.m/sec"
" 38           START/RE-START TOTALS "
"             3   Runoff Totals on EXIT"
"              Total Catchment area                         0.000    hectare"
"              Total Impervious area                        0.000    hectare"
"              Total % impervious                           0.000"
" 19           EXIT"
```

Appendix 'G'
Post-Development Runoff Results

```
"                MIDUSS Output ------------------------------------------------>"
"                MIDUSS version                              Version 2.25  rev. 473"
"                MIDUSS created                                     February-07-10"
"           10   Units used:                                            ie METRIC"
"                Job folder:                                 C:\swm\MIDUSS\15640"
"                Output filename:                                        pst5.out"
"                Licensee name:                                               Bob"
"                Company                                                        "
"                Date & Time last used:                  30/06/2022 at 11:10:33 AM"
" 31          TIME PARAMETERS"
"       10.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32          STORM Chicago storm"
"            1   Chicago storm"
"      771.901   Coefficient A"
"        6.241   Constant B"
"        0.786   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"             Maximum intensity            82.668    mm/hr"
"             Total depth                  38.054    mm"
"            6   005hyd   Hydrograph extension used in this file"
" 33          CATCHMENT 101"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          101   No description"
"       10.000   % Impervious"
"        0.091   Total Area"
"       45.000   Flow length"
"        1.000   Overland Slope"
"        0.082   Pervious Area"
"       45.000   Pervious length"
"        1.000   Pervious slope"
"        0.009   Impervious Area"
"       45.000   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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           0.082      0.009      0.091      hectare"
"             Time of concentration  35.709     3.759      18.435     minutes"
"             Time to Centroid       94.224     88.939     91.367     minutes"
"             Rainfall depth         38.054     38.054     38.054     mm"
"             Rainfall volume        31.17      3.46       34.63      c.m"
"             Rainfall losses        34.651     2.000      31.386     mm"
"             Runoff depth           3.404      36.054     6.669      mm"
"             Runoff volume          2.79       3.28       6.07       c.m"
"             Runoff coefficient     0.089      0.947      0.175      "
```

```
"             Maximum flow            0.001      0.002      0.003      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                     0.003     0.003     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         0.003    c.m/sec"
"             Volume of diverted flow       6.069    c.m"
"             DIV00101.005hyd"
"             Divert to Infiltrartion 0.015 cms (Drywell)"
"                     0.003     0.003     0.000     0.000 c.m/sec"
" 40          HYDROGRAPH   Combine    9999"
"             6   Combine "
"          9999   Node #"
"                 "
"             Maximum flow                  0.000    c.m/sec"
"             Hydrograph volume             0.000    c.m"
"                     0.003     0.003     0.000     0.000"
" 40          HYDROGRAPH Start - New Tributary"
"             2   Start - New Tributary"
"                     0.003     0.000     0.000     0.000"
" 33          CATCHMENT 102"
"             2   Rectangular"
"             1   Equal length"
"             2   Horton equation"
"           102   No description"
"        10.000   % Impervious"
"         0.128   Total Area"
"        23.647   Flow length"
"         1.000   Overland Slope"
"         0.115   Pervious Area"
"        23.647   Pervious length"
"         1.000   Pervious slope"
"         0.013   Impervious Area"
"        23.647   Impervious length"
"         1.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        30.000   Pervious Max.infiltration"
"        20.000   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"
"                     0.006     0.000     0.000     0.000 c.m/sec"
"             Catchment 102          Pervious   Impervious Total Area "
"             Surface Area           0.115      0.013      0.128      hectare"
"             Time of concentration  24.272     2.555      12.531     minutes"
"             Time to Centroid       88.367     88.694     88.544     minutes"
"             Rainfall depth         38.054     38.054     38.054     mm"
"             Rainfall volume        43.84      4.87       48.71      c.m"
"             Rainfall losses        34.651     2.000      31.386     mm"
"             Runoff depth           3.404      36.054     6.669      mm"
"             Runoff volume          3.92       4.61       8.54       c.m"
"             Runoff coefficient     0.089      0.947      0.175      "
```

```
"             Maximum flow            0.003      0.003      0.006      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.006     0.006     0.000     0.000"
" 56          DIVERSION"
"          102   Node number"
"        0.000   Overflow threshold"
"        1.000   Required diverted fraction"
"            0   Conduit type; 1=Pipe;2=Channel"
"             Peak of diverted flow         0.006    c.m/sec"
"             Volume of diverted flow       8.536    c.m"
"             DIV00102.005hyd"
"             Divert to Infiltraation 0.015 cms (drywell)"
"                    0.006     0.006     0.000     0.000 c.m/sec"
" 40          HYDROGRAPH   Combine    9999"
"            6   Combine "
"         9999   Node #"
"                "
"             Maximum flow                  0.000    c.m/sec"
"             Hydrograph volume             0.000    c.m"
"                    0.006     0.006     0.000     0.000"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.006     0.000     0.000     0.000"
" 33          CATCHMENT 103"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          103   No description"
"       10.000   % Impervious"
"        0.102   Total Area"
"       18.844   Flow length"
"        1.000   Overland Slope"
"        0.092   Pervious Area"
"       18.844   Pervious length"
"        1.000   Pervious slope"
"        0.010   Impervious Area"
"       18.844   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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 103          Pervious   Impervious Total Area "
"             Surface Area           0.092      0.010      0.102      hectare"
"             Time of concentration  21.181     2.230      10.935     minutes"
"             Time to Centroid       86.486     88.694     87.680     minutes"
"             Rainfall depth         38.054     38.054     38.054     mm"
"             Rainfall volume        34.93      3.88       38.82      c.m"
"             Rainfall losses        34.651     2.000      31.386     mm"
"             Runoff depth           3.404      36.054     6.669      mm"
"             Runoff volume          3.12       3.68       6.80       c.m"
"             Runoff coefficient     0.089      0.947      0.175      "
```

```
"             Maximum flow            0.002      0.002      0.005      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.005     0.005     0.000     0.000"
" 56          DIVERSION"
"          103   Node number"
"        0.006   Overflow threshold"
"        1.000   Required diverted fraction"
"            0   Conduit type; 1=Pipe;2=Channel"
"             Peak of diverted flow         0.000    c.m/sec"
"             Volume of diverted flow       0.000    c.m"
"             DIV00103.005hyd"
"             Divert to Infiltration 0.006 cms (Drywell)"
"                    0.005     0.005     0.005     0.000 c.m/sec"
" 40          HYDROGRAPH   Combine    9999"
"            6   Combine "
"         9999   Node #"
"                "
"             Maximum flow                  0.005    c.m/sec"
"             Hydrograph volume             6.802    c.m"
"                    0.005     0.005     0.005     0.005"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.005     0.000     0.005     0.005"
" 33          CATCHMENT 106"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          106   No description"
"       10.000   % Impervious"
"        0.071   Total Area"
"       38.172   Flow length"
"        1.000   Overland Slope"
"        0.064   Pervious Area"
"       38.172   Pervious length"
"        1.000   Pervious slope"
"        0.007   Impervious Area"
"       38.172   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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     0.005     0.005 c.m/sec"
"             Catchment 106          Pervious   Impervious Total Area "
"             Surface Area           0.064      0.007      0.071      hectare"
"             Time of concentration  32.351     3.405      16.702     minutes"
"             Time to Centroid       92.394     88.818     90.461     minutes"
"             Rainfall depth         38.054     38.054     38.054     mm"
"             Rainfall volume        24.32      2.70       27.02      c.m"
"             Rainfall losses        34.651     2.000      31.386     mm"
"             Runoff depth           3.404      36.054     6.669      mm"
"             Runoff volume          2.17       2.56       4.73       c.m"
"             Runoff coefficient     0.089      0.947      0.175      "
```

```
"             Maximum flow            0.001      0.002      0.003      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.003     0.003     0.005     0.005"
" 51          PIPE DESIGN"
"         0.003   Current peak flow    c.m/sec"
"         0.013   Manning 'n'"
"         1.000   Diameter    metre"
"         1.000   Gradient   %"
"              Depth of flow                 0.026    metre"
"              Velocity                      0.506    m/sec"
"              Pipe capacity                 2.398    c.m/sec"
"              Critical depth                0.028    metre"
" 53          ROUTE Zero Route"
"          0.00   Zero Route Reach length   ( metre)"
"                    0.003     0.003     0.003     0.005 c.m/sec"
" 40          HYDROGRAPH   Combine    9999"
"            6   Combine "
"         9999   Node #"
"                "
"              Maximum flow                  0.008    c.m/sec"
"              Hydrograph volume            11.537    c.m"
"                    0.003     0.003     0.003     0.008"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.003     0.000     0.003     0.008"
" 33          CATCHMENT 107"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          107   No description"
"       10.000   % Impervious"
"        0.200   Total Area"
"       38.241   Flow length"
"        1.000   Overland Slope"
"        0.180   Pervious Area"
"       38.241   Pervious length"
"        1.000   Pervious slope"
"        0.020   Impervious Area"
"       38.241   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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     0.003     0.008 c.m/sec"
"              Catchment 107          Pervious   Impervious Total Area "
"              Surface Area           0.180      0.020      0.200      hectare"
"              Time of concentration  32.386     3.409      16.720     minutes"
"              Time to Centroid       92.415     88.819     90.471     minutes"
"              Rainfall depth         38.054     38.054     38.054     mm"
"              Rainfall volume        68.50      7.61       76.11      c.m"
"              Rainfall losses        34.651     2.000      31.386     mm"
"              Runoff depth           3.404      36.054     6.669      mm"
```

```
"             Runoff volume          6.13       7.21       13.34      c.m"
"             Runoff coefficient     0.089      0.947      0.175      "
"             Maximum flow           0.003      0.005      0.008      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.008     0.008     0.003     0.008"
" 56          DIVERSION"
"          107   Node number"
"        0.000   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      13.338    c.m"
"             DIV00107.005hyd"
"             Divert to Infiltration 0.015 cms (Drywell)"
"                    0.008     0.008     0.000     0.008 c.m/sec"
" 40          HYDROGRAPH   Combine    9999"
"            6   Combine "
"         9999   Node #"
"                "
"             Maximum flow                  0.008    c.m/sec"
"             Hydrograph volume            11.537    c.m"
"                    0.008     0.008     0.000     0.008"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                    0.008     0.000     0.000     0.008"
" 33          CATCHMENT 110"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          110   No description"
"       10.000   % Impervious"
"        0.448   Total Area"
"       35.848   Flow length"
"        1.000   Overland Slope"
"        0.403   Pervious Area"
"       35.848   Pervious length"
"        1.000   Pervious slope"
"        0.045   Impervious Area"
"       35.848   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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"
"                    0.018     0.000     0.000     0.008 c.m/sec"
"             Catchment 110          Pervious   Impervious Total Area "
"             Surface Area           0.403      0.045      0.448      hectare"
"             Time of concentration  31.155     3.280      16.084     minutes"
"             Time to Centroid       91.651     88.779     90.098     minutes"
"             Rainfall depth         38.054     38.054     38.054     mm"
"             Rainfall volume        153.43     17.05      170.48     c.m"
"             Rainfall losses        34.651     2.000      31.386     mm"
"             Runoff depth           3.404      36.054     6.669      mm"
```

```
"             Runoff volume          13.72      16.15      29.88      c.m"
"             Runoff coefficient     0.089      0.947      0.175      "
"             Maximum flow           0.007      0.010      0.018      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                     0.018     0.018     0.000     0.008"
" 51          PIPE DESIGN"
"         0.018   Current peak flow    c.m/sec"
"         0.013   Manning 'n'"
"         1.000   Diameter    metre"
"         1.000   Gradient    %"
"             Depth of flow                 0.061    metre"
"             Velocity                      0.892    m/sec"
"             Pipe capacity                 2.398    c.m/sec"
"             Critical depth                0.072    metre"
" 53          ROUTE Zero Route"
"          0.00   Zero Route Reach length   ( metre)"
"                     0.018     0.018     0.018     0.008 c.m/sec"
" 40          HYDROGRAPH   Combine    999"
"            6   Combine "
"          999   Node #"
"                "
"             Maximum flow                  0.018    c.m/sec"
"             Hydrograph volume            29.876    c.m"
"                     0.018     0.018     0.018     0.018"
" 40          HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                     0.018     0.000     0.018     0.018"
" 33          CATCHMENT 199"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          199   No description"
"       10.000   % Impervious"
"        2.612   Total Area"
"       44.064   Flow length"
"        1.000   Overland Slope"
"        2.351   Pervious Area"
"       44.064   Pervious length"
"        1.000   Pervious slope"
"        0.261   Impervious Area"
"       44.064   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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"
"                     0.097     0.000     0.018     0.018 c.m/sec"
"             Catchment 199          Pervious   Impervious Total Area "
"             Surface Area           2.351      0.261      2.612      hectare"
"             Time of concentration  35.261     3.712      18.204     minutes"
"             Time to Centroid       93.999     88.921     91.254     minutes"
"             Rainfall depth         38.054     38.054     38.054     mm"
"             Rainfall volume        894.58     99.40      993.98     c.m"
```

```
"            Rainfall losses        34.651     2.000      31.386     mm"
"            Runoff depth           3.404      36.054     6.669      mm"
"            Runoff volume          80.01      94.17      174.19     c.m"
"            Runoff coefficient     0.089      0.947      0.175      "
"            Maximum flow           0.038      0.060      0.097      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                  0.097     0.097     0.018     0.018"
" 51         PIPE DESIGN"
"       0.097   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient    %"
"            Depth of flow                0.138    metre"
"            Velocity                     1.496    m/sec"
"            Pipe capacity                2.398    c.m/sec"
"            Critical depth               0.172    metre"
" 53         ROUTE Zero Route"
"        0.00   Zero Route Reach length   ( metre)"
"                  0.097     0.097     0.097     0.018 c.m/sec"
" 40         HYDROGRAPH   Combine    999"
"           6   Combine "
"         999   Node #"
"               "
"            Maximum flow                 0.115    c.m/sec"
"            Hydrograph volume          204.064    c.m"
"                  0.097     0.097     0.097     0.115"
" 40         HYDROGRAPH   Confluence    999"
"           7   Confluence "
"         999   Node #"
"               "
"            Maximum flow                 0.115    c.m/sec"
"            Hydrograph volume          204.064    c.m"
"                  0.097     0.115     0.097     0.000"
" 51         PIPE DESIGN"
"       0.115   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient    %"
"            Depth of flow                0.149    metre"
"            Velocity                     1.571    m/sec"
"            Pipe capacity                2.398    c.m/sec"
"            Critical depth               0.187    metre"
" 53         ROUTE Zero Route"
"        0.00   Zero Route Reach length   ( metre)"
"                  0.097     0.115     0.115     0.000 c.m/sec"
" 40         HYDROGRAPH   Combine    9999"
"           6   Combine "
"        9999   Node #"
"               "
"            Maximum flow                 0.123    c.m/sec"
"            Hydrograph volume          215.601    c.m"
"                  0.097     0.115     0.115     0.123"
" 40         HYDROGRAPH   Confluence    9999"
"           7   Confluence "
"        9999   Node #"
"               "
"            Maximum flow                 0.123    c.m/sec"
"            Hydrograph volume          215.601    c.m"
"                  0.097     0.123     0.115     0.000"
```

```
" 52          CHANNEL DESIGN"
"        0.123   Current peak flow    c.m/sec"
"        0.040   Manning 'n'"
"           0.   Cross-section type: 0=trapezoidal; 1=general"
"        0.600   Basewidth    metre"
"        3.000   Left bank slope"
"        3.000   Right bank slope"
"        0.450   Channel depth    metre"
"        0.300   Gradient   %"
"             Depth of flow                0.241    metre"
"             Velocity                     0.386    m/sec"
"             Channel capacity             0.483    c.m/sec"
"             Critical depth               0.130    metre"
" 53          ROUTE    Channel Route 450"
"       450.00      Channel Route 450 Reach length   ( metre)"
"        0.415   X-factor <= 0.5"
"      436.628   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag   ( seconds)"
"        0.500   Beta weighting factor"
"      600.000   Routing time step   ( seconds)"
"            2   No. of sub-reaches"
"             Peak outflow                 0.109    c.m/sec"
"                    0.097     0.123     0.109     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"             5   Next link "
"                    0.097     0.109     0.109     0.000"
" 56          DIVERSION"
"          9999   Node number"
"        0.052   Overflow threshold"
"        1.000   Required diverted fraction"
"             0   Conduit type; 1=Pipe;2=Channel"
"             Peak of diverted flow        0.057    c.m/sec"
"             Volume of diverted flow     44.935    c.m"
"             DIV09999.005hyd"
"             Divert to Infiltrration Gallery 44.935 cu.m. (45)"
"                    0.097     0.109     0.052     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"             5   Next link "
"                    0.097     0.052     0.052     0.000"
" 38          START/RE-START TOTALS 999"
"             3   Runoff Totals on EXIT"
"             Total Catchment area                    3.652    hectare"
"             Total Impervious area                   0.365    hectare"
"             Total % impervious                     10.000"
" 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\15640"
"               Output filename:                                        pst100.out"
"               Licensee name:                                                  Bob"
"               Company                                                           "
"               Date & Time last used:                 30/06/2022 at 10:52:24 AM"
" 31          TIME PARAMETERS"
"       10.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32          STORM Chicago storm"
"           1   Chicago storm"
"     1274.631   Coefficient A"
"        7.540   Constant B"
"        0.796   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"             Maximum intensity          124.853    mm/hr"
"             Total depth                 59.309    mm"
"            6   005hyd   Hydrograph extension used in this file"
" 33          CATCHMENT 101"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          101   No description"
"       10.000   % Impervious"
"        0.091   Total Area"
"       45.000   Flow length"
"        1.000   Overland Slope"
"        0.082   Pervious Area"
"       45.000   Pervious length"
"        1.000   Pervious slope"
"        0.009   Impervious Area"
"       45.000   Impervious length"
"        1.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       30.000   Pervious Max.infiltration"
"       20.000   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           0.082      0.009      0.091      hectare"
"             Time of concentration  20.212     3.187      15.470     minutes"
"             Time to Centroid       88.195     87.637     88.039     minutes"
"             Rainfall depth         59.309     59.309     59.309     mm"
"             Rainfall volume        48.57      5.40       53.97      c.m"
"             Rainfall losses        42.814     2.000      38.732     mm"
"             Runoff depth           16.496     57.309     20.577     mm"
"             Runoff volume          13.51      5.22       18.73      c.m"
"             Runoff coefficient     0.278      0.966      0.347      "
```

```
"             Maximum flow            0.010      0.003      0.013      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                     0.013     0.013     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         0.013    c.m/sec"
"             Volume of diverted flow      18.725    c.m"
"             DIV00101.005hyd"
"             Divert to Infiltrartion 0.015 cms (Drywell)"
"                     0.013     0.013     0.000     0.000 c.m/sec"
" 40          HYDROGRAPH   Combine    9999"
"             6   Combine "
"          9999   Node #"
"                 "
"             Maximum flow                  0.000    c.m/sec"
"             Hydrograph volume             0.000    c.m"
"                     0.013     0.013     0.000     0.000"
" 40          HYDROGRAPH Start - New Tributary"
"             2   Start - New Tributary"
"                     0.013     0.000     0.000     0.000"
" 33          CATCHMENT 102"
"             2   Rectangular"
"             1   Equal length"
"             2   Horton equation"
"           102   No description"
"        10.000   % Impervious"
"         0.128   Total Area"
"        23.647   Flow length"
"         1.000   Overland Slope"
"         0.115   Pervious Area"
"        23.647   Pervious length"
"         1.000   Pervious slope"
"         0.013   Impervious Area"
"        23.647   Impervious length"
"         1.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        30.000   Pervious Max.infiltration"
"        20.000   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"
"                     0.024     0.000     0.000     0.000 c.m/sec"
"             Catchment 102          Pervious   Impervious Total Area "
"             Surface Area           0.115      0.013      0.128      hectare"
"             Time of concentration  13.739     2.167      10.516     minutes"
"             Time to Centroid       85.202     87.566     85.861     minutes"
"             Rainfall depth         59.309     59.309     59.309     mm"
"             Rainfall volume        68.32      7.59       75.92      c.m"
"             Rainfall losses        42.814     2.000      38.732     mm"
"             Runoff depth           16.496     57.309     20.577     mm"
"             Runoff volume          19.00      7.34       26.34      c.m"
"             Runoff coefficient     0.278      0.966      0.347      "
```

```
"            Maximum flow            0.020      0.004      0.024      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                   0.024     0.024     0.000     0.000"
" 56         DIVERSION"
"         102   Node number"
"       0.009   Overflow threshold"
"       1.000   Required diverted fraction"
"           0   Conduit type; 1=Pipe;2=Channel"
"            Peak of diverted flow         0.015    c.m/sec"
"            Volume of diverted flow       9.827    c.m"
"            DIV00102.005hyd"
"            Divert to Infiltraation 0.015 cms (drywell)"
"                   0.024     0.024     0.009     0.000 c.m/sec"
" 40         HYDROGRAPH   Combine    9999"
"           6   Combine "
"        9999   Node #"
"               "
"            Maximum flow                  0.009    c.m/sec"
"            Hydrograph volume            16.511    c.m"
"                   0.024     0.024     0.009     0.009"
" 40         HYDROGRAPH Start - New Tributary"
"           2   Start - New Tributary"
"                   0.024     0.000     0.009     0.009"
" 33         CATCHMENT 103"
"           2   Rectangular"
"           1   Equal length"
"           2   Horton equation"
"         103   No description"
"      10.000   % Impervious"
"       0.102   Total Area"
"      18.844   Flow length"
"       1.000   Overland Slope"
"       0.092   Pervious Area"
"      18.844   Pervious length"
"       1.000   Pervious slope"
"       0.010   Impervious Area"
"      18.844   Impervious length"
"       1.000   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      30.000   Pervious Max.infiltration"
"      20.000   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"
"                   0.021     0.000     0.009     0.009 c.m/sec"
"            Catchment 103          Pervious   Impervious Total Area "
"            Surface Area           0.092      0.010      0.102      hectare"
"            Time of concentration  11.989     1.891      9.176      minutes"
"            Time to Centroid       84.057     87.566     85.035     minutes"
"            Rainfall depth         59.309     59.309     59.309     mm"
"            Rainfall volume        54.45      6.05       60.50      c.m"
"            Rainfall losses        42.814     2.000      38.732     mm"
"            Runoff depth           16.496     57.309     20.577     mm"
"            Runoff volume          15.14      5.85       20.99      c.m"
"            Runoff coefficient     0.278      0.966      0.347      "
```

```
"            Maximum flow           0.018      0.004      0.021      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                  0.021     0.021     0.009     0.009"
" 56         DIVERSION"
"         103   Node number"
"       0.006   Overflow threshold"
"       1.000   Required diverted fraction"
"           0   Conduit type; 1=Pipe;2=Channel"
"            Peak of diverted flow         0.015    c.m/sec"
"            Volume of diverted flow       9.360    c.m"
"            DIV00103.005hyd"
"            Divert to Infiltration 0.006 cms (Drywell)"
"                  0.021     0.021     0.006     0.009 c.m/sec"
" 40         HYDROGRAPH   Combine    9999"
"           6   Combine "
"        9999   Node #"
"               "
"            Maximum flow                  0.015    c.m/sec"
"            Hydrograph volume            28.140    c.m"
"                  0.021     0.021     0.006     0.015"
" 40         HYDROGRAPH Start - New Tributary"
"           2   Start - New Tributary"
"                  0.021     0.000     0.006     0.015"
" 33         CATCHMENT 106"
"           2   Rectangular"
"           1   Equal length"
"           2   Horton equation"
"         106   No description"
"      10.000   % Impervious"
"       0.071   Total Area"
"      38.172   Flow length"
"       1.000   Overland Slope"
"       0.064   Pervious Area"
"      38.172   Pervious length"
"       1.000   Pervious slope"
"       0.007   Impervious Area"
"      38.172   Impervious length"
"       1.000   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      30.000   Pervious Max.infiltration"
"      20.000   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     0.006     0.015 c.m/sec"
"            Catchment 106          Pervious   Impervious Total Area "
"            Surface Area           0.064      0.007      0.071      hectare"
"            Time of concentration  18.311     2.888      14.016     minutes"
"            Time to Centroid       87.428     87.577     87.470     minutes"
"            Rainfall depth         59.309     59.309     59.309     mm"
"            Rainfall volume        37.90      4.21       42.11      c.m"
"            Rainfall losses        42.814     2.000      38.732     mm"
"            Runoff depth           16.496     57.309     20.577     mm"
"            Runoff volume          10.54      4.07       14.61      c.m"
"            Runoff coefficient     0.278      0.966      0.347      "
```

```
"            Maximum flow           0.008      0.002      0.011      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                    0.011     0.011     0.006     0.015"
" 51         PIPE DESIGN"
"       0.011   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient   %"
"            Depth of flow                 0.048    metre"
"            Velocity                      0.765    m/sec"
"            Pipe capacity                 2.398    c.m/sec"
"            Critical depth                0.056    metre"
" 53         ROUTE Zero Route"
"        0.00   Zero Route Reach length   ( metre)"
"                    0.011     0.011     0.011     0.015 c.m/sec"
" 40         HYDROGRAPH   Combine    9999"
"           6   Combine "
"        9999   Node #"
"               "
"            Maximum flow                  0.026    c.m/sec"
"            Hydrograph volume            42.749    c.m"
"                    0.011     0.011     0.011     0.026"
" 40         HYDROGRAPH Start - New Tributary"
"           2   Start - New Tributary"
"                    0.011     0.000     0.011     0.026"
" 33         CATCHMENT 107"
"           2   Rectangular"
"           1   Equal length"
"           2   Horton equation"
"         107   No description"
"      10.000   % Impervious"
"       0.200   Total Area"
"      38.241   Flow length"
"       1.000   Overland Slope"
"       0.180   Pervious Area"
"      38.241   Pervious length"
"       1.000   Pervious slope"
"       0.020   Impervious Area"
"      38.241   Impervious length"
"       1.000   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      30.000   Pervious Max.infiltration"
"      20.000   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"
"                    0.030     0.000     0.011     0.026 c.m/sec"
"            Catchment 107          Pervious   Impervious Total Area "
"            Surface Area           0.180      0.020      0.200      hectare"
"            Time of concentration  18.331     2.891      14.031     minutes"
"            Time to Centroid       87.436     87.577     87.475     minutes"
"            Rainfall depth         59.309     59.309     59.309     mm"
"            Rainfall volume        106.76     11.86      118.62     c.m"
"            Rainfall losses        42.814     2.000      38.732     mm"
"            Runoff depth           16.496     57.309     20.577     mm"
```

```
"            Runoff volume          29.69      11.46      41.15      c.m"
"            Runoff coefficient     0.278      0.966      0.347      "
"            Maximum flow           0.023      0.007      0.030      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                  0.030     0.030     0.011     0.026"
" 56         DIVERSION"
"         107   Node number"
"       0.015   Overflow threshold"
"       1.000   Required diverted fraction"
"           0   Conduit type; 1=Pipe;2=Channel"
"            Peak of diverted flow         0.015    c.m/sec"
"            Volume of diverted flow      13.815    c.m"
"            DIV00107.005hyd"
"            Divert to Infiltration 0.015 cms (Drywell)"
"                  0.030     0.030     0.015     0.026 c.m/sec"
" 40         HYDROGRAPH   Combine    9999"
"           6   Combine "
"        9999   Node #"
"               "
"            Maximum flow                  0.041    c.m/sec"
"            Hydrograph volume            70.088    c.m"
"                  0.030     0.030     0.015     0.041"
" 40         HYDROGRAPH Start - New Tributary"
"           2   Start - New Tributary"
"                  0.030     0.000     0.015     0.041"
" 33         CATCHMENT 110"
"           2   Rectangular"
"           1   Equal length"
"           2   Horton equation"
"         110   No description"
"      10.000   % Impervious"
"       0.448   Total Area"
"      35.848   Flow length"
"       1.000   Overland Slope"
"       0.403   Pervious Area"
"      35.848   Pervious length"
"       1.000   Pervious slope"
"       0.045   Impervious Area"
"      35.848   Impervious length"
"       1.000   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      30.000   Pervious Max.infiltration"
"      20.000   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"
"                  0.069     0.000     0.015     0.041 c.m/sec"
"            Catchment 110          Pervious   Impervious Total Area "
"            Surface Area           0.403      0.045      0.448      hectare"
"            Time of concentration  17.634     2.781      13.497     minutes"
"            Time to Centroid       87.154     87.569     87.270     minutes"
"            Rainfall depth         59.309     59.309     59.309     mm"
"            Rainfall volume        239.14     26.57      265.71     c.m"
"            Rainfall losses        42.814     2.000      38.732     mm"
"            Runoff depth           16.496     57.309     20.577     mm"
```

```
"            Runoff volume          66.51      25.67      92.18      c.m"
"            Runoff coefficient     0.278      0.966      0.347      "
"            Maximum flow           0.053      0.016      0.069      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                    0.069     0.069     0.015     0.041"
" 51         PIPE DESIGN"
"       0.069   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient   %"
"            Depth of flow                 0.116    metre"
"            Velocity                      1.348    m/sec"
"            Pipe capacity                 2.398    c.m/sec"
"            Critical depth                0.144    metre"
" 53         ROUTE Zero Route"
"        0.00   Zero Route Reach length   ( metre)"
"                    0.069     0.069     0.069     0.041 c.m/sec"
" 40         HYDROGRAPH   Combine    999"
"           6   Combine "
"         999   Node #"
"               "
"            Maximum flow                  0.069    c.m/sec"
"            Hydrograph volume            92.185    c.m"
"                    0.069     0.069     0.069     0.069"
" 40         HYDROGRAPH Start - New Tributary"
"           2   Start - New Tributary"
"                    0.069     0.000     0.069     0.069"
" 33         CATCHMENT 199"
"           2   Rectangular"
"           1   Equal length"
"           2   Horton equation"
"         199   No description"
"      10.000   % Impervious"
"       2.612   Total Area"
"      44.064   Flow length"
"       1.000   Overland Slope"
"       2.351   Pervious Area"
"      44.064   Pervious length"
"       1.000   Pervious slope"
"       0.261   Impervious Area"
"      44.064   Impervious length"
"       1.000   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      30.000   Pervious Max.infiltration"
"      20.000   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"
"                    0.365     0.000     0.069     0.069 c.m/sec"
"            Catchment 199          Pervious   Impervious Total Area "
"            Surface Area           2.351      0.261      2.612      hectare"
"            Time of concentration  19.958     3.147      15.276     minutes"
"            Time to Centroid       88.017     87.627     87.909     minutes"
"            Rainfall depth         59.309     59.309     59.309     mm"
"            Rainfall volume        1394.24    154.92     1549.16    c.m"
```

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"            Rainfall losses        42.814     2.000      38.732     mm"
"            Runoff depth           16.496     57.309     20.577     mm"
"            Runoff volume          387.78     149.69     537.47     c.m"
"            Runoff coefficient     0.278      0.966      0.347      "
"            Maximum flow           0.298      0.091      0.365      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"           4   Add Runoff "
"                    0.365     0.365     0.069     0.069"
" 51         PIPE DESIGN"
"       0.365   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient    %"
"            Depth of flow                0.264    metre"
"            Velocity                     2.205    m/sec"
"            Pipe capacity                2.398    c.m/sec"
"            Critical depth               0.339    metre"
" 53         ROUTE Zero Route"
"        0.00   Zero Route Reach length   ( metre)"
"                    0.365     0.365     0.365     0.069 c.m/sec"
" 40         HYDROGRAPH   Combine    999"
"           6   Combine "
"         999   Node #"
"               "
"            Maximum flow                 0.434    c.m/sec"
"            Hydrograph volume          629.656    c.m"
"                    0.365     0.365     0.365     0.434"
" 40         HYDROGRAPH   Confluence    999"
"           7   Confluence "
"         999   Node #"
"               "
"            Maximum flow                 0.434    c.m/sec"
"            Hydrograph volume          629.656    c.m"
"                    0.365     0.434     0.365     0.000"
" 51         PIPE DESIGN"
"       0.434   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient    %"
"            Depth of flow                0.288    metre"
"            Velocity                     2.317    m/sec"
"            Pipe capacity                2.398    c.m/sec"
"            Critical depth               0.371    metre"
" 53         ROUTE Zero Route"
"        0.00   Zero Route Reach length   ( metre)"
"                    0.365     0.434     0.434     0.000 c.m/sec"
" 40         HYDROGRAPH   Combine    9999"
"           6   Combine "
"        9999   Node #"
"               "
"            Maximum flow                 0.475    c.m/sec"
"            Hydrograph volume          699.745    c.m"
"                    0.365     0.434     0.434     0.475"
" 40         HYDROGRAPH   Confluence    9999"
"           7   Confluence "
"        9999   Node #"
"               "
"            Maximum flow                 0.475    c.m/sec"
"            Hydrograph volume          699.745    c.m"
"                    0.365     0.475     0.434     0.000"
```

```
" 52          CHANNEL DESIGN"
"         0.475   Current peak flow    c.m/sec"
"         0.040   Manning 'n'"
"            0.   Cross-section type: 0=trapezoidal; 1=general"
"         0.600   Basewidth    metre"
"         3.000   Left bank slope"
"         3.000   Right bank slope"
"         0.450   Channel depth    metre"
"         0.300   Gradient   %"
"              Depth of flow                0.447    metre"
"              Velocity                     0.548    m/sec"
"              Channel capacity             0.483    c.m/sec"
"              Critical depth               0.265    metre"
" 53          ROUTE    Channel Route 450"
"        450.00      Channel Route 450 Reach length   ( metre)"
"         0.427   X-factor <= 0.5"
"       616.195   K-lag   ( seconds)"
"         0.000   Default(0) or user spec.(1) values used"
"         0.500   X-factor <= 0.5"
"        30.000   K-lag   ( seconds)"
"         0.500   Beta weighting factor"
"       600.000   Routing time step   ( seconds)"
"             1   No. of sub-reaches"
"              Peak outflow                 0.438    c.m/sec"
"                     0.365     0.475     0.438     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"             5   Next link "
"                     0.365     0.438     0.438     0.000"
" 56          DIVERSION"
"          9999   Node number"
"         0.380   Overflow threshold"
"         1.000   Required diverted fraction"
"             0   Conduit type; 1=Pipe;2=Channel"
"              Peak of diverted flow        0.058    c.m/sec"
"              Volume of diverted flow     44.292    c.m"
"              DIV09999.005hyd"
"              Divert to Infiltrration Gallery 44.292 cu.m. (45)"
"                     0.365     0.438     0.380     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"             5   Next link "
"                     0.365     0.380     0.380     0.000"
" 38          START/RE-START TOTALS 999"
"             3   Runoff Totals on EXIT"
"              Total Catchment area                    3.652    hectare"
"              Total Impervious area                   0.365    hectare"
"              Total % impervious                     10.000"
" 19          EXIT"
```

MAP A

CONTEXT MAP

Geographic Township of WINDHAM

28TPL2023088

Legend

- Subject Lands
- Lands Owned
- 2020 Air Photo

3/16/2023

N

40 20 0 40 80 120 160 Meters

MAP B

28TPL2023088

OFFICIAL PLAN MAP

Geographic Township of WINDHAM

Legend

- Subject Lands
- Lands Owned

Official Plan Designations

- Agricultural
- Hazard Lands
- Provincially Significant Wetland
- Hamlet
- Parks & Open Space
- Hamlet Area Boundary
- Significant Woodland

3/16/2023

N

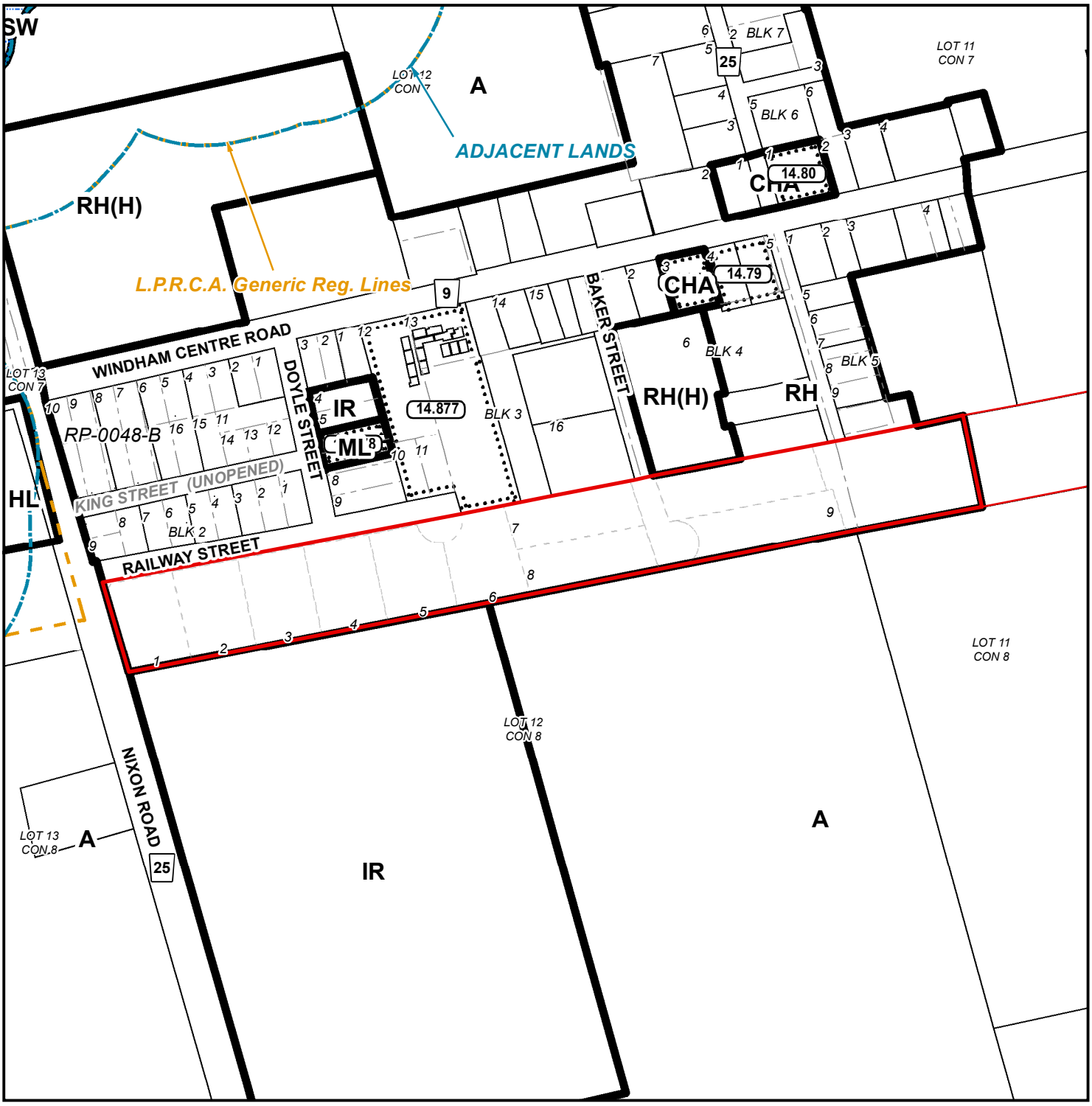
40 20 0 40 80 120 160 Meters

MAP C

ZONING BY-LAW MAP

Geographic Township of WINDHAM

28TPL2023088



LEGEND

- Subject Lands
- Lands Owned
- Adjacent Lands
- Wetland
- LPRCA Generic RegLines

ZONING BY-LAW 1-Z-2014

- (H) - Holding
- A - Agricultural Zone
- CHA - Hamlet Commercial Zone
- RH - Hamlet Residential Zone
- HL - Hazard Land Zone
- ML - Light Industrial Zone
- PSW - Provincially Significant Wetland Zone
- IR - Rural Institutional Zone

3/16/2023

N

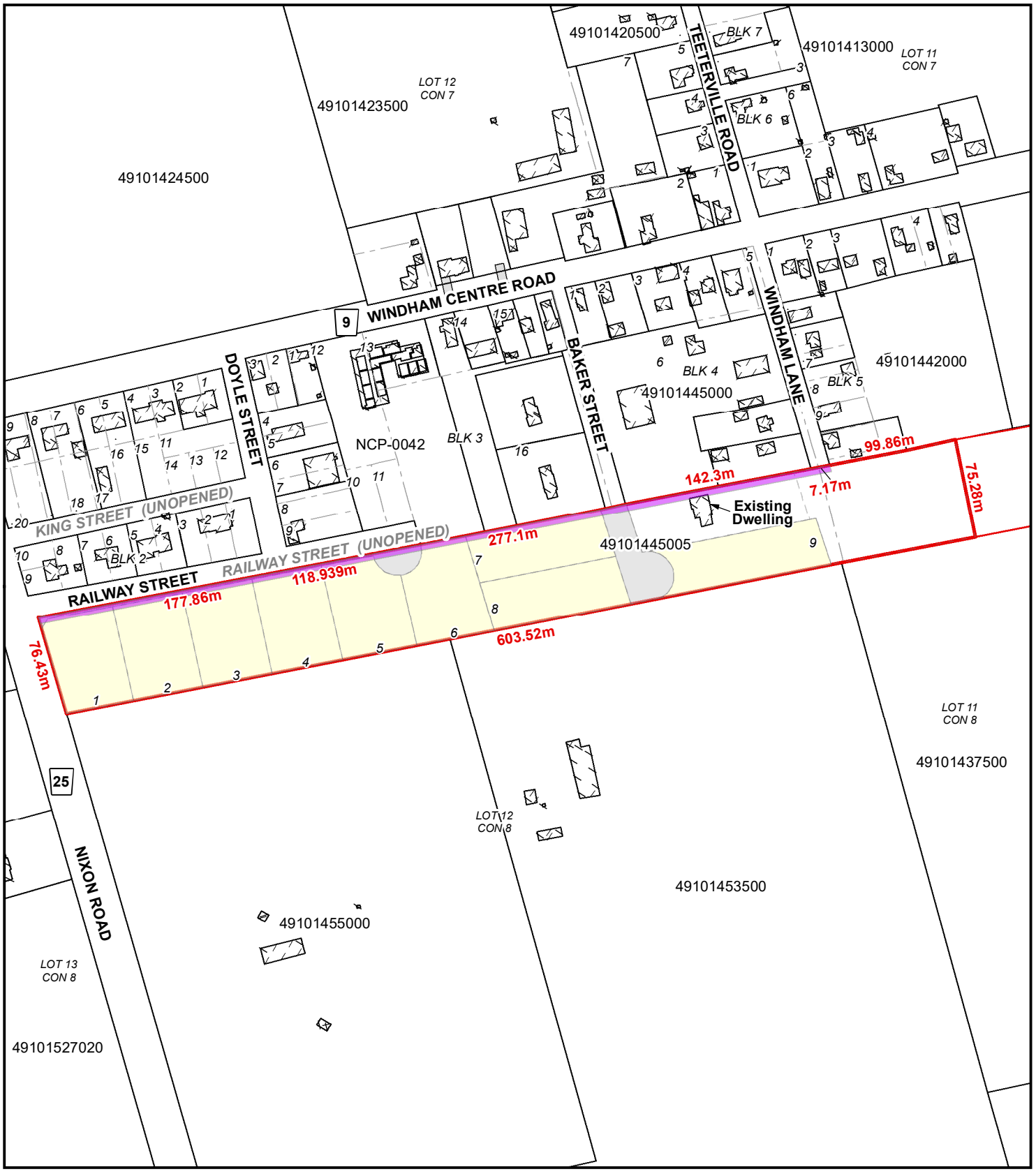
30 15 0 30 60 90 120 Meters

MAP D

28TPL2023088

CONCEPTUAL PLAN

Geographic Township of WINDHAM



Legend

- Subject Lands
- Lands Owned
- Single Detached Dwelling
- Road Dedication
- Existing Hydro Easement

3/16/2023

N

30 15 0 30 60 90 120 Meters