

September 25, 2024

Norfolk County Clerks and By-Law 50 Colborne Street South Simcoe, Ontario N3Y 4H3

Attention: Fabian Serra

Planner

Planning and Development Division

Dear Fabian,

Reference: Site Plan SPPL2024243 – 139 Queensway West

Simcoe, Norfolk County

Our File 18-057

Further to our application 'submission review' meeting and subsequent letter from the County dated August 19, 2024, Vallee is pleased to provide an updated submission package which includes the final items requested by the County. We trust that with these items provided, along with the items originally submitted, this application can be deemed complete.

- 1. A vehicular moving diagram be shown on the site plan. This is shown on plan C105 'Overall Site Plan'.
- 2. A site plan showing the full extent of the property boundary with a zoomed in plan for the works proposed.
 - Plan C105 'Overall Site Plan' has been added to the drawing set. C100 shows the limits of proposed works.
- 3. LPRCA requirement of showing the floodplain elevation be shown on the grading plan and site plan. Floodplain elevation provided by LPRCA has been added to the plan. Development limits have been revised to respect the floodplain limits.

Furthermore, it was agreed that the following two items were noted as not required to deem the application complete but are required as a condition of Site Plan approval.

- 4. An easement/access agreement is required for proposed access to property.
- 5. Photometric study

Site Plan SPPL2024243 – 139 Queensway West Simcoe, Norfolk County Our File 18-057 September 25, 2024

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With the above items now in order, please accept this package as our formal site plan application for the following above-noted planning application. In response to Norfolk County's minutes issued on March 27, 2023 (updated September 19, 2023) relating to the pre-consultation meeting of February 15, 2023, we include the following documents as our complete application package:

- 1. Completed and executed Norfolk County Planning Department Development Application Form.
- 2. Norfolk County Pre-consultation minutes issued on March 27, 2023 (updated September 19, 2023) relating to the pre-consultation meeting of February 15, 2023.
- 3. Long Point Region Conservation Authority Pre-Consultation Comments dated February 15, 2023.
- 4. Traffic Impact Study prepared by RC Spencer Associates Inc.
- 5. Noise Feasibility Study prepared by Howe Gastmeier Chapnik Limited.
- 6. Environmental Impact Statement prepared by Terrastory Environmental Consulting Inc.
- 7. Topographic Site Plan prepared by Jewitt & Dixon Ltd.
- 8. Functional Servicing Report prepared by G. Douglas Vallee Limited, including request for confirmation on water/wastewater capacity.
- 9. SWM Report prepared by G. Douglas Vallee Limited.
- 10. Complete civil design set prepared by G. Douglas Vallee Limited, including:
 - a. C100 Site Plan
 - b. C101 Servicing Plan
 - c. C102 Grading Plan (including base topographical data)
 - d. C103 Erosion and Sediment Control Plan
 - e. C104 Removals Plan
 - f. C105 Overall Site Plan
 - g. GN General Notes
 - h. STM Storm Drainage Areas
- 11. Securities Estimate REV1

Yours Truly,

John lezzi/ P. Eng G. DOUGLAS VALLEE LIMITED

Consulting Engineers, Architect and Planners

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G. DOUGLAS VALLEE LIMITED Consulting Engineers, Architects & Planners







Planning Department Development Application Form

Complete Application

A complete development application consists of the following:

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

Pre-Submission Consultation:

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

Development Application Process

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

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



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

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

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

Notification Sign Requirements

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

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

Contact Us

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



For Office Use Only: File Number Related File Number Pre-consultation Meeting Application Submitted Complete Application	Public Notice Sign Application Fee Conservation Authority Fee Well & Septic Info Provided Planner	
Check the type of planning application(s	s) you are submitting.	
□ Official Plan Amendment		
□ Zoning By-Law Amendment		
☐ Temporary Use By-law		
☐ Draft Plan of Subdivision/Vacant La	nd Condominium	
□ Condominium Exemption		
☐ Site Plan Application		
☐ Extension of a Temporary Use By-la	ıw	
□ Part Lot Control		
☐ Cash-in-Lieu of Parking		
Renewable Energy Project or Radio Tower	Communication	
Please summarize the desired result of this application (for example, a special zoning provision on the subject lands to include additional use(s), changing the zone or official plan designation of the subject lands, creating a certain number of lots, or similar)		
	oposed development at 139 Queensway West in Simcoe,	
	situent drawings/reports, the proposed development serves	
	ant. The proposed development complies with the Norfolk	
County Official Plan and Zoning By-Law.		
Property Assessment Roll Number: 40100118300		



A. Applicant Information

Name of Owner	Nick Zographos and Nick Kokkoros
	121 Ouganoway West
Address	131 Queensway West
Town and Postal Code	Simcoe, ON, N3Y 2M8
Phone Number	(519) 426-0068
Cell Number	-
Email	info@barrelrestaurant.ca
Name of Applicant	Same as owner.
Address	
Town and Postal Code	•
Phone Number	
Cell Number	
Email	
Name of Agent	John lezzi
Address	2 Talbot St N
Town and Postal Code	Simcoe, N3Y 3W4
Phone Number	(519) 426-6270 x113
Cell Number	-
Email	johniezzi@gdvallee.ca
	l, Norfolk County will forward all correspondence and notices to both owner and agent noted above.
Owner	■ Agent □ Applicant
Names and addresses of encumbrances on the sub	any holder of any mortgagees, charges or other pject lands:



Location, Legal Description and Property Information 1. Legal Description (include Geographic Township, Concession Number, Lot Number, Block Number and Urban Area or Hamlet): PLAN 182 BLKS 24,25 PT LOT 1, Simcoe, Norfolk County Municipal Civic Address: 139 Queensway West Present Official Plan Designation(s): Commercial OP, Special Policy 6.5.1.5 Present Zoning: Service Commercial Zone (CS) 2. Is there a special provision or site specific zone on the subject lands? ■ Yes □ No If yes, please specify corresponding number: Site Specific Zone 8-Z-2017. Requesting clarification from Norfolk County. 3. Present use of the subject lands: The present use of the subject lands is the Queensway Motel, a small motel with 18 rooms. 4. Please describe all existing buildings or structures on the subject lands and whether they will be retained, demolished or removed. If retaining the buildings or structures, please describe the type of buildings or structures, and illustrate the setback, in metric units, from the front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application: The Queensway Motel building will be demolished along with the "barn-like" structure located at the rear (North) of the property. 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. N/A 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: The proposed development includes a new 371 sqm drive-through style restaurant and 48 parking

spaces (2 accessible). This total is in a surplus of the 37 required parking spaces.



7.	Are any existing buildings on the subject lands designated under the <i>Ontario</i> Heritage Act as being architecturally and/or historically significant? Yes □ No ■		
	If yes, identify and provide details of the building: N/A		
8.	If known, the length of time the existing uses have continued on the subject lands: Unsure.		
9.	Existing use of abutting properties: North: PSW, South: Hwy 3, East: Commercial, West: Residential		
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: N/A		
c.	Purpose of Development Application		
No	te: Please complete all that apply.		
1.	Please explain what you propose to do on the subject lands/premises which makes this development application necessary: The proposal desires to demolish the existing building/structure and contruct a new building, drive through, parking spaces, and through-fares, thus requiring a site plan application.		
2.	Please explain why it is not possible to comply with the provision(s) of the Zoning By-law/and or Official Plan: The proposed development does comply with the ZBA/OP.		
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: N/A		
4.	Does the requested amendment remove the subject land from an area of employment? ☐ Yes ■ No If yes, describe its effect: N/A		



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): N/A
3.	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 o
	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:
	Description of proposed right-of-way/easement: Frontage:
	Depth:
	Width:
	Area:
	Proposed use:
3/	Name of person(s), if known, to whom lands or interest in lands to be transferred, leased or charged (if known):



9. Site information	∠oning	Proposed
Please indicate unit of measuren	nent, for example: m, n	n² or %
Lot frontage	min 15m	See site plan
Lot depth	n/a	
Lot width	n/a	
Lot area	min 450 sqm	
Lot coverage	min 35%	
Front yard	min 3m	
Rear yard	min 9m	
Left Interior side yard	min 3m	
Right Interior side yard	min 3m	
Exterior side yard (corner lot)	n/a	
Landscaped open space	n/a	
Entrance access width	n/a	
Exit access width	<u>n/a </u>	
Size of fencing or screening	<u>n/a </u>	
Type of fencing	<u>n/a </u>	
10. Building Size		
Number of storeys		See site plan
Building height		
Total ground floor area		
Total gross floor area		
Total useable floor area		
11.Off Street Parking and Loadin	g Facilities	
Number of off street parking spac	es	See site plan
Number of visitor parking spaces		
Number of accessible parking spa	aces	
Number of off street loading facili	ties	



12. Residential (if applicable)		
Number of buildings existing:	, 	
Number of buildings propose	d:	
Is this a conversion or addition	on to an existing building	? □ Yes ■ No
If yes, describe:		
Туре	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 e or swimming pool):	example: play facilities, ι	underground parking, games room,
13. Commercial/Industrial Use	es (if applicable)	
Number of buildings existing:	1	
Number of buildings propose	d: 1	
Is this a conversion or addition	on to an existing building	i? □ Yes ■ No
If yes, describe: N/A		
Indicate the gross floor area I		xample: office, retail, or storage):



Seating Capacity (for assembly halls or similar	_{ar):} TBD
Total number of fixed seats:	TBD
Describe the type of business(es) proposed:	Drive through restaurant
Total number of staff proposed initially:	TBD
Total number of staff proposed in five years:	TBD
Maximum number of staff on the largest shift:	TBD
Is open storage required: ☐ Yes ■ No	
Is a residential use proposed as part of, or ac	cessory 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 us	e (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): The subject lands have always been of commercial use for the Simcoe Motel.
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: Motel use is not one that creates contamination.
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? \square Yes \blacksquare No
E.	Provincial Policy
1.	Is the requested amendment consistent with the provincial policy statements issued under subsection 3(1) of the <i>Planning Act, R.S.O. 1990, c. P. 13</i> ? ■ Yes □ No
	If no, please explain:
	N/A
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:
	A sub-consultant has been retained to complete an EIS and has provided technical
	recommendations to ensure that development will comply with the PPS in regard to
	the protection of endangered/threatened species & habitats.



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: Not identified on Norfolk GIS.		
	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		



Servicing and Access		
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)		
Existing or proposed access to subject lands:		
☐ Municipal road		Provincial highway
☐ Unopened road		Other (describe below)
Name of road/street: The Queensway/Highway 3		
Other Information		
TDB.		
•		
application? If so, explain below or attach on a se Details such as seating capacity and type of restau	par rant	ate page. are to be determined.
	Water Supply ■ Municipal piped water □ Individual wells Sewage Treatment ■ Municipal sewers □ Septic tank and tile bed in good working order Storm Drainage ■ Storm sewers □ Other (describe below) Existing or proposed access to subject lands: □ Municipal road □ Unopened road Name of road/street: The Queensway/Highway 3 Other Information Does the application involve a local business? ■ If yes, how many people are employed on the sub TDB. Is there any other information that you think may be application? If so, explain below or attach on a second to the sub application? If so, explain below or attach on a second to the sub application? If so, explain below or attach on a second to the sub application? If so, explain below or attach on a second to the sub application? If so, explain below or attach on a second to the sub application? If so, explain below or attach on a second to the sub application?	Indicate what services are available or proposed: Water Supply Municipal piped water Individual wells Sewage Treatment Municipal sewers Septic tank and tile bed in good working order Storm Drainage Storm sewers Other (describe below) Existing or proposed access to subject lands: Municipal road Unopened road Unopened road Name of road/street: The Queensway/Highway 3 Other Information Does the application involve a local business? ■ Yealf yes, how many people are employed on the subject



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

addition, the following additional plans, studies and reports, including but not limited 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
	 Plan applications will require the following supporting materials: Two (2) complete sets of the site plan drawings folded to 8½ x 11 and an electronic version in PDF format Letter requesting that the Holding be removed (if applicable) A cost estimate prepared by the applicant's engineer An estimate for Parkland dedication by a certified land appraiser Property Identification Number (PIN) printout
Sta	ndard condominium exemptions will require the following supporting materials:
	Plan of standard condominium (2 paper copies and 1 electronic copy)
	Draft condominium declaration
	Property Identification Number (PIN) printout

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

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

I. Development Agreements

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



J. Transfers, Easements and Postponement of Interest

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

K. Permission to Enter Subject Lands

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

L. Freedom of Information

For the purposes of the Municipal Freedom of Information and Protection of Privacy				
Act, I authorize and consent to the use by or the disclosure to any person or public				
body any information that is collected under the authority of the <i>Planning Act, R.S.O.</i>				
1990, c. P. 13 for the purposes of processing	this application.			
	June 18/2024.			
Owner/Applicant Signature	Date			
M. Owner's Authorization				
If the applicant/agent is not the registered own	ner of the lands that is the subject of this			
application, the owner(s) must complete the a	uthorization set out below.			
IMe NICK Zographos.	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 pe	ersonal information necessary for the			
processing of this application. Moreover, this	shall be your good and sufficient			
authorization for so doing.				
Mut	June 18 (2024			
Øwner	Date			
A A A A A A A A A A A A A A A A A A A	June 18/2024			
Owner	ι Date			



N. Declaration
1, Mich Zographus. of Boantford.
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 <i>The Canada Evidence Act</i> .
Declared before me at:
Town of Sincoe
Owner/Applicant Signature
In County of Norfolk
This 18 day of June
A.D., 20 <u>24</u>
to the second se
A Commissioner, etc.
SCOTT CONNELL PUILLANDRE, a Commissioner, etc., Province of Ontario,

a Commissioner, etc., Province of Ontario, for G. Douglas Vallee Limited. Expires August 19, 2025.





Pre-Submission Consultation Meeting Notes

Date: February 15, 2023; Updated on September 19, 2023

Description of Proposal: Proposed redevelopment to allow for a new 370m2 fast food

restaurant with connected parking access.

Property Location: 139 Queensway W., Simcoe

Roll Number: 33104010011830000000

Please read all the information contained in this document, as it pertains to the requirements for future development planning applications. As a result of the information shared at the pre-consultation meeting dated February 15, 2023, the following applications and qualified professional documents / reports are required as part of a complete application. Failure to include all listed items with the application will deem the application incomplete. The County reserves the right to change, reduce or add requirements for a complete application, particularly if the submission does not match the proposal as reviewed during the pre-submission consultation meeting.

Please note that various fees are associated with each application and there are also costs for qualified professionals retained to complete various documents / reports. All requirements identified are minimum and determined as of the date of the preconsultation meeting with the information available at that time. As the proposal proceeds and more information is made available, additional applications, studies, reports, etc. may be required.

The information contained in this document is applicable for a maximum of one (1) year from the date of meeting. If an application is not received within that time frame or any component of the proposal changes, a new pre-submission consultation meeting is required.

All applications are required to include information outlined in the Presubmission consultation meeting notes; failure to include all items with the application submission without prior approval will necessitate a notice of incomplete application response by the County.

Before you submit your application, please contact the assigned Planner to confirm submission requirements and the applicable fee.

As part of a complete application, a signed version of these meeting notes is required.

Proponent / Agent Name	Signature	Date
Nick Zographos		

Attendance List

Proponent	Nick Zographos (Applicant), John Vallee (Agent)
Community Development –	Tricia Givens, Director, Planning (Chair)
Planning and Agreement	Mohammad Alam, Senior Planner
	Lindsay King, Planning Coordinator
	Annette Helmig, Agreement and Development
	Coordinator
Community Development –	Jonathon Weir, Building Inspector
Building and Zoning	Kacie Vandenbulk, Zoning Administrator
Environment & Infrastructure	Stephen Gradish, Development Technologist
Services –	
Development Engineering	
Community Services –	Katie Ballantyne, Community Safety Officer
Fire	(reviewed file and provided comments, but not
	present for meeting)
Community Development –	Chris Garwood, Economic Development Supervisor
Economic Development	
Corporate Support Services –	Karen Lambrecht, Corporate Support Generalist
Realty Services	
Haldimand Norfolk Health Unit	Stephanie Rice
Long Point Regional	Isabel Johnson, Resource Planner
Conservation Authority	

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List of Application Requirements* and General Comments

Planning Department

Planning application(s) required to proceed		Required
Official Plan Amendment Application Choose an ite	-	
Zoning By-law Amendment Application Choose an		
Site Plan Application (Regular)		X
Draft Plan of Subdivision Application		
Draft Plan of Condominium Application		
Part Lot Control Application		
Consent / Severance Application		
Minor Variance Application		
Removal of Holding Application		
Temporary Use By-Law Application		
Other - Click here to enter text.		
Planning requirements for a complete application The items below are to be submitted as part of the identified Planning Application(s). ** electronic/PDF copies of all plans, studies and reports are required**	Required at OPA/ Zoning Stage	Required at Site Plan Stage
Proposed Site Plan / Drawing		Х
Planning Impact Analysis Report / Justification Report		
Environmental Impact Study Choose an item.(Scoped)		Х
Neighbourhood Plan (TOR (Terms of Reference) must be approved by the County)		
Agricultural Impact Assessment Report		
Archaeological Assessment		*X
Heritage Impact Assessment		
Noise Impact Study		**X
Dust, Noise and/or Vibration Study		
MOE D-Series Guidelines Analysis		
Landscaping Plan		
Elevation Plan		
Photometrics (Lighting) Plan		X

Odour mitigation plan (in relation to Cannabis Production and Processing Facilities)	
Shadow Analysis Report	
Record of Site Condition	
Contaminated Site Study	
Minimum Distance Separation Schedule	
Parking Assessment	
Hydrogeological Study	
Restricted Land Use Screening Form	
Topographical Survey Drawing	X
Additional Planning requiremen	nts Required
Development Agreement	X
Parkland Dedication/Cash-in-lieu of Parkland	X

^{*}The list of Planning Department requirements is based on the information submitted and as presented for this specific pre-consultation meeting. Norfolk County reserves the right to adjust requirements including identifying additional requirements or reducing requirements. Any changes to a proposal may necessitate changes to Planning Department submission requirements. Furthermore, reports and studies are subject to peer review. An Archaeological Study may not be required if the addition of parking space is not encroaching on the significant wooded area.

Community Development fees, applications, and helpful resources can be found can be found by visiting https://www.norfolkcounty.ca/government/planning/

Planning Comments

All comments are general and nature and subject to change pending modifications to the proposal and full analysis at the application submission stage.

The subject lands are designated as Commercial in the Official Plan with a strip of lands to the south as Hazard Lands. The proposed restaurant use is permitted in the commercial designated area. The subject lands are also within the Site Specific Policy Area 6.5.1.5.

Site Specific Policy Area 6.5.1.5 - 'Queensway Corridor Special Policy Area' states that "the planned function of the Queensway Corridor is to be an area of auto-oriented commercial activities, providing for highway commercial uses for the residents of Simcoe and the surrounding area."

^{**} A Noise Impact Study will be required if the drive through is proposed adjacent to the existing residential dwellings.

It also further elaborates that the changes to permitted use in this plan would be made to accommodate those types of space-extensive or destination outlets for which there is not a realistic location in the Downtown Area. Staff recommends that these policies are well established in the Planning Justification report.

Section 7.11.2 - land use policies of Commercial designated lands also state that a high standard of site design shall be required through site plan control.

Section 5.7.4 related to Archaeological Resources states that Archaeological potential areas shall be determined through the use of Provincial screening criteria, or criteria developed based on the known archaeological record within the County. There is no archaeological evidence identified in the surrounding areas. If the development is not encroaching to undisturbed lands at the south, an archaeological study would not be required.

Section 3.5.1 related Provincially significant Features, states that development and site alteration shall not be permitted on lands adjacent to the natural heritage features and areas, unless the ecological function of the adjacent land has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions that cannot be adequately mitigated. Provincially Significant Wetlands is within 120 m of the subject lands. It is proposed that due to the existing grading of the site, the rear portion of the site may be required to drain overland to the PSW to the North. It is Staff's opinion that based on the OP policies a minimum of a scoped Environmental Impact Study would be required.

Endangered and threatened species and their habitat are protected under the provinces Endangered Species Act, 2007 (ESA), O. Reg. 242/08 & O. Reg. 830/21. The Act prohibits development or site alteration within areas of significant habitat for endangered or threatened species without demonstrating that no negative impacts will occur. The Ministry of Environment, Conservation and Parks provides the service of responding to species at risk information requests and project screenings. The proponent is responsible for discussing the proposed activity and having their project screened with MECP (Ministry of Environment, Conservation and Parks).

Zoning By-law:

The subject lands are zoned as Service Commercial. Takeout restaurant is permitted in the zoning by-law. No Zoning Amendment will be required if all other zoning provisions are satisfied.

Please be advised that it is the owner's responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws, or other agency approvals.

Parking Spaces: The require number of parking needs to be as per 1-Z-2014 for the proposed use.

Site Plan Control:

The subject property is located within a site plan control area. As per Site Plan Control By-Law 2014-97, the proposed development will require a site plan approval.

Site Statistics: A basic site statistics including zoning information should be included with the site plan.

_	equirements:
	Il measurements must be in metric
	Il drawings must be to a standard scale to suit project requirements:
	urveyed property limits (including bearings and dimensions)
	ocation and extent of road widening, daylight triangles, easements and road
	erves (if any)
	ocation of existing tree cover (if any)
	xisting topography of the land ndicate existing land uses along property lines
□ II	idicate existing land uses along property lines
Title Block	Information
□K	ey plan (showing location of subject lands and surroundings)
\square N	orth arrow
	consultant's name and contact information (address, telephone, email)
	rofessional stamp, signed and dated
	ate of plan preparation, Revision column (numbered and dated)
	roject name
Site Featu	
	abel materials on the plan and/or provide legend (i.e. paving, curbing,
	ewalks, depressed curbs, retaining walls, acoustic structures, fencing, signage
	ns, landscape areas, snow storage areas, etc.)
	ocation and details of existing and proposed fencing, including acoustic
	cing requirements
	ocation of garbage collection areas
⊔ ∟ Utilities:	ocation of on-site snow storage areas
	acation of fire bydrants and transformers (if any)
	ocation of fire hydrants and transformers (if any) ocation of hydro & gas meters (if any)
	ocation of flydro & gas meters (if arry) ocation of all proposed signs
Streetscap	· · ·
•	ocation of sidewalks
	xisting and proposed trees, SOD areas
Vehicular I	
	ocation of proposed curbing. Provide Ontario Provincial Standard Drawing
	SD) curb detail
,	ocation and dimension of designated fire routes (indicate centre-line, road
	th and centre- line turning radii)
	ocation of garbage collection area

	cation of driveways and parking space with dimensions and materials
□ "No	parking/fire route" and "accessible parking signs"
Accessibility	
□ Loc	cation of accessible spaces complete with signage for each space
□ Loc	cation of depressed curbs for each accessible space/ group of accessible
space	es as appropriate and required
☐ Acc	cessible routes to accommodate barrier-free paths of travel to main access
of the	building including tactile warning surface.

Additional Documents and Information:

- Please provide a vehicular maneuvering diagram for garbage collection truck, and drive through vehicles;
- Identify the area/boundary of this site plan application;
- Please include an appraisal of the developable area to calculate the cash-in-lieu of parkland dedication;
- Please include a filled in security schedule (attached with this pre-consultation meeting) with the site plan application. Please note Norfolk County requires 100% security for landscaping (including fencing) and any exterior works.
- The site plan application must contain only one property. The proposal for parking space to adjacent property will technically make the site deficient to parking space.
- The proposed drive-through is adjacent to a residential property. Staff have concerns about the compatibility of the land uses. An alternate traffic flow is recommended. If the proposal remains same, a noise study with mitigation measures will be required.

Assigned Planner:

Mohammad Alam Principal Planner Extension 1828 Mohammad.Alam@norfolkcounty.ca

Development Engineering

Development Engineering – 139 Queensway West, Simcoe

Development Engineering requirements to proceed The below requirements are to be submitted as part of the Formal Development Planning application.	Required at OPA/ Zoning Stage	Required at Site Plan Stage	Potentially Required (See Notes Section)	
General Requirements				
Concept Plan		Х		

Lot Grading Plan	X ¹⁰	
9	X ¹⁰	
Siltation and Erosion Control Plan	X ¹⁰	
General Plan of Services		
Utility Plan	X	
Geotechnical Report		X
Functional Servicing Report	X ₉	
Water Servicing Requirements – Section 10.0 Nand ISMP Section 4.0	Norfolk County D	esign Criteria
Disconnection of Water Service(s) to Property Line	X ¹¹	
Disconnection of Water Service(s) to Main		X ¹²
Water Modelling (County Consultant)	X ₉	
Backflow Preventer (RPZ)	X ¹³	
Sanitary Servicing Requirements – Section 9.0 and ISMP Section 4.0 Disconnection of Sanitary Service(s) to Property Line	X ¹⁴	
Disconnection of Sanitary Service(s) to Main	X ¹⁴	
Sanitary Modelling (County Consultant)	X ₉	
Property Line Inspection Maintenance Hole	X ¹⁵	
Storm Water Servicing Requirements – Sectio County Design Criteria and ISMP Section 4.0	n 7.0 and Section	n 8 Norfolk
Storm Water Management Design Report (including calculations)	X ¹⁶	
Storm Water Drainage Plan	X ¹⁷	
Storm Sewer Design Sheet		X
Establish/Confirm Legal and Adequate Outlet	X ¹⁸	
Anticipated Flow/Analysis to Receiving Collection System	X ¹⁹	
Transportation Requirements – Section 6.0 No ISMP Section 5.0, Section 6.0 and Appendix J	orfolk County De	sign Criteria,
Traffic Impact Study	X ²⁰	
· · · · · · · · · · · · · · · · · · ·	<u> </u>	

Improvements to Existing Roads &	X ^{21, 22}	
Sidewalk (urbanization, pavement		
structure, widening sidewalk replacement,		
upgrades, extension and accessibility)		

General Notes:

- 1. Securities will be required in the form of a schedule. Any works completed within the Municipal Right-of-Way (R.O.W.) is to be shown as 100% security. Any works completed within private property is to be shown as 10% security. This can be submitted at time of Site Plan.
- 2. All reports and plans are to be signed and stamped by a Professional Engineer (P.Eng.).
- 3. All reports are to be completed in reference to Norfolk County's Design Criteria and Integrated Sustainable Master Plan (ISMP).
- 4. Recommendations from all reports / modelling must be incorporated into the design and is to adhere to Norfolk County's Design Criteria. A copy of this criteria has been provided as part of this information package.
- 5. Recommendations from all reports (FSR, SWM, TIB, Modelling, etc.) must be incorporated into the design and be constructed at the developer's expense.
- 6. All applicable permits and inspections to be issued by Public Works.

Required at Zoning Amendment Stage Notes:

In Development Engineering review of this submission, we considered the applicants assessment of the current zoning being adequate and have provided no comments specific to any potential Zone change. If a Zone change is ever required Development Engineering would have additional comments.

Required at Site Plan Stage Notes:

- 7. All Site Plan submissions are to comply with Section 16 of the Norfolk County Design Criteria in addition to the comments below.
- 8. The following reports/studies will be required at time of Site Plan Submission:
 - a. Concept Plan;
 - b. Functional Servicing Report (as per Norfolk County Design Criteria);
 - c. Water / Sanitary Modelling;
 - d. Storm Water Management Report;
 - e. Traffic Impact Study (as per ISMP Appendix J TIS Guidelines);
- 9. Sanitary and Water modelling MAY be required. As discussed at the Pre Consultation meeting once calculations are completed for water and wastewater, Development Engineering will review to confirm whether the proposed flows are within the current range allocated to this site in the County Models. If the flows are within the current model, then NO further modelling will

be required. However, if the proposal exceeds the existing allocation in the model then Modelling will be required.

If modeling is required, this is to be completed by Norfolk County's third-party consultant. The cost to complete the modelling and any recommendations from reports are to be implemented into the design at the applicant's expense. The following information will be required to receive a quote and complete the modelling.

- a. General Plan of Services
- a. Functional Servicing Report;
 - i. Total Wastewater Design Flows;
 - ii. Total Domestic Water and Fire Flows as per Norfolk County Design Criteria Section 10.1.1

The Functional Servicing Report must include water /sanitary servicing and fire flow calculations.

Once the quote has been received, approval from the applicant will be required before proceeding.

- 10. Lot Grading Plan, Siltation and Erosion Control Plan, and General Plan of Services drawing can be shown on one engineering plan as long as it's legible for review.
- 11. Disconnection of existing commercial water service on private property will be required prior demolition of existing structures. This will require permits from Environmental Services. At the time of disconnection of Water service, the size and material will be confirmed. According to Norfolk County records the current meter size is 1.5" (40mm).
- 12. Disconnection of existing commercial water service within ROW will be required prior to installation of new water service if upsizing is required.
- 13. A Reduce Pressure Flow Assembly (RPZ) will be required after the meter. Approval from the Manager of Environmental Services must be obtained as per Norfolk County Design criteria.
- 14. Confirmation of size and condition of existing Sanitary laterals will be required. As discussed at the pre consultation meeting this can be noted on the site plan drawing and then completed when Disconnection of services is completed prior to Demolition. Removal of the existing Sanitary laterals will be required if it is inadequate due to size and/or conditions.
- 15. A Sanitary Inspection manhole will be required on Property line.
- 16. Stormwater Management Report is to be completed as per Norfolk County Design Criteria.
- 17. A Storm Drainage area plan will be required as per Norfolk County Design Criteria and must identify any external overland flows tributary to this site.
- 18. Confirm Legal and Adequate outlet.
 - a. Due to the age of the Storm infrastructure along Queensway West, Norfolk County does not have original Storm sewer design sheets. As a result, confirmation that the proposed discharge will be appropriate for the existing infrastructure will be required. Alternatively, the predevelopment flow could be determined at a 5yr storm with a C=0.25

for the site, as per NCDC for undeveloped land. Development Engineering would accept the existing sewer had this condition included as a minimum.

- 19. The developer will be responsible to confirm anticipated flow to the existing storm system and ensure adequate capacity exists to accept the proposed development.
- 20. As per Norfolk County's Integrated Sustainable Master Plan (ISMP) Appendix J Traffic Impact Study (TIS) Guidelines, a full Traffic Impact Study will be required.

At the pre-consultation meeting there was discussion about performing a "Scoped Traffic Impact Study". While a full Traffic Impact Study may not be required, Norfolk County certainly has some significant concerns at this location. Completing 5 and 10 year build out horizons will not be required but it will be very important that we get all the information regarding Sightlines, Safe turning movements (ingress and egress) AND an Assessment of how the site entrances deal with the intersection directly opposite this proposal (Queensway and North Main Street). It is assumed that this proposal will significantly increase Traffic Volumes to and from this site so the additional traffic must be assessed and confirmation that egress and ingress from the proposal will not impact the turning lanes of the Queensway and Queen St intersection.

As there was no submission of Traffic information for this pre con. Once additional information is provided Norfolk County may reduce the TIS requirement to a brief. At this time Development Engineering request, the following sections will need to be reviewed and completed.

- b. Section A1.2 Data Requirements;
- c. Section A1.3 Existing Conditions;
- d. Section A1.4 Study Area
- e. Section A1.5 Development Land Use & Type
- f. Analysis
 - i. Sightlines
 - ii. Turning movements
- g. Conclusions and Recommendations
- 21. All existing driveway cuts that are not required in the future are to be replaced with full barrier curb and matching new Sidewalks.
- 22. It is noted that the existing Driveway on East side has broken curb that should be replaced.

Development Engineering comments are not complete, however future developments will be subject to Development Engineering requirements. As soon as these comments become available, you will be provided with an updated version of this document. For status updates, please contact Development Engineering directly at developmentengineering@norfolkcounty.ca.

Stephen Gradish

Development Technologist Extension 1702 Stephen.Gradish@norfolkcounty.ca

Agreements

A recommended condition of your planning application approval will be to enter into a development agreement with the County that will be registered on title to the subject lands, at the Owner's expense. The additional requirements for a development agreement could include, but are not limited to the following:

- Engineering drawing review
- Engineer's schedule of costs for the works
- Clearance letter and supporting documentation to support condition clearance
- User fees and performance securities
- Current property identification number (PIN printout) (can be obtained by visiting https://help.onland.ca/en/home/)
- Owner's commercial general liability insurance to be obtained and kept in force during the terms of the agreement
- Postponement of interest. If there are mortgages / charges on your property identifier, your legal representative will be required to obtain a postponement from your bank or financial institution to the terms outlined in your development agreement
- Transfers and / or transfer easements along with registered reference plan

Annette Helmig
Agreement and Development Coordinator
Extension 8053
Annette.Helmig@norfolkcounty.ca

Conservation Authority

Long Point Regional Conservation Authority

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

Click here to enter text.

*LPRCA fees, applications, and helpful resources can be found can be found by visiting https://lprca.on.ca/planning-permits/planning-fees/

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

Isabel Johnson, Resource Planner

Building

Zoning Administrator:

Proposal meets all zoning requirements. Sufficient parking is being provided on site.

We will require a Zoning Table to be provided on the final site plan stating the required zoning provisions of the zone, what you are proposing and highlighting any deficiencies.

The table should include the total usable floor area, the lot area and coverage, height of the buildings and all setbacks from the buildings to all property lines. The zoning table should include a parking table showing the required spaces and what is being provided. The parking spaces should be labelled and dimensioned on the site plan. Please refer to section 4 of the Zoning Bylaw for parking requirements including parking aisle width requirements. Any proposed balconies or decks should be shown on the site plan with dimensions including the setbacks to the property lines.

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

Kacie VandenBulck Zoning Administrator Extension 8097 Kacie.vandenbulck@norfolkcounty.ca

Building Inspector:

The proposed construction would be considered an A2 assembly type occupancy as defined by the Ontario Building Code (OBC) if the seating exceeds 30 occupants. You would need to retain the services of an Architect and a Professional Engineer to complete the design documentation for this application.

If the occupant load is for 30 or less, a Designer with BCIN qualifications for Small Buildings/Building Services would be a minimum requirement.

The Designer will be required to submit an OBC matrix, this matrix represents selected elements from your detailed code analysis and presents a quick overview to the municipal building official of the key OBC factors concerning your design.

Signs proposed due to development will require a permit as part of Norfolks Sign Bylaw and may need a Building Permit according to the OBC.

Items for Site Plan

Site plan drawings need to have enough detail, to determine compliance with the code references listed.

- 1. Indicate location of access route and access route design [OBC 3.2.5.4 to 3.2.5.6]
- 2. Revised fire water pond design and calculations. [OBC 3.2.5.7]
- 1. Indicate location of existing and new fire department connections. Dimensions between hydrants and building entrances is required.

[OBC 3.2.5.16]

- 3. Location and specifications of exterior lighting. Lighting to be included in SB-10 report energy efficiency
- 4. Indicate barrier free path of travel from parking area to building entrance. Construction of curb cuts and location of tactile attention indicators is required. [OBC 3.8.1.3, & 3.8.3.2]
- 5. Location of revised septic system (if required)
- 6. Provide building elevations and cross section, showing building massing, location of proposed entrances and exits, barrier free controls, exterior lighting locations, and exterior signage. [Planning Act 41(4).2]

Items for Building Permit

"-Industrial Commercial Institutional (ICI)" Step by Step Guide Building Permit Package has been attached to the minutes herein, this contains information on drawing requirements, designers, forms, contact information for Building Department etc.

If you have any questions on the building permit process or plans required, please contact permits@norfolkcounty.ca or 519-426-5870 ext. 6016

Jonathan Weir
Building Inspector III
Extension 1832
jonathan.weir@norfolkcounty.ca

Corporate Support Services – Realty Services

1. If a Site Plan Agreement is required, then the County will require postponements of any charges/mortgages (if any) on title to the County's Site Plan Agreement. We recommend that

you connect with your Lender(s) (if any) and/or your solicitors as early in the process as possible to avoid any delays

2. Should you wish to proceed with this development, and the subject lands will have "shared parking access with the adjoining property" immediately to the east of the subject property, Norfolk County may require some form of mutual access agreement be registered on title between these two properties.

Karen Lambrecht, Corporate Services Generalist Realty Services Extension 8140 Karen,lambrecht@norfolkcountv.ca

Fire Department

Norfolk County Fire has the following comment on this proposal:

- Ensure adequate access for fire department apparatus is provided as indicated on the site plan.

Katie Ballantyne Community Safety Officer Extension 2423 Katie.Ballantyne@norfolkcounty.ca

Haldimand-Norfolk Health and Social Services

Housing Services:

Support may be made available for anyone that is currently living on site.

Stephanie Rice
Acting Director Social Services & Housing / Program Manager, Housing Services
519-426-6170
stephanie.rice@hnhss.ca

Privileged Information and Without Prejudice

Appendix A: Planning Reference Materials

Following is a summary of some land use planning reference materials. It is the requirement of the applicant to ensure compliance with applicable legislation, policies and regulations.

Provincial Policy Statement, 2020

https://www.ontario.ca/page/provincial-policy-statement-2020

Norfolk County Official Plan

https://www.norfolkcounty.ca/government/planning/official-plan/

Section 9.6.1 outlines requirements in relation to requests to amend the Official Plan.

Section 9.6.2 outlines requirements in relation to requests to amend the Zoning By-law.

It is the responsibility of the proponent to review and ensure relevant Official Plan policies are addressed in any future development application.

Norfolk County Zoning By-Law 1-Z-2014

https://www.norfolkcounty.ca/government/planning/new-zoning-by-law/

The provisions of the Norfolk County Zoning By-Law shall apply to all lands within the boundaries of Norfolk County. No land, building or structure shall be used, erected, or altered in whole or in part except in conformity with the provisions of this By-Law. No land, building or structure shall be used or occupied except for uses that are specifically identified in the By-Law as permitted uses by the relevant zoning category.

It is the responsibility of the proponent to review and ensure relevant Zoning Bylaw provisions are addressed in any future development application

Conservation Authority Requirements to Proceed:	May be	Required
The requirements below are to be submitted as part of a complete application:	Required	
Conservation Authority Permit		Х
Environmental Impact Study		Х
Stormwater Management Report		Х
Grading Plan		Х
Other		

Site Characteristics

The property is within the floodplain of Patterson creek and adjacent to a Provincially Significant Wetland.

Ontario Regulation 178/06

The subject lands are regulated by Long Point Region Conservation Authority under Ontario Regulation 178/06. Permission from this office is required prior to any development within the regulated area.

Development is defined as:

- the construction, reconstruction, erection or placing of a building or structure of any kind.
- any change to a building or structure that would have the effect of altering the use or
 potential use of the building or structure, increasing the size of the building or structure
 or increasing the number of dwelling units in the building or structure,
- site grading, or
- the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere (Conservation Authorities Act, R.S.O. 1990, c. 27, s. 28 (25))

It appears that a small portion of the proposed parking lot will be within the 100-year floodplain of the Creek. The 100-year floodplain elevation is 213.63m GGVD1928 (213.18m GGVD2013). Staff could support minor encroachment into the floodplain provided the grade does not change (or is very minimal), so flood storage is not affected. Please identify the floodplain elevation on a topographic survey relative to the proposed development.

An Environmental Impact Study (EIS) is required to be completed due to the proximately of the Provincially Significant Wetland. The EIS should investigate the impacts of overland flow draining

to the Provincially Significant Wetland and provide any recommendations to mitigate potential impacts.

The Environmental Impact Study must be completed by a qualified professional to the satisfaction of the LPRCA in conformance with the most current technical guidelines approved by the LPRCA. LPRCA staff will work with the retained consultants for any studies to determine the <u>Terms of Reference</u>. The completion of a study does not guarantee a favourable outcome and it should also be noted that the report conclusions may constrain the size and location of future development.

Please ensure the retained consultant connects with LPRCA staff to complete a Terms of Reference.

Stormwater Management

LPRCA will review the final stormwater management design using the 2003 MECP Stormwater Management Planning and Design Manual, MTO Drainage Manual, LID Stormwater Management Manual, the sustainable technologies STEP website https://sustainabletechnologies.ca/, and the Municipal SWM guidelines.

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

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

- Minimize, or, where possible, prevent increases in contaminant loads.
- Minimize, erosion and changes in water balance, and prepare for the impacts of a changing climate through the effective management of stormwater, including the use of green infrastructure.
- Mitigate risks to human health, safety, property and the environment.
- Maximize the extent and function of vegetative and pervious surfaces.
- Implement stormwater management best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development, for end of pipe facilities 24-48hr drawdown times to be targeted in all case.
- Provide adequate and legal outlet for major, minor, and all flow conditions from the site be provided.

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

- Major flow systems are delineated on the drawing. Overland flow paths and depths from surcharged storm sewer systems and the stormwater treatment facility during a 100-year storm must not increase the flood risk to life, property and the environment.
- Minor overland flow systems and paths are to be delineated and shown on the drawings.
- Erosion and sedimentation control during construction.
- Adequate erosion control on inlets and outlets.

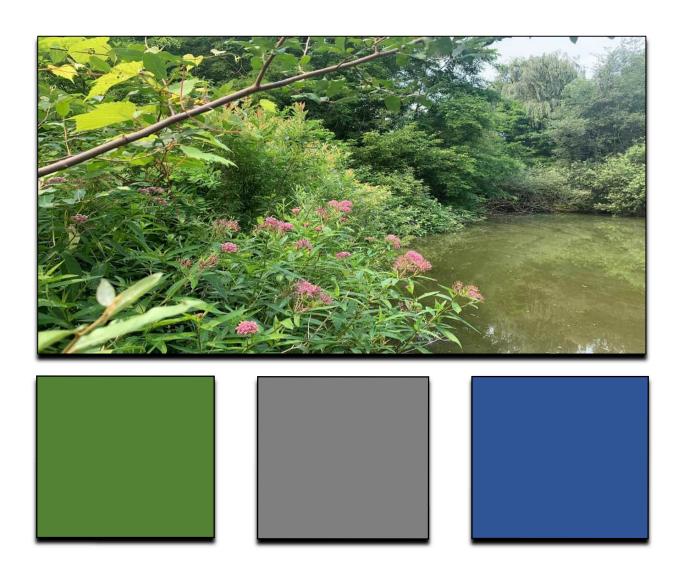
<u>Current Planning Application Fees (2023)</u>

Pre-consultation Fee - \$339 Variance- \$514.15* Site Plan Control- \$514.15*

* Accompanied by 1 technical report- \$813.60, Accompanied by 2 technical reports- \$1,615.90

LPRCA fees, applications, and helpful resources can be found can be found by visiting https://lprca.on.ca/planning-permits/planning-fees/

Isabel Johnson, Resource Planner
4 Elm Street, Tillsonburg, ON. N4G 0C4
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ENVIRONMENTAL IMPACT STATEMENT

Site Plan Application 139 Queensway West, Norfolk County 25 September 2024



ENVIRONMENTAL IMPACT STATEMENT

Site Plan Application 139 Queensway West, Norfolk County

Prepared for:

1800296 Ontario Ltd. 131 Queensway West Simcoe, ON N3Y 2M8 info@barrelrestaurant.ca

Prepared by:

Terrastory Environmental Consulting Inc. 171 Glen Road Hamilton, ON L8S 3N2 905.745.5398

> Tristan Knight, M.E.S., M.Sc., I.S.A., C.E.R.P. Senior Ecologist | President

> > Project No.: 23037 25 September 2024

This report has been prepared by Terrastory Environmental Consulting Inc. (hereinafter "Terrastory") for the client. All information, conclusions, and recommendations contained in this report are subject to the scope and limitations set out in the agreement between Terrastory and the client and qualifications contained in this report. This report shall not be relied upon by any third parties without the prior written consent of Terrastory. Terrastory is not responsible for any injury, loss, or damages arising from improper use of this report by third parties. Excerpts of this report or alterations to this report taken without the authorization of Terrastory invalidates the report and any conclusions therein.

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1 INTRODUCTION

1.1 Study Background

Terrastory Environmental Consulting Inc. (hereinafter "Terrastory") was retained by 1800296 Ontario Limited (hereinafter "the Applicant") to prepare this Environmental Impact Study (EIS) in support of a Site Plan Application (SPA) at 139 Queensway West (hereinafter "Subject Property") in Simcoe (Norfolk County). The Subject Property is an approximately 0.71-hectare (1.79 acre) parcel located on the north side of Queensway West opposite to North Main Street. Parcels east and west of the Subject Property include a mixture of commercial and residential uses. The Subject Property consists of an existing building (Queensway Motel) surrounded by paved surface parking and manicured amenity space (lawn). The location of the Subject Property within its broader landscape setting is shown in **Figure 1**.

The Subject Property is primarily designated "Commercial" per Schedule B-15 (Land Use) of the County's Official Plan (OP) and further overlaps with a "Special Policy Area". The extreme northern portion of the Subject Property is designated "Provincially Significant Wetland" (PSW) and "Hazard Lands", which is assumed to reflect a floodplain associated with Patterson Creek per the Long Point Region Conservation Authority (LPRCA). Flanking Patterson Creek is a riparian area consisting of wetlands which form part of the Provincially Significant LR-13 Wetland Complex along with a Significant Woodland, both of which are indicated on Schedule C-4 (Natural Heritage) of the County's OP.

The SPA considered herein will facilitate demolition of the existing motel and construction of a new restaurant building. Additional surface parking is proposed at the rear of the building, which will have vehicular access to surface parking on a parcel to the east (Barrel Restaurant) which is also owned by the Applicant. In support of SPA, the County has requested the preparation of this EIS given the presence of significant natural heritage features (e.g., Significant Woodland, PSW) within and adjacent to the Subject Property pursuant to a Pre-consultation Meeting held on 15 February 2023. A Terms of Reference (ToR) which scopes the conduct and content of this study was prepared by Terrastory on 23 May 2023 and confirmed via email with minor comments from the County (A. Biddle, Forestry Supervisor) and LPRCA (I. Johnson, Resource Planner). The approved ToR alongside County and LPRCA comments is provided in **Appendix 1**.

1.2 Study Purpose

The purpose of this study is to present a biophysical characterization of the Subject Property and Adjacent Lands (i.e., those within 120 m of the Subject Property) as a means to assess the potential for adverse effects on the natural environment and natural heritage features stemming from the proposed redevelopment. The scope and approach of this study address the reporting requirements of **Appendix 1** and s. 9.7.1 (Environmental Impact Study) of the County's OP. It is understood that this report will form part of the development application package to be submitted for consideration by the County and LPRCA.

2 APPROACH AND METHODS

This study is composed of five (5) discrete components which are bulleted below and further described in the following sections.

- environmental consulting inc.
 - 1. **Acquire background biophysical information and mapping** available for the local landscape surrounding the Subject Property (see **Section 2.1**).
 - 2. **Conduct a site assessment** to field-verify the accuracy of the acquired background biophysical information and collect additional biophysical information as necessary (see **Section 2.2**).
 - 3. **Assess the significance** of the biophysical information collected and natural features identified within the context of applicable natural heritage and environmental policies (see **Section 2.3**).
 - 4. **Predict the effects** of the application on the identified significant natural features and natural environment, particularly the net effects once mitigation measures and technical recommendations are implemented (see **Section 2.4**).
 - 5. Determine whether the proposed application addresses applicable natural heritage and environmental policies at municipal, provincial, and federal levels (see Section 2.5).

2.1 Background Biophysical Information Assessment

This study is supported by background biophysical information and mapping acquired and reviewed from a variety of sources which are listed below in **Table 1**.

Table 1. Background Biophysical Information Acquired and Reviewed.

Type of Information Acquired	Description
Ortho-rectified Aerial Photographs	• 1954, 2009, 2013, 2016 to 2018.
Natural Feature Mapping	Norfolk County Official Plan (February 2023) Schedules B and C.
	• Land Information Ontario (LIO) accessed via the "Make a Map: Natural Heritage Areas" web-based platform (last accessed 18 April 2024).
	 Long Point Region Conservation Authority (LPRCA) regulation mapping (last accessed 18 April 2024).
Physiographic Resource	Topographic Survey of the Subject Property.
Mapping and Datasets	• Ontario Base Mapping produced by MNR (1:10,000) with 5 m contours.
	Provincial Digital Terrain Model (LiDAR-derived).
	Ontario Well Records (publicly-available).
	• Soils of the Regional Municipality of Haldimand-Norfolk (Presant and Acton 1984).
	Agricultural Information Atlas (last accessed 18 April 2024).
	• Bedrock Topography and Overburden Thickness Mapping (Gao et al. 2006).
	• Paleozoic Geology of Southern Ontario (Armstrong and Dodge 2007).
	• Surficial Geology of Southern Ontario (Ontario Geological Survey 2010).
	• Physiography of Southern Ontario (Chapman and Putnam 1984).
Ecological Resource Mapping and Datasets	• Natural Heritage Information Centre (NHIC) database accessed via the "Make a Map: Natural Heritage Areas" web-based platform (squares: 17NH5643, 17NH5644, 17NH5744, 17NH5744, 17NH5743, 17NH5742, 17NH5642, 17NH5542, 17NH5543, 17NH5544; last accessed 18 April 2024).
	• iNaturalist "(NHIC) Rare species of Ontario" project (last accessed 18 April 2024).
	• Ontario Breeding Bird Atlas (OBBA) database and the Atlas of the Breeding Birds of Ontario, 2001–2005 (Cadman et al. 2007) (square: 17NH54).
	Ontario Reptile & Amphibian Atlas (square: 17NH54; last accessed 18 April 2024).

Type of Information Acquired	Description	
	Ontario Butterfly Atlas database (square: 17NH54; last accessed 18 April 2024).	
	• iNaturalist "Ontario Odonata" project (last accessed 18 April 2024).	
	 Aquatic Species at Risk Maps produced by Fisheries and Oceans Canada (last accessed 18 April 2024). 	
	• MNRF Fish ON-line database maintained by MNRF (accessed 18 April 2024).	
	• Atlas of the Mammals of Ontario (Dobbyn 2005).	
Natural Heritage Objectives and Strategies	• Great Lakes Conservation Blueprint for Terrestrial Biodiversity, Volume 2 (Henson and Brodribb 2005).	
	• Great Lakes Conservation Blueprint for Aquatic Biodiversity, Volume 2 (Phair et al. 2005).	

2.2 Site Assessment and Surveys

The acquired background information per **Table 1** helped direct a site assessment carried out by Terrastory staff (C.-W. Wegenschimmel) on 17 July 2023. Weather conditions were warm (24 to 27°C), with light air to light breeze (Beaufort wind scale 1 to 2), mostly clear skies (0 to 25% cloud cover), and no precipitation.

The site assessment centred on characterizing the land use (e.g., historical development patterns, existing built features, land maintenance, etc.), physiographic (e.g., topography, drainage, surface water features, etc.), and ecological (e.g., vegetation, wildlife, habitats, etc.) conditions and features of the Subject Property and (where appropriate) Adjacent Lands (i.e., those within 120 m of the Subject Property). All land-use, physiographic, and ecological information described for Adjacent Lands was collected from either current aerial photographs or observations from inside the Subject Property and/or publicly-accessible areas (e.g., rights-of-way, etc.). The locations and boundaries of significant natural features and/or habitats were recorded on-site with a high-accuracy GPS supported by representative photographs.

In addition to collecting general biophysical information, the following targeted assessments (i.e., feature- or species-specific surveys) were undertaken:

- Vegetation Mapping according to Ecological Land Classification (ELC): Vegetation
 communities on the Subject Property were characterized and mapped according to Ecological Land
 Classification (Lee et al. 1998) and the 2008 update to the Vegetation Type List (Lee 2008). Vegetation
 communities were initially identified based on current aerial photographs and then verified and refined
 (as necessary) on-site. ELC mapping was scaled to the finest level of resolution deemed appropriate (i.e.,
 either Ecosite or Vegetation Type). Vegetation communities mapped on Adjacent Lands were
 delineated predominantly via aerial photograph interpretation.
- Wetland Boundaries: Where wetlands were identified via ELC, their boundaries were delineated consistent with the "50% wetland vegetation rule" and presence of hydric soils per the procedures of the Ontario Wetland Evaluation System (OWES) (OMNRF 2014). All wetlands mapped on Adjacent Lands were delineated via aerial photograph interpretation.
- Significant Woodland Boundaries: The dripline of the Significant Woodland was delineated by Terrastory during the site assessment, which represents the southern limit or boundaries of the Significant Woodland as a natural feature.

• Vascular Plant Survey: Vascular plants were recorded based on a comprehensive area search ("wandering transects") within naturally-occurring (i.e., non-planted) or naturalizing areas of vegetation. Particular effort was paid to areas with the greatest potential to support significant vascular plants (i.e., designated Species at Risk, provincially rare, etc.) and areas with the greatest potential for impact based on the proposed development plan. Nomenclature and common names for the recorded vascular plant species are generally consistent with the Southern Ontario Vascular Plant Species List (Bradley 2013) except where a name change has more recently been adopted by NHIC.

2.3 Significance Assessment

2.3.1 Definitions and Criteria

"Significant natural features" as described herein represent natural features and habitats that have recognized status (and therefore policy significance) within the planning jurisdiction in which an application is proposed. Significant natural features are defined herein to include those referenced in section 2.1 of the 2020 Provincial Policy Statement (PPS), namely:

- Significant Wetlands;
- Significant Woodlands;
- Significant Valleylands;
- Significant Wildlife Habitat (SWH);
- Significant Areas of Natural and Scientific Interest (ANSIs);
- Habitat of Endangered and Threatened Species; and
- Fish Habitat.

Defining "significant natural features" pursuant to the PPS is considered warranted herein as such features form part of the County's Natural Heritage System (NHS) per Section 3.5 of the OP and are shown on Schedule C-4. It is noted that Norfolk County's OP provides provisions that consider and/or protect additional natural features beyond the requirements of the PPS per the list of County "Natural Heritage Features" in Section 3.5.2 of the County's OP. The potential presence of these regionally/locally significant features are also considered herein and include:

- Locally significant wetlands;
- Locally significant coastal wetlands;
- Life Science ANSIs (regardless of significance);
- Earth Science ANSIs (regardless of significance);
- Watercourses (without mapping or regulations from LPRCA or GRCA); and
- Natural areas (as identified in the Natural Areas Inventory and including Carolinian Canada sites).

Criteria used to determine the presence or absence of the above significant natural features within the Subject Property and Adjacent Lands were considered from a variety of sources including the local and Regional OPs, Natural Heritage Reference Manual (MNR 2010), and (for Significant Wildlife Habitat) the Ecoregion 7E Criteria Schedule (MNRF 2015).

Apart from PPS- and County-derived significant natural features, this study also seeks to determine whether any natural features or hazards regulated by LPRCA pursuant to O. Reg. 41/24 occur within the Subject Property and/or Adjacent Lands. LPRCA regulated features and hazard lands include:

- Wetlands (significant, evaluated, or identified);
- Watercourses and their associated meanderbelts and floodplains;
- Valleylands;
- Steep slopes and other hazard lands; and
- Shorelines.

Like significant natural features, "significant species" represent individuals of wild species which have recognized status (and therefore policy significance) within the planning jurisdiction in which an application is proposed. Significant species are defined herein to include:

- Species designated Endangered, Threatened, or Special Concern under O. Reg. 230/08 pursuant to the provincial *Endangered Species Act*, 2007.
- Species designated Provincially Rare (i.e., S1, S2, or S3) by NHIC.
- Species considered Regionally Rare in Norfolk County pursuant to the List of the Vascular Plants of Ontario's Carolinian Zone (Oldham 2017).

2.3.2 Determination

After collecting the background biophysical information and conducting the site assessment, the data was interpreted to determine whether any significant natural features, natural features/hazards regulated by LPRCA, and/or significant species occur on the Subject Property and/or Adjacent Lands. If a natural feature or species met the significance criteria, it is considered "confirmed". If a natural feature or species may be present on the Subject Property and/or Adjacent Lands given the prevailing biophysical or habitat conditions but was not confirmed based on either background or site-specific biophysical data, it is considered potential or "candidate". Candidate significant natural features and species are treated as confirmed where no additional information is available.

2.4 Effects Assessment and Mitigation

The potential ecological effects of an application can be understood spatially as zones that radiate outward from the direct project footprint (e.g., building envelope, etc.) and associated areas of site alteration (e.g., grading, etc.). While the greatest potential for effects typically occurs within areas directly subject to development or disturbance, surrounding areas may also be affected indirectly. Such indirect effects can include light or noise pollution that affects wildlife communities on Adjacent Lands, or degradation of water quality within a downstream receptor resulting from sediment runoff during construction.

The following five-pronged approach is employed herein to assess the effects of an application on significant natural features and species and (where warranted) the natural environment in general:

1. **Scope** the effects assessment to environmental components that warrant consideration. The effects assessment herein centres principally on significant natural features and species (i.e., those that have

policy significance within the planning jurisdiction, as defined in **Section 2.3**) but may also consider general environmental effects where warranted.

- 2. **Identify the predicted direct and indirect effects** of the application on each significant natural feature or species during all project stages (i.e., pre- to -post-development) in the absence of mitigation. Direct effects are those where there is a cause-effect relationship between a proposed activity and an effect on a natural feature or species (e.g., tree clearance within a building footprint, etc.). Indirect effects result when an activity is linked to a direct effect through a chain of foreseeable interactions or steps.
- 3. **Evaluate the significance** of the predicted effects for each environmental component based on their attributes (i.e., spatial extent, magnitude, timing, frequency, and duration) and likelihood (i.e., high, medium, low).
- 4. Where the potential for negative effects are anticipated, **recommend ecologically-meaningful mitigation measures** to avoid such impacts first (where possible), and where impacts cannot be avoided to minimize, compensate, and/or enhance as appropriate.
- 5. **Identify the predicted residual or net effect**s of the application assuming implementation of all recommended mitigation measures.

Per step 4, mitigation measures are offered where the potential for negative effects are anticipated to a degree that cannot be supported given the prevailing policy context. Whenever possible, Terrastory works iteratively with the project team as a means to identify development plan options that avoid negative effects first; options that would minimize or mitigate such negative effects are less preferred and considered secondarily. In general, avoidance measures that have already been incorporated into the application or project design are not duplicated as technical recommendations herein. The effects assessment and any recommended mitigation measures are provided in **Section 5**.

2.5 Natural Heritage Policy Context

There is an overlapping municipal, provincial, and federal policy framework respecting the protection of natural heritage features and areas across southern Ontario. These requirements include objectives, policies, and directives which are principally contained in federal and provincial statutes, regulations, policy statements, Official Plans, and guidance documents. The overarching natural heritage policy framework directing development activities within the Subject Property is outlined below in **Table 2**. A determination of whether the application considered herein addresses such policies is provided in **Section 6**.

Table 2. Applicable Natural Heritage Policies.

Level of	Natural Heritage or Environmental Policy Requirements	
Government		
Municipal	Norfolk County Official Plan (consolidated January 2021).	
Provincial	 Provincial Policy Statement 2020, pursuant to the <i>Planning Act</i>, R.S.O. 1990, c. P.13, including: Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (MNR 2010). Significant Wildlife Habitat Technical Guide (MNR 2000). Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015). Significant Wildlife Habitat Mitigation Support Tool (MNRF 2014). 	

Level of Government	Natural Heritage or Environmental Policy Requirements	
	Conservation Authorities Act, R.S.O. 1990, c. C.27, including:	
	 Ontario Regulation 41/24 – Prohibited Activities, Exemptions, and Permits. LPRCA Guidelines for the Implementation of Ontario Regulation 178/06 (October 4, 2017). 	
	Endangered Species Act (ESA), S.O. 2007, c. 6, including:	
	 Ontario Regulation 230/08 – Species at Risk in Ontario List Ontario Regulation 242/08 – General Ontario Regulation 832/21 – Habitat 	
	Fish and Wildlife Conservation Act, S.O. 1997, c. 41.	
Federal	Fisheries Act, R.S.C. 1985, c. F-14, including:	
	• Fish and Fish Habitat Protection Policy Statement (DFO 2019).	
	Migratory Birds Comention Act, S.C. 1994, c. 22, including: • Migratory Birds Regulations, C.R.C., c. 1035.	

3 EXISTING BIOPHYSICAL CONDITIONS

The following is a description of the biophysical features and conditions of the Subject Property, which are shown spatially on **Figure 2**. Representative photographs are provided in **Appendix 2**.

3.1 Land-use and Landscape Setting

The Subject Property is situated within the community of Simcoe on the north side of Queensway West. Parcels immediately adjacent to the Subject Property contain a mixture of single-family residences, commercial properties, and amenity space, while the surrounding landscape contains agricultural land (mostly cash crops) and natural features (thicket, wetland, and woodland).

3.2 Physical Setting

3.2.1 Bedrock Geology

The bedrock underlying the Subject Property is characterized as Middle Devonian-aged (i.e., 397.5 to 385.3 million-year-old) limestone, dolostone, and shales of the Dundee Formation (Armstrong and Dodge 2007). In Ontario the Dundee Formation extends as the stratigraphically uppermost bedrock unit from Long Point northwest to Goderich on the southeastern shore of Lake Huron.

3.2.2 Surficial Geology and Soils

The southernmost portion of the Subject Property (abutting Queensway West) is mapped as glaciolacustrine deep water silt deposits (Presant and Acton 1984). The remainder of the Subject Property is comprised of modern alluvium associated with more recent flood events in Patterson Creek, wherein a mixture of clay, silt, sand, and muck are present. Alluvial soils have various drainage conditions, but most are imperfectly or poorly drained due to the nearness of the water table to the surface for long periods each year in portions of the lands.

3.2.3 Topography and Drainage

The area proposed for development is overall flat and sits around 215 metres above sea level (masl). The northern portion of the Subject Property is gently sloped towards Patterson Creek which sits at approximately 212 masl and flows in an eastward direction approximately 32 to 40 m north of the Subject Property. Overall, surface runoff is shed in a predominantly northerly direction based on the topographic contours.

A defined top of bank was present and delineated by Terrastory, which sits around 214 masl. The top of bank demarcates a small north-facing slope that is best expressed in the eastern portion of the parcel (becoming less defined in the western portion) and is floored by the floodplain of Patterson Creek. Within the Subject Property the floodplain is largely occupied by a pond (OAO) which has some aquatic vegetation like the non-native Curly-leaved Pondweed (*Potamogeton crispus*).

3.3 Ecological Setting

3.3.1 Vegetation Communities

The largest vegetation community on the Subject Property by spatial extent is a Sugar Maple Deciduous Woodland (WODM4-3). The canopy is dominated by Sugar Maple (*Acer saccharum*), Black Walnut (*Juglans nigra*), Norway Maple (*Acer platanoides*), and Wych Elm (*Ulmus glabra*). The subcanopy is comprised of Sugar Maple, Black Cherry (*Prunus serotina*), and Black Walnut. The understory is composed of Sugar Maple, Common Buckthorn (*Rhamnus cathartica*), and Tatarian Honeysuckle (*Lonicera tatarica*). The ground layer is mainly comprised of non-native species like English Ivy (*Hedera helix*) and Garlic Mustard (*Alliaria petiolata*) as well as native species like Tall Goldenrod (*Solidago altissima*) and Broad-leaved Enchanter's Nightshade (*Circaea canadensis*). The WODM4-3 community occurs in the northern portion of the Subject Property and extends west of the Subject Property onto Adjacent Lands (see **Figure 2**).

There is a small Dry - Fresh Deciduous Shrub Thicket (THDM2) in the northeast section of the Subject Property. The understory is comprised of Common Lilac (*Syringa vulgaris*), Multiflora Rose (*Rosa multiflora*), Manitoba Maple (*Acer negundo*), and Tatarian Honeysuckle. The ground layer is composed of English Ivy, Garlic Mustard, Tall Goldenrod, and Broad-leaved Enchanter's Nightshade.

A small area of Forb Mineral Meadow Marsh (MAMM2) occurs along the northern boundary of the Subject Boundary abutting a pond. A few shrubs are present in the understory which include Heart-leaved Willow (*Salix eriocephala*), Red-osier Dogwood (*Cornus sericea*), and Sandbar Willow (*Salix interior*). The ground layer is comprised of Tall Goldenrod, Purple Loosestrife (*Lythrum salicaria*), Fowl Bluegrass (*Poa palustris*), and White Panicled Aster (*Symphyotrichum lanceolatum*).

There is a small community of Mineral Deciduous Swamp (SWDM4) in the northwest corner of the Subject Property. This community appears to be more extensive north and northwest of the Subject Property. The canopy is comprised of White Willow (Salix alba), Peach-leaved Willow (Salix amygdaloides), Eastern Cottonwood (Populus deltoides), and Black Walnut (Juglans nigra). The subcanopy contains Manitoba Maple, Black Walnut and White Mulberry (Morus alba). The understory is mainly composed of young Manitoba Maple and Black Walnut. A few ground layer species observed include False Nettle (Boehmeria cylindrica), Swamp Dotter (Cuscuta gronovii var. gronovii), and White Panicled Aster.

3.3.2 Vascular Plants

A total of 104 vascular plant species were recorded within the Subject Property (see **Appendix 3**). No provincially rare or species at risk vascular plants were documented.

3.3.3 Incidental Wildlife Recorded

Efforts to incidentally document wildlife were made during all site visits by Terrastory in 2023. Incidental wildlife species included:

- One (1) **amphibian** species: Green Frog (*Lithobates clamitans*)
- Fifteen (15) bird species: American Robin (Turdus migratorius), Baltimore Oriole (Icterus galbula), Belted Kingfisher (Megaceryle alcyon), Black-capped Chickadee (Poecile atricapillus), Blue Jay (Cyanocitta cristata), Carolina Wren (Thryothorus ludovicianus), Common Grackle (Quiscalus quiscula), European Starling (Sturnus vulgaris), Gray Catbird (Dumetella carolinensis), Downy Woodpecker (Dryobates pubescens), Northern Cardinal (Cardinalis cardinalis), Northern Flicker (Colaptes auratus), Song Sparrow (Melospiza melodia), Warbling Vireo (Vireo gilvus) and Whitebreasted Nuthatch (Sitta carolinensis).
- One (1) **bumblebee** species: Perplexing Bumblebee (*Bombus perplexus*).
- One (1) **butterfly** species: Dun Skipper (*Euphyes vestris*).
- Four (4) **odonate** species: Eastern Amberwing (*Perithemis tenera*), Eastern Forktail (*Ischnura verticalis*), Common Whitetail (*Plathemis lydia*), and Twelve-spotted Skimmer (*Libellula pulchella*).

Although the birds were observed outside of the breeding bird survey window (May 24 to July 10), all bird species recorded should be considered "Possible" breeders within the Subject Property as the date of the site visit fell within their breeding "safe date". At a provincial/subnational level, all of the incidental species recorded have been assigned subnational ranks of either S4 or S5 by NHIC, which indicates that their provincial populations are "apparently secure" or "secure", respectively.

4 SIGNIFICANCE ASSESSMENT

Based on the biophysical information collected during background information gathering (per **Table 1**) and the results of Terrastory's site assessment (per **Sections 2.2** and **3**), **Table 3** below provides a determination of the presence (or potential presence) of each significant natural feature considered herein. Shaded rows denote features which were confirmed or may be present within the Subject Property or Adjacent Lands and are considered further as part of the effects assessment in **Section 5**. Significant natural feature mapping is provided in **Figure 3**.

Table 3. Summary of the Assessment of Significant Natural Features on the Subject Property and Adjacent Lands.

Significant Natural Feature	Status on the Subject Property	Status on Adjacent Lands (i.e., < 120 m from the Subject Property)
PPS Significant Natural Features		
Significant Wetlands	Confirmed. See Section 4.1.	Confirmed. See Section 4.1.
Significant Woodlands	Candidate. See Section 4.2.	Candidate. See Section 4.2.
Significant Valleylands	Candidate. See Section 4.3.	Candidate. See Section 4.3.

Significant Natural Feature	Status on the Subject Property	Status on Adjacent Lands (i.e., < 120 m from the Subject Property)
Significant Wildlife Habitat	Candidate. See Section 4.4.	Candidate. See Section 4.4.
Significant Areas of Natural and Scientific Interest	Absent.	Absent.
Habitat of Endangered and Threatened Species (per ESA)	Candidate. See Section 4.5.	Candidate. See Section 4.5.
Fish Habitat (per Fisheries Act)	Confirmed. See Section 4.6.	Confirmed. Section 4.6.
County Significant Natural Feature	es (i.e., apart from PPS requirements)	
Locally significant wetlands	Absent. See Section 4.1.	Absent. See Section 4.1.
Locally significant coastal wetlands	Absent. See Section 4.1.	Absent. See Section 4.1.
Life Science ANSIs (regardless of significance)	Absent.	Absent.
Earth Science ANSIs (regardless of significance)	Absent.	Absent.
Watercourses (without mapping or regulations from LPRCA or GRCA)	Absent.	Absent.
Natural areas (as identified in the Natural Areas Inventory and including Carolinian Canada sites)	Absent.	Absent.
Conservation Authority Regulated	Features and Hazard Lands	
Wetlands, watercourses, valleylands, meanderbelts, floodplains, steep slopes, and shorelines.	Confirmed. See Section 4.7.	Confirmed. See Section 4.7.

4.1 Significant Wetlands

The Provincially Significant LR-13 Wetland Complex occurs within the northern portion of the Subject Property flanking Patterson Creek. The southern boundary of the PSW was delineated by Terrastory based on OWES protocols (i.e., "50% wetland vegetation rule" and hydric soils) during the site assessment and was found to closely align with the existing PSW mapping.

An assessment of potential effects to the PSW associated with the proposed development plan is provided in **Section 5.3.1**.

4.2 Significant Woodlands

The wooded area to the north of the Subject Property is mapped as a Significant Woodland per Schedule C-4 under the County' OP.

An assessment of potential effects to the Significant Woodland associated with the proposed development plan is provided in **Section 5.3.2**.

4.3 Significant Valleylands

There is a discrete, wide valleyland flanking Patterson Creek, the southern boundary of which extends into the Subject Property and was delineated by Terrastory during the site visit (see **Figure**

3). In the absence of further or more detailed information for the valleyland (which mostly extends off-site), this feature is considered a candidate Significant Valleyland for the purposes of this assessment.

An assessment of potential effects to the Significant Valleyland associated with the proposed development plan is provided in **Section 5.3.3**.

4.4 Significant Wildlife Habitat

An assessment of the likelihood that any candidate or confirmed SWH types occur within the Subject Property or Adjacent Lands is provided in **Appendix 4**. Based on the results of this assessment, four (4) SWH types are considered further through this study:

- Seasonal Concentration Areas of Animals
 - 1. Turtle Wintering Areas
 - 2. Reptile Hibernaculum
- Rare Vegetation Communities or Specialized Habitats for Wildlife
 - 3. Amphibian Breeding Habitat (Wetlands)
- Habitat of Species of Conservation Concern
 - 4. Special Concern and Rare Wildlife Species

Also based on this assessment, a total of six (6) Special Concern or provincially rare species are considered to have at least a possible likelihood of occurrence on the Subject Property given their habitat associations and current distribution in southern Ontario:

- 1) American Bumble Bee (Bombus pensylvanicus)
- 2) Four-toothed Mason Wasp (Monobia quadridens)
- 3) Monarch (Danaus plexippus)
- 4) Painted Skimmer (Libellula semifasciata)
- 5) Yellow-banded Bumblebee (Bombus terricola)
- 6) Snapping Turtle (Chelydra serpentina)

An assessment of potential effects to the identified candidate SWH types and Special Concern/provincially rare species associated with the proposed development plan is provided in **Section 5.3.4**.

4.5 Habitat of Endangered and Threatened Species

An assessment of the likelihood that any Endangered and Threatened species or their habitats occur within the Subject Property or Adjacent Lands is provided in **Appendix 5**. A total of three (3) Endangered or Threatened species are considered to have a possible likelihood of occurrence on the Subject Property (or were confirmed) given their habitat associations and current distribution in southern Ontario:

- 1) Little Brown Myotis (Myotis lucifugus)
- 2) Northern Myotis (Myotis septentrionalis)
- 3) Tri-colored Bat (Perimyotis subflavus)

A general description of each Endangered/Threatened species and their habitat is offered below. An assessment of potential effects to these Endangered/Threatened species associated with the proposed development plan is provided in **Section 5.3.5**.

4.5.1 Bats

Per the assessment in **Appendix 5**, Little Brown Myotis, Northern Myotis, and Tri-colored Bat have the potential to roost and forage on the Subject Property. Each of these bat species are designated Endangered in Ontario per O. Reg. 230/08 pursuant to the *Endangered Species Act* (ESA) and are federally designated Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Little Brown Myotis and Northern Myotis form maternity colonies that roost in large-diameter trees with cracks, crevices, and/or exfoliating bark; Little Brown Myotis will also frequently roost in buildings (e.g., attics, barns, etc.). Roosting sites for Tri-colored Bat maternity colonies are less understood but have been documented in dead or dying leaf clusters of oaks (*Quercus* spp.) and maples (*Acer* spp.), along with live foliage and buildings (Humphrey and Fotherby 2019). Individuals (i.e., non-reproductive females and males) of all three bat species may roost in smaller diameter trees and other spaces (e.g., beneath house siding, etc.) which are not occupied by maternity colonies. Overwintering habitat includes caves and mines that maintain temperatures above 0°C. White Nose Syndrome (a fungal disease caused by an introduced pathogen) has devastated populations of each species across their ranges. The fungus causes hibernating individuals to become dehydrated, leading to excessive arousal, depleted fat reserves, and ultimately emaciation and/or death.

4.6 Fish Habitat

Patterson Creek is mapped as a coldwater watercourse by the Province through the Aquatic Resource Areas (ARA) dataset (AY-0001-DAV). Coldwater species including Brook Trout (*Salvelinus fontinalis*) and Mottled Sculpin (*Cottus bairdii*) are considered present based on the ARA dataset.

An assessment of potential effects to fish habitat associated with the proposed development plan is provided in **Section 5.3.6**.

4.7 Conservation Authority Regulated Areas

LPRCA regulates development and site alteration (including fill placement and grade changes) within 15 m of the regulatory floodplain and 30 m from wetlands per O. Reg. 41/24. LPRCA regulated areas therefore overlap with the northern half of the Subject Property.

5 EFFECTS ASSESSMENT AND MITIGATION

The purpose of this EIS is to present a biophysical characterization of the Study Area and Adjacent Lands as a means to identify the potential for adverse effects on the natural environment and natural heritage features stemming from the proposed construction of a restaurant on municipal servicing. Several significant natural features and species were documented (or may occur) within the Subject Property pursuant to the assessments presented in **Section 4**. The following effects assessment provides an evaluation of the potential for the SPA to result in negative effects to such environmental components and offers technical recommendations to mitigate such effects where warranted. Certain technical recommendations offered herein apply to several natural features and/or species simultaneously; as such, all technical recommendations should be read and considered in their entirety. The baseline or existing conditions against which the application is

assessed are treated as the state of the Subject Property at the time of the site assessment. The effects assessment herein is based on the design drawings provided in **Appendix 6**.

5.1 Proposed Development Plan

The proposed development and site alteration activities consist of the following elements:

- Demolition of the existing building;
- Reconstruction and expansion of on-site surface parking, including a vehicular connection to 131 Queensway West (to the east);
- Reconstruction of the new restaurant building (371 m²); and
- Municipal servicing connections at Queensway West.

5.2 Avoidance Measures incorporated into the Proposed Development Plan

Since project commencement in February 2023 Terrastory has provided extensive feedback to and worked iteratively with the project team during formulation of the proposed development plan. These discussions have centred on the need to avoid/minimize impacts to and maintain ecologically/policy appropriate setbacks from the significant natural features identified herein. As a result, the proposed limit of development associated with the surface parking was shifted several metres southward, outside the boundary of the Significant Woodland plus an additional 3 m setback. The outcome of this redesign reduced available surface parking somewhat but eliminated encroachment within the Significant Woodland and allowed for a modest setback to avoid negative effects. The site plan has been further revised to accommodate a setback from the floodplain; as such, the full extent of the development setback is 7 to 24 m.

In recognizing the foregoing, an assessment of the potential for negative impacts on the identified significant natural features are further described below.

5.3 Feature-based Effects Assessment and Technical Recommendations

5.3.1 Significant Wetlands

Where development and/or site alteration activities are proposed adjacent to wetlands, adverse effects may occur via the following pathways:

- Alterations to surface water and/or groundwater contributions to the wetland from construction (e.g., dewatering, etc.), grading that modifies the existing topography or drainage, and/or increased coverage of impervious surfaces (e.g., roads, roofs, etc.);
- Increased sediment loadings and/or nutrient enrichment within the wetland via runoff exiting from development areas during and post construction. This may alter wetland water quality and vegetation communities via increased turbidity, eutrophication, contamination by toxic substances, changes in pH, etc.
- Noise and/or light pollution that may adversely affect the ability of wetland wildlife to successfully carry out their life processes (e.g., breeding, feeding, etc.); and
- Increased human activity (i.e., encroachment) within the wetland which may result in soil compaction, dumping, etc.
- Potential for fuel spills during the construction phase of development.

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• Increased potential for introducing invasive species including both animals and plants during and post construction.

The proposed development envelope is situated 50 m from the boundary of the PSW. This setback is adequate to protect the wetland from potential impacts associated with construction or future uses, particularly given existing conditions of the site (e.g., motel with impervious surface parking).

The proposed development area (including the building and servicing parking) mostly overlaps with an existing developed area, though extends approximately 28 m northward beyond the existing limit of impervious surfaces. Drainage from the area representing the northward extension of the development would now be conveyed southward towards internal catch-basins which form part of the stormwater management and conveyance infrastructure. This represents a very minor redirection of surface water runoff away from the wetland under the proposed condition. Notwithstanding this, the wetland is "online" to Patterson Creek, and thus the full extent of the "wetland-shed" includes all upstream areas forming part of the Patterson Creek subwatershed. On this basis, the quantity and spatial extent of surface water runoff that would no longer drain northward to the wetland would be negligible and not expected to meaningfully affect the volume of water reaching the wetland nor its form or function.

During construction it is anticipated that the proposed development areas will contain exposed soils, which are inherently unstable and have a greater potential for runoff into adjacent areas (including adjacent wetlands) during rainfall events. The most effective erosion and sediment control system emphasizes the prevention of erosion first, minimizes sediment transport off-site through a multi-barrier approach, and involves regular inspection and maintenance. To protect adjacent wetlands from construction-related impacts, the following measures are recommended:

- > Schedule work to avoid weather conditions which increase the potential for erosion and sedimentation (i.e., rain, strong wind, etc.).
- Exposed soils will be restricted to the smallest area for the shortest period of time.
- Sediment fence will be installed prior to the commencement of site preparation and other construction-related activities as shown on Figure 3. Sediment fence will be installed properly (e.g., trenched in, etc.), inspected regularly (i.e., daily, following storm events, etc.), and repaired immediately when necessary (e.g., breaches eliminated, sediment accumulations removed, etc.).
- Any necessary stockpiles or temporarily stored topsoil, fill, or aggregate material will be piled as low as practicable and isolated by sediment fence.
- Minimize storage of all fuels, construction materials, and other potentially deleterious substances (if needed) on-site.
- Contractor will be prepared to immediately deploy spills response equipment (e.g., absorption pads, etc.) if necessary. All spills will be

reported to the Ontario Spills Action Centre (1-800-268-6060) as soon as possible.

Non-biodegradable erosion and sediment control materials (including accumulated sediment if any) will be removed once construction is complete and disturbed areas are stabilized.

5.3.2 Significant Woodlands

Where development and/or site alteration activities are proposed within or adjacent to forests or woodlands, adverse effects may occur via the following pathways:

- Mechanical injury to the trunk, roots, branches, and/or foliage of retained woody vegetation.
- Smothering or exposure of roots due to changes in grade.
- Soil compaction from the use of heavy machinery.
- Noise and/or light pollution that may adversely affect the ability of woodland wildlife to successfully carry out their life processes (e.g., breeding, feeding, etc.).
- Increased human activity (i.e., encroachment) within or adjacent to the woodland which may result in soil compaction, dumping, etc.
- Increased susceptibility to establishment by invasive species either directly or indirectly and including both animals and plants.

As noted in **Section 5.2**, the proposed development plan was redesigned to eliminate encroachment of the proposed surface parking area into the Significant Woodland and achieve a minimum 3 m setback. As a result, the following is recommended:

- All proposed development features will be situated a minimum of 3 m from the dripline of the Significant Woodland, and all necessary grading and/or temporary disturbances will be restricted from the dripline as shown in Figure 3.
- A border of shrub plantings will be installed between the Significant Woodland dripline and limit of curbing to restrict human and/or pet encroachment into the natural area to the north.

5.3.3 Significant Valleylands

The form and function of the Significant Valleyland will be adequately protected via implementation of the other technical mitigation measures recommended herein.

5.3.4 Significant Wildlife Habitat

Per the assessment in **Section 4.4**, a total of four (4) candidate SWH types were considered further through this study:

- Seasonal Concentration Areas of Animals
 - 1. Turtle Wintering Areas
 - 2. Reptile Hibernaculum
- Rare Vegetation Communities or Specialized Habitats for Wildlife

- 3. Amphibian Breeding Habitat (Wetlands)
- Habitat of Species of Conservation Concern
 - 4. Special Concern and Rare Wildlife Species

Also based on this assessment, a total of six (6) Special Concern or provincially rare species have at least a possible likelihood of occurrence on the Subject Property given their habitat associations and current distribution in southern Ontario:

- 1) American Bumble Bee (Bombus pensylvanicus)
- 2) Four-toothed Mason Wasp (Monobia quadridens)
- 3) Monarch (Danaus plexippus)
- 4) Painted Skimmer (Libellula semifasciata)
- 5) Yellow-banded Bumblebee (Bombus terricola)
- 6) Snapping Turtle (Chelydra serpentina)

The form and function of all candidate SWH types will be adequately protected via implementation of the other technical mitigation measures recommended herein.

Habitat of Endangered and Threatened Species

Per the assessment in **Appendix 5** a total of three (3) Endangered or Threatened species are considered to have a possible likelihood of occurrence on the Subject Property given their habitat associations and current distribution in southern Ontario:

- 1) Little Brown Myotis (Myotis lucifugus)
- 2) Northern Myotis (Myotis septentrionalis)
- 3) Tri-colored Bat (Perimyotis subflavus)

Minimal tree removal is required to support the proposed development plan, and areas with the greatest potential to support roosting bats (e.g., wooded area to the north) will be adequately protected by the proposed development plan. To further protect Endangered bats (which may roost and/or feed within the Subject Property and Study Area) the following technical recommendations are offered.

- Any necessary tree removal within the proposed development envelopes will only take place between October 1 and April 30 to avoid the active season for bats. Should minor tree removal be required between May 1 and September 30, a qualified professional will complete an exit survey of suitable maternal roosting sites identified for removal a maximum of 24 hours before removal. The exit survey must make use of a bat detector and will occur for no less than the time period between sunset and 60 minutes after sunset. If an Endangered bat is identified during the survey, MECP should be contacted to obtain further direction prior to removal of the tree.
- If construction activities occur during the active bat season (i.e., May 1 and September 30), work will be restricted to daylight hours only and the use of artificial lighting will be avoided.

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Any lighting incorporated into the final building designs should be directed downward (i.e., towards the ground) and/or away from the adjacent woodlot (i.e., directed eastward) to the extent practicable.

5.3.6 Fish Habitat

Where development and/or site alteration activities are proposed adjacent to watercourses that support (or are assumed to support) fish and/or aquatic organisms, adverse effects may occur via the following pathways (amongst others):

- Alterations to surface water and/or groundwater contributions to the watercourse from construction (e.g., dewatering, etc.), grading that modifies the existing topography or drainage, and/or increased coverage of impervious surfaces (e.g., roads, roofs, etc.);
- Increased sediment loadings and/or nutrient enrichment within the watercourse via runoff exiting from development areas during and post construction. This may alter water quality and/or degrade habitat quality via increased turbidity, eutrophication, contamination by toxic substances, changes in pH, etc.
- Introduction of invasive species including aquatic organisms and aquatic plants.
- Increased human activity (i.e., encroachment) in the vicinity of the watercourse which may result in bank compaction, exploitation of fish, dumping, etc.

Fish habitat within Patterson Creek (mapped by the Province as a coldwater system) is a minimum of 100 m from the limit of development. On-site fish habitat will be adequately protected via implementation of the other technical mitigation measures recommended herein.

5.3.7 Other Natural Environment Considerations

While the recommendations offered herein restrict development activities from all significant natural heritage features, some vegetation removal (i.e., woody and herbaceous vegetation) is required to facilitate development. To further minimize potential adverse effects to the natural environment and breeding birds during construction, the following measures are recommended:

- > The removal of trees will be restricted to areas in direct conflict with the footprints of the proposed development features (e.g., residence, septic system, driveway, etc.) and grading, along with any hazardous trees in the immediate vicinity that pose an unacceptable risk to human life or property.
- All necessary vegetation removal (e.g., trees, meadow vegetation, etc.) will be completed outside the primary bird nesting period (i.e., to be completed between September 1 and March 31). Should minor vegetation removal be proposed during the bird nesting period, a bird nesting survey will be undertaken to confirm the presence or absence of nesting birds or bird nests within or adjacent to the areas subject to vegetation clearance. The survey is to take place within 48 hours of vegetation removal.
- Incorporation of Bird-Friendly Guidelines into the building design such as those published in City of Toronto's "Best Practices for Bird-

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Friendly Glass" and "Best Practices for Effective Lighting" should be considered at detailed design.

Any Landscape Plans prepared as part of the development approval should incorporate species native to the local landscape.

5.3.8 Summary of Technical Recommendations

All technical recommendations provided in **Section 5.3** are reiterated in **Appendix 7**.

6 APPLICABLE NATURAL HERITAGE AND ENVIRONMENTAL POLICIES

The following sections summarize the various municipal, provincial, and federal environmental policies that may apply to the proposed development plan and describe how the recommendations provided in this EIS will address these policies (where applicable).

6.1 Norfolk County Official Plan (consolidated to January 1, 2021)

The County's OP is a legal document prepared as required under section 14.7(3) of the *Planning Act*. An OP sets out goals, objectives, and policies that direct and manage land-use and future development activities and their effects on the social and natural environment of a municipality. Provincial plans that offer direction on matters of provincial interest are implemented principally through the County's OP. Provided herein is a description of relevant environmental and natural heritage policies contained within the County's OP and an assessment of whether the Site Plan Application addresses such policies.

The Subject Property is primarily designated "Commercial" per Schedule B-15 (Land Use) of the County's Official Plan (OP) and further overlaps with a "Special Policy Area". The extreme northern portion of the Subject Property is designated "Provincially Significant Wetland" (PSW) and "Hazard Lands", which is assumed to reflect a floodplain hazard associated with Patterson Creek as determined by the Long Point Region Conservation Authority (LPRCA). Flanking Patterson Creek is a riparian area consisting of wetlands which form part of the Provincially Significant LR-13 Wetland Complex along with a Significant Woodland, both of which are indicated per Schedule C-4 (Natural Heritage) under the County's OP.

The County's natural heritage protection framework is primarily outlined in Section 3.5 of the OP. This framework includes consideration for the following three categories:

• Provincially Significant Features

- o Provincially Significant Wetlands
- o Habitat of Endangered and Threatened Species

Natural Heritage Features

- o Significant Woodlands
- o Significant Valleylands
- o Significant Wildlife Habitat
- o Life Science ANSIs
- o Earth Science ANSIs
- o Locally Significant Wetlands
- o Locally Significant Coastal Wetlands

- o Unevaluated wetlands within GRCA's jurisdiction
- o Watercourses (not mapped or regulated by LPRCA or GRCA)
- o Fish Habitat
- o Natural Areas (identified on the NAI and including Carolinian Canada sites)

Hazard Lands

A summarized and condensed list of key natural heritage provisions of the County's OP that pertain to the SPA considered herein is provided below.

- Section 3.5.1a prohibits development or site alteration within "Provincially Significant Features", which includes PSWs and habitat of Endangered/Threatened species (unless in accordance with provincial and federal requirements)
- Section 3.5.1b prohibits development and site alteration on Adjacent Lands to "Provincially Significant Features" except where the ecological function of adjacent lands has been evaluated and it has been demonstrated that no negative impacts on the natural features or their ecological functions has been adequately mitigated.
- Section 3.5.2b prohibits development or site alteration within or adjacent to "Natural Heritage Features" unless it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions that cannot be adequately mitigated.

Terrastory reviewed potential impacts to the identified significant natural features – including the PSW, Significant Woodland, Significant Valleyland, candidate SWH, and potential habitat of Endangered and Threatened species – in **Section 5.3** of this EIS. Provided that Terrastory's recommended mitigation measures (summarized in **Appendix 7**) are carried out in full, no negative impacts are anticipated to the any significant natural heritage feature. Based on the preceding discussion, Terrastory can conclude that the proposed development plan appropriately addresses the natural heritage protection provisions of the County's OP.

6.2 Provincial Policy Statement 2020, pursuant to the *Planning Act*, R.S.O. 1990, c. P. 13

The Provincial Policy Study (PPS) is promulgated under the authority of the *Planning Act* and came into effect on 1 May 2020. The PPS provides direction to municipalities on land-use matters of provincial interest and sets the policy framework for regulating the use and development of land. Municipal OP's must be consistent with the PPS. Per its preamble, the PPS *provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment.*

The principal PPS policies that apply to natural heritage protection are outlined in section 2.1. While recognizing that the natural heritage protection framework is not intended to limit the ability of agricultural uses to continue (Policy 2.1.9), the PPS instructs that natural features and areas shall be protected for the long term (Policy 2.1.1) and that their diversity and connectivity be maintained, restored or, where possible, improved (Policy 2.1.2). In Ecoregions 6E and 7E the PPS separates significant features into three categories:

- 1) Those in which development and site alteration are not permitted, including 1) Provincially Significant Wetlands and 2) Significant Coastal Wetlands (Policy 2.1.4);
- 2) Those in which development and site alteration are not permitted unless it can be demonstrated that no negative impacts on the significant natural feature and/or its functions

- will occur, including: 1) Significant Woodlands, 2) Significant Valleylands, 3) Significant Wildlife Habitat, 4) Significant Areas of Natural and Scientific Interest, 5) Non-significant Coastal wetlands, and 6) Adjacent Lands (Policy 2.1.5 and 2.1.8).
- 3) Those in which development and site alteration are not permitted except in accordance with federal/provincial requirements, including: 1) fish habitat (Policy 2.1.6) and 2) habitat of Endangered and Threatened Species (Policy 2.1.7).

In considering the aforementioned PPS policies, it has been determined that the proposed development plan addresses relevant natural heritage provisions of the PPS for the following reasons:

- Per Table 3 of this report, no Significant Areas of Natural or Scientific Interest are present within the Study Area.
- Per Section 5.3 of this report, no negative impacts to the Significant Woodland, Significant Valleyland, candidate SWH, or PSW are anticipated given implementation of the proposed development plan provided that the recommended mitigation measures are implemented in full.
- Per **Section 5.3** of this report, Fish Habitat and Endangered/Threatened species habitat will be protected in accordance with provincial and federal requirements.

6.3 Ontario Regulation 41/24, pursuant to the *Conservation Authorities Act*, R.S.O. 1990, c. C.27

LPRCA's regulatory jurisdiction includes areas within and adjacent to valley and stream corridors, the Lake Erie shoreline, hazard lands (e.g., floodplains, steep slopes, etc.), watercourses, and wetlands as provided under O. Reg. 41/24 of the *Conservation Authorities Act*. While LPRCA no longer regulates matters related to natural heritage, LPRCA's Policy document (04 October 2017) would continue to provide guidance on regulatory review and issuance of any necessary permits and permissions.

Permission to develop within a LPRCA regulated area must establish how the "five tests" of development within or adjacent to "hazardous land" have been met. More specifically, development is only permitted if (in the opinion of the Authority) the control of 1) flooding, 2) erosion, 3) dynamic beaches, 4) unstable soil, or 5) bedrock will not be affected.

O. Reg. 178/06 was replaced by O. Reg. 41/24 on 1 April 2024. While LPRCA's regulatory jurisdiction formerly extended 120 m from PSWs, this regulated area limit now only extends 30 m from all wetlands. As a result, the proposed development area no longer appears to overlap with LPRCA's regulatory jurisdiction, and therefore formal permission to develop is not expected to be required (although the floodplain limit is not known by Terrastory with certainty). Further discussion with LPRCA to confirm regulatory requirements is encouraged.

6.4 Provincial Endangered Species Act, S.O. 2007, c. 6

The Endangered Species Act (ESA) is administered by MECP and protects designated Endangered and Threatened species in Ontario from being killed, harmed, or harassed (s. 9) or having their habitat damaged or destroyed (s. 10). The protection afforded to Endangered and Threatened species "habitat" is either prescribed by O. Reg. 832/21, or (for those species that lack regulated habitat) is defined as an area on which the species depends, directly or indirectly, to carry on its life processes, including life

processes such as reproduction, rearing, hibernation, migration or feeding. Development activities that constitute habitat damage and/or destruction typically require permitting under section 17 of the ESA, or proceed through registration of the activity as a conditional exemption under O. Reg. 242/08 or O. Reg. 830/21 (where applicable).

A detailed assessment of potential Endangered and Threatened habitat within the Subject Property is provided in **Appendix 5**. Per this assessment, and provided that relevant technical recommendations outlined in **Section 5.3** are implemented in full, it has been determined that the proposed development plan is consistent with the species and habitat protection provisions of the ESA.

6.5 Federal Fisheries Act, R.S.C. 1985, c. F-14

The amended federal Fisheries Act (Bill C-68) received Royal Assent in June 2019 while the updated fish and fish habitat protection provisions came into force in August 2019. Subsection 34.4(1) of the amended Fisheries Act prohibits all work, undertaking, or activity from causing the death of fish (other than fishing). Subsection 35(1) requires that project activities not result in the "harmful alteration, disruption or destruction of fish habitat" (HADD) unless undertaken in accordance with the requirements of a statutory exemption per subsection 35(2). Based on the Fish and Fish Habitat Protection Policy Statement (August 2019), HADD is interpreted by DFO to include "any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes of fish".

No in-water works or fill placement below the high-water mark of a surface water feature containing fish habitat is proposed through this application. Consistent with the assessment carried out in **Section 5.3.6** and provided that relevant technical recommendations outlined in **Section 5.3** are implemented in full, it has been determined that the proposed development plan is consistent with the fish and fish habitat protection provisions outlined in the *Fisheries Act*.

6.6 Federal Migratory Birds Convention Act, S.C. 1994, c. 22

Subsection 5(1) of the Migratory Birds Regulations under the Migratory Birds Convention Act, 1994 (MBCA) prohibits the disturbance or destruction of nests, eggs, or nest shelters of a migratory bird without authorization. Subsection 5(2) of the Migratory Birds Regulations allows for damage or destruction of nests which lack a live bird or viable egg with the exception of inactive nests associated with species listed under Schedule 1. In Ontario, the nests of Schedule 1 species are afforded year-round protection (i.e., regardless of the presence or absence of a live bird or viable egg), inclusive of the following species:

- Black-crowned Night Heron (*Nycticorax nycticorax*)
- Cattle Egret (Bubulcus ibis)
- Great Blue Heron (Ardea herodias)
- Great Egret (Ardea alba)
- Green Heron (Butorides virescens)
- Pileated Woodpecker (*Dryocopus pileatus*)
- Snowy Egret (*Egretta thula*)

The provincial Fish and Wildlife Conservation Act, 1997 (FWCA) extends the protection of bird nests and eggs to certain non-migratory species not listed under the Migratory Birds Regulations (e.g.,

Corvids, Strigids, Accipitrids). Section 7(1) of the FWCA prohibits a person from destroying, taking, or possessing the nest or eggs of a bird that belongs to a species that is wild by nature. Section 7(3) identifies that section 7(1) of the FWCA does not apply to a person who destroys, takes, or possesses the nest or eggs of a bird described in subsection (a) in accordance with the authorization of the Minister, or subsection (b) in the circumstances prescribed by the regulations. The nests of certain non-migratory bird species are not protected under the FWCA (e.g., Red-winged Blackbird).

Provided that the recommendations outlined in **Section 5.3.7** are implemented in full (i.e., prohibition on vegetation removal during the bird breeding season), no impacts to breeding birds or bird nests protected by the MBCA or FWCA are anticipated.

7 CONCLUSIONS

In accordance with the Terms of Reference for this study (**Appendix 1**) and relevant environmental policies, the preceding Environmental Impact Study provides a detailed characterization of the natural environment occurring within and adjacent to 139 Queensway West in Simcoe (Norfolk County). This EIS has been prepared in support of a Site Plan Application submitted to facilitate the construction of a new restaurant and to expand on-site surface parking. The EIS also supports Long Point Region Conservation Authority's review under O. Reg. 41/24 pursuant to the *Conservation Authorities Act*. Included herein is a comprehensive approach to identifying the presence or absence of several significant natural features afforded varying degrees of protection by applicable environmental policies. Potential negative impacts to the identified significant natural features are described with mitigation measures and technical recommendations offered to avoid or minimize such impacts as appropriate.

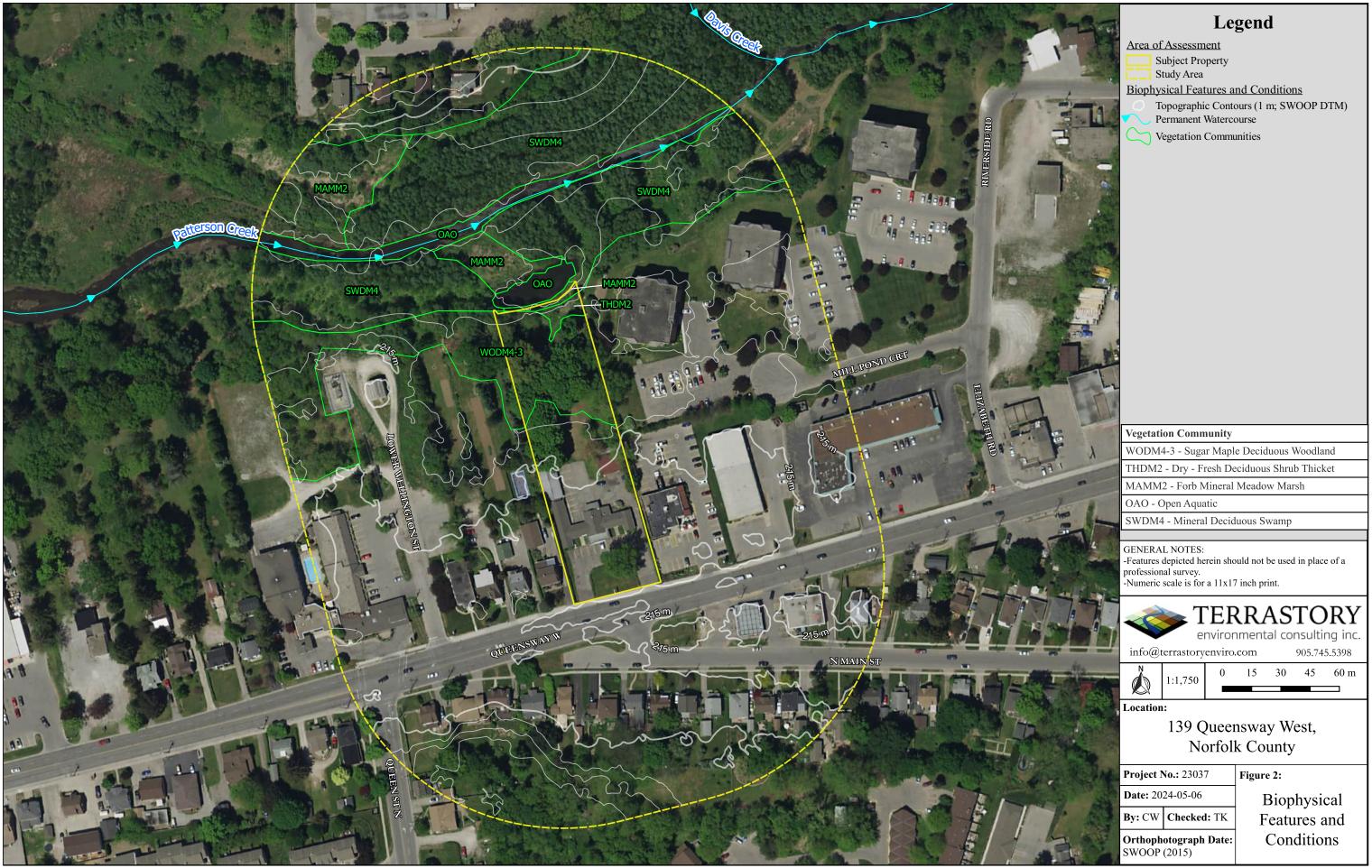
Based on the findings presented in this report, the natural area to the north of the proposed development area was found to contain a watercourse (Patterson Creek), Provincially Significant Wetland, Significant Valleyland, Significant Woodland, candidate Significant Wildlife Habitat, and potential Endangered/Threatened species habitat. Based on the presence of the above-mentioned significant natural heritage features, a comprehensive set of recommendations and mitigation measures are offered in **Section 5.3** to achieve "no negative impact" and address applicable municipal, provincial, and federal policies outlined in **Section 6**. This includes the establishment of a minimum 3 m setback from the Significant Woodland (which represents the greatest limit of the contiguous natural area), installation of shrub plantings within the buffer (to restrict human and pet encroachment), implementation of erosion and sediment controls at construction, and application of a timing restriction on vegetation removal. The development plan has since been further revised to avoid the regulatory floodplain, and thus achieves a variable 7 to 24 m setback from the woodland dripline.

It has been determined that no negative impacts to the above-noted features will occur and that the application appropriately addresses applicable natural heritage policies provided that all technical mitigation measures recommended herein (summarized in **Appendix 7**) are implemented in full. It is advised that such technical recommendations be incorporated into any necessary development approvals that permit the application.

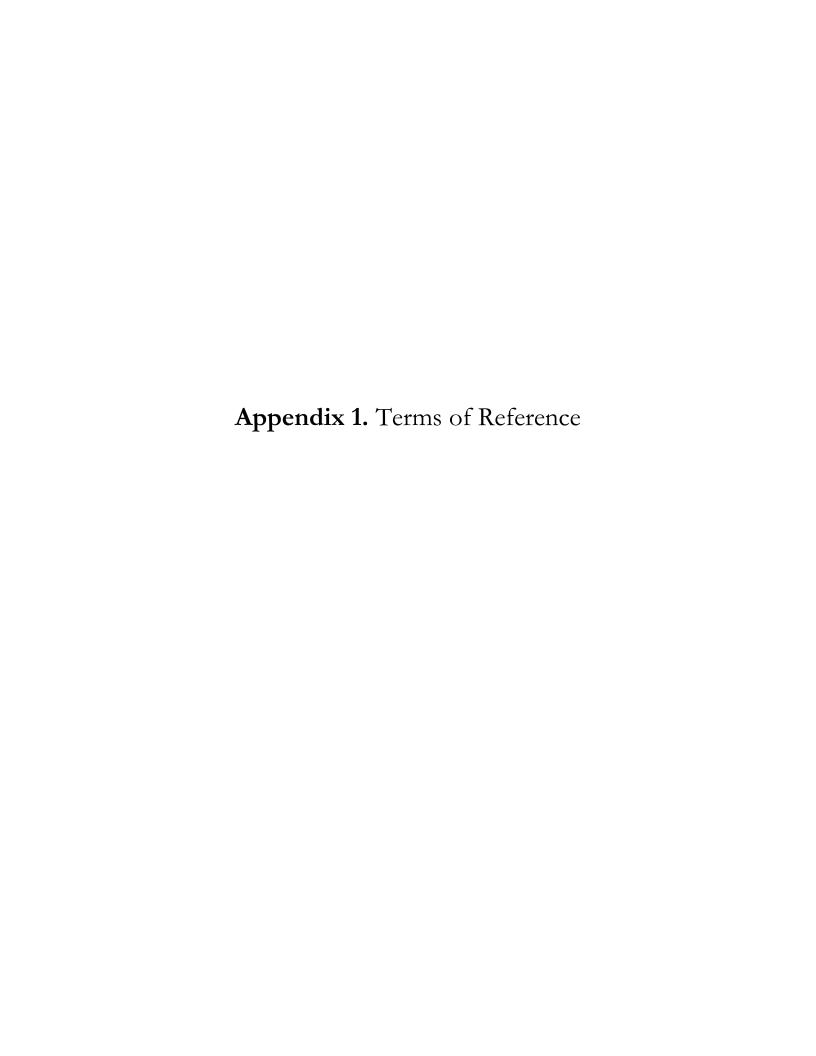
8 REFERENCES

- Armstrong, D. K., and J. E. P. Dodge. 2007. "Paleozoic Geology of Southern Ontario."
- Bradley, D. J. 2013. "Southern Ontario Vascular Plant Species List."
- Cadman, M. D., D. A. Sutherland, G. G. Beck, D. Lepage, and A. R. Couturier. 2007. *Atlas of the Breeding Birds of Ontario*, 2001–2005.
- Chapman, L. J., and D. F. Putnam. 1984. "Physiography of Southern Ontario."
- DFO. 2019. "Fish and Fish Habitat Protection Policy Statement."
- Dobbyn, J. S. 2005. Atlas of the Mammals of Ontario.
- Gao, C., J. Shirota, R.I. Kelly, F.R. Brunton, and S. van Haaften. 2006. "Bedrock Topography and Overburden Thickness Mapping, Southern Ontario."
- Henson, B. L., and K. E. Brodribb. 2005. "Great Lakes Conservation Blueprint for Terrestrial Biodiversity." Vol. 2.
- Humphrey, C., and H. Fotherby. 2019. "Little Brown Myotis, Northern Myotis and Tri-Colored Bat Recovery Strategy."
- Lee, H. T. 2008. "Southern Ontario Ecological Land Classification: Vegetation Type List."
- Lee, H. T., W. D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. "Ecological Land Classification for Southern Ontario: First Approximation and Its Application."
- MNR. 2000. "Significant Wildlife Habitat Technical Guide."
- ——. 2010. "Natural Heritage Reference Manual."
- MNRF. 2014. "Significant Wildlife Habitat Mitigation Support Tool."
- ———. 2015. "Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E."
- Oldham, M. 2017. "List of Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E)."
- OMNRF. 2014. Ontario Wetland Evaluation System: Southern Manual.
- Ontario Geological Survey. 2010. "Surficial Geology of Southern Ontario."
- Phair, C., B.L. Henson, and K.E. Brodribb. 2005. "Great Lakes Conservation Blueprint for Aquatic Biodiversity." Vol. 2.
- Presant, E.W., and C.J. Acton. 1984. "The Soils of the Regional Municipality of Haldimand-Norfolk."









May 23, 2023 Project No.: 23037



Attn: Mohammad Alam, Planner Norfolk County 50 Colborne St. South Simcoe, ON N3Y 4H3 519-426-5870 x 1828 Mohammad.Alam@norfolkcounty.ca

SUBJECT: EIS Terms of Reference

139 Queensway West

Community of Simcoe, Norfolk County

Dear Mohammad,

Terrastory Environmental Consulting Inc. (hereinafter "Terrastory") has been retained to complete an Environmental Impact Study (EIS) in support of a development application at the above-captioned location in Simcoe. The development application involves the demolition of an existing motel and the construction of a new restaurant building, including associated surface parking.

Please find below our proposed Terms of Reference (ToR) for the EIS.

OVERALL APPROACH AND METHODOLOGY

- EIS will be undertaken consistent requirements provided within Section 9.7.1 of the Norfolk County Official Plan (OP) and relevant Long Point Region Conservation Authority's (LPRCA) Policies for the Administration of O. Reg 178/06.
- Study Area will include the area proposed for development/disturbance and Adjacent Lands (natural lands) to a distance of 120 m.

BACKGROUND INFORMATION GATHERING

- Background biophysical information will be gathered from the following sources (minimum):
 - o Current and historical aerial photographs
 - o Existing natural feature mapping (e.g., NHIC, LPRCA regulation mapping, etc.).
 - Ontario Base Mapping and other sources of topographic information (e.g., LiDAR).
 - Ontario well records from the local landscape
 - o Soils mapping for the local landscape
 - o NHIC element occurrences
 - o iNaturalist element occurrences, including rare species records retrieved through the "(NHIC) Rare Species of Ontario" project
 - o Federal SAR Critical Habitat Mapping
 - o eBird

- o Ontario Breeding Bird Atlas database
- o Ontario Butterfly Atlas
- o Bumblebee Watch
- o DFO Aquatic Species at Risk Maps
- o Atlas of the Mammals of Ontario

SITE ASSESSMENT AND ECOLOGICAL SURVEYS

- Characterization and mapping of vegetation communities following the Ecological Land Classification (ELC) protocol.
- Assessment of site drainage to locate any wetlands or any permanent, seasonal, or intermittent streams (where present).
- Habitat-based assessment for fauna (birds, bats, herpetofauna, etc.).
- Identification of any designated or field-identified key natural features or sensitive habitats and delineation of their boundaries based on relevant protocols, including the dripline of the woodland.
- Incidental wildlife species sightings and potential wildlife corridors.
- Habitat-based assessment for species at risk and significant wildlife habitat.
- List of vascular plant survey (late spring/early summer).

SIGNIFICANCE ASSESSMENT

- Determination of whether any confirmed or potential significant natural heritage features and/or natural hazards are present within the Subject Property (or Adjacent Lands), particularly (among others) Significant Woodland, Significant Wildlife Habitat, Wetlands, Species at Risk, etc.
- Mapping of significant natural heritage feature boundaries per provincial protocols (i.e., wetland boundary, etc.).
- Full screening for Significant Wildlife Habitat (based on the Ecoregion 7E Criteria Schedule) and Species at Risk.
- If any Endangered/Threatened species are documented, their locations will be mapped, and the extent of their habitat will be delineated. Any correspondence with MECP (if required) will be appended to the EIS
- All species documented will include their relevant local, provincial, and federal rankings.
- If any S1-S3 species are found on-site, their locations and habitat extent will be mapped and considered through the impact assessment.

IMPACT ASSESSMENT AND RECOMMENDATIONS

- Description of the proposed development plan and any related technical plans/documents where available (e.g., Grading Plan, etc.).
- Mapping which indicates the proposed development plan overlaid with the significant natural feature mapping on a current air photo base.
- Impact assessment for all-natural heritage/hazard features identified and their functions from an ecological perspective.

Project No.: 23037

- Recommendations related to the preferred limit of disturbance based on the data collected, impact assessment, and conformity with applicable policies and legislation.
- Recommendations for buffers will include both widths and design recommendations.
- General mitigation measures to avoid/minimize impacts (e.g., tree removal timing window, ESC measures, etc.) when development does occur.

POLICY CONFORMITY ASSESSMENT

- An overall assessment of whether the proposed application, combined with any design changes and mitigation measures, conform to relevant natural heritage policies in the Norfolk County OP, PPS, LPRCA Regulation, MBCA and any other applicable natural heritage policy/legislation.
- Confirmation that relevant Norfolk County OP policies and other legislative requirements (e.g., Endangered Species Act, Migratory Birds Convention Act, etc.) are addressed by the proposed development plan.

NEXT STEPS

Should you have any questions or require further clarification regarding the contents of this letter, I would be pleased to discuss them further and can be reached by phone (905.745.5398) or email (tristan@terrastoryenviro.com).

Regards,

Terrastory Environmental Consulting Inc.

Senior Ecologist | President

Project No.: 23037

Tristan Knight

From: Mohammad Alam <Mohammad.Alam@norfolkcounty.ca>

Sent: June 7, 2023 11:14 AM

To: Tristan Knight

Subject: FW: Terms of Reference for EIS - 139 Queensway West

Good morning Tristan,

Please find the comments below from Forestry on the TOR of the EIS.

Sincerely, Mohammad

Mohammad Alam, MPL, MUD, RPP, MCIP

Supervisor, Development Planning Planning Community Development Division 185 Robinson Street, Simcoe, Ontario, Canada, N3Y 5L6 226-NORFOLK x. 8060



Providing valued public services that are responsive to our community's needs

From: Adam Biddle <Adam.Biddle@norfolkcounty.ca>

Sent: Wednesday, June 7, 2023 11:08 AM

To: Mohammad Alam < Mohammad. Alam@norfolkcounty.ca > **Subject:** RE: Terms of Reference for EIS - 139 Queensway West

Hi Mohammad,

The ToR seem adequate to address the potential impacts to the natural heritage features that may be on site.

I would just make a couple notes:

- Mapping of ELC communities should include an area measurement for each unit
- The EIS should quantify how much area of each of the ELC units will be directly impacted by development (ie. Removal of woodland)
- The EIS should also include proposed mitigation for direct impacts to natural heritage features, specifically woodland or forest communities. In the past, appropriate mitigation has included paying Norfolk County a fee to our Norfolk Reforestation Reserve to offset the loss of woodland/forest cover.

Adam Biddle

Supervisor, Forestry

Parks

Operations Division



8 Schellburg Ave., Simcoe, Ontario, Canada, N3Y 2J4

226-NORFOLK x. 2224



Providing valued public services that are responsive to our community's needs

From: Mohammad Alam < Mohammad. Alam @norfolkcounty.ca >

Sent: May-31-23 2:23 PM

To: Adam Biddle < Adam. Biddle@norfolkcounty.ca >

Subject: FW: Terms of Reference for EIS - 139 Queensway West

Hi Adam,

Just following up, if you get a chance to look at this TOR or can you give me some idea how is your timeline?

Thanks, Mohammad

Mohammad Alam, MPL, MUD, RPP, MCIP

Supervisor, Development Planning
Planning
Community Development Division
185 Robinson Street, Simcoe, Ontario, Canada, N3Y 5L6
226-NORFOLK x. 8060



Providing valued public services that are responsive to our community's needs

From: Mohammad Alam < Mohammad. Alam@norfolkcounty.ca >

Sent: Wednesday, May 24, 2023 8:44 AM

To: Adam Biddle < Adam. Biddle @norfolkcounty.ca >

Subject: FW: Terms of Reference for EIS - 139 Queensway West

Good morning Adam,

Hope all is good with you! The attached EIS TOR needs a cursory review for a proposed restaurant (reconstruction). The proposed building and parking spaces will be within 120 m of PSW and significant woodland to the North.

It would very helpful if you can provide a quick review.

Thanks.

Mohammad

Mohammad Alam, MPL, MUD, RPP, MCIP

Supervisor, Development Planning Planning Community Development Division 185 Robinson Street, Simcoe, Ontario, Canada, N3Y 5L6 519-426-5870 x. 8060



Working together with our community

From: Tristan Knight < tristan@terrastoryenviro.com>

Sent: Wednesday, May 24, 2023 7:46 AM

To: Mohammad Alam < Mohammad. Alam@norfolkcounty.ca >

Cc: lmaulthe@lprca.on.ca; Carl Wegenschimmel carl@terrastoryenviro.com

Subject: Terms of Reference for EIS - 139 Queensway West

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Mohammad.

Terrastory has been retained to complete an Environmental Impact Study in support of a development application at 139 Queensway West in Simcoe. For reference, attached herein is a copy of the Pre-con meeting minutes.

We have prepared a proposed Terms of Reference for the EIS, which is also attached herein. Please let us know if the County has any questions or comments pertaining to the ToR. Also cc'ed is Leigh-Anne at LPRCA for any comments from the Authority's perspective.

We look forward to agency review of the ToR.

Cheers,

T.

Tristan Knight M.E.S., M.Sc., I.S.A Senior Ecologist | President Terrastory Environmental Consulting Inc. (c) 905-745-5398 www.terrastoryenv.com

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Tristan Knight

From: planning <planning@lprca.on.ca>

Sent: June 7, 2023 3:51 PM

To: Tristan Knight

Cc: Leigh-Anne Mauthe; Carl Wegenschimmel; Mohammad Alam
Subject: LPRCA notes- Terms of Reference for EIS - 139 Queensway West

Good afternoon,

Thank you for the email regarding the Terms of Reference for 139 Queensway West. Staff have reviewed the submitted document and can provide the following comment.

To ensure there will be no negative impacts to the adjacent natural heritage features, please include an assessment of the groundwater and surface water (water budget).

If there are further questions, please contact me. Thank you,



Isabel Johnson, *Resource Planner*Long Point Region Conservation Authority
4 Elm Street, Tillsonburg, ON. N4G 0C4

519-842-4242 ext. 229. Email: ijohnson@lprca.on.ca

From: Tristan Knight <tristan@terrastoryenviro.com>

Sent: May 24, 2023 7:48 AM

To: Leigh-Anne Mauthe < Imauthe@lprca.on.ca>

Subject: FW: Terms of Reference for EIS - 139 Queensway West

Good Morning Leigh-Anne,

Please see below (apologies, I inputted your email incorrectly).

Cheers,

T.

Tristan Knight M.E.S., M.Sc., I.S.A Senior Ecologist | President

Terrastory Environmental Consulting Inc.

(c) 905-745-5398

www.terrastoryenv.com

From: Tristan Knight

Sent: Wednesday, May 24, 2023 7:46 AM **To:** Mohammad.Alam@norfolkcounty.ca

Cc: Imaulthe@lprca.on.ca; Carl Wegenschimmel <carl@terrastoryenviro.com>

Subject: Terms of Reference for EIS - 139 Queensway West

Hi Mohammad,

Terrastory has been retained to complete an Environmental Impact Study in support of a development application at 139 Queensway West in Simcoe. For reference, attached herein is a copy of the Pre-con meeting minutes.

We have prepared a proposed Terms of Reference for the EIS, which is also attached herein. Please let us know if the County has any questions or comments pertaining to the ToR. Also cc'ed is Leigh-Anne at LPRCA for any comments from the Authority's perspective.

We look forward to agency review of the ToR.

Cheers,

T.

Tristan Knight M.E.S., M.Sc., I.S.A
Senior Ecologist | President
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(c) 905-745-5398
www.terrastoryenv.com

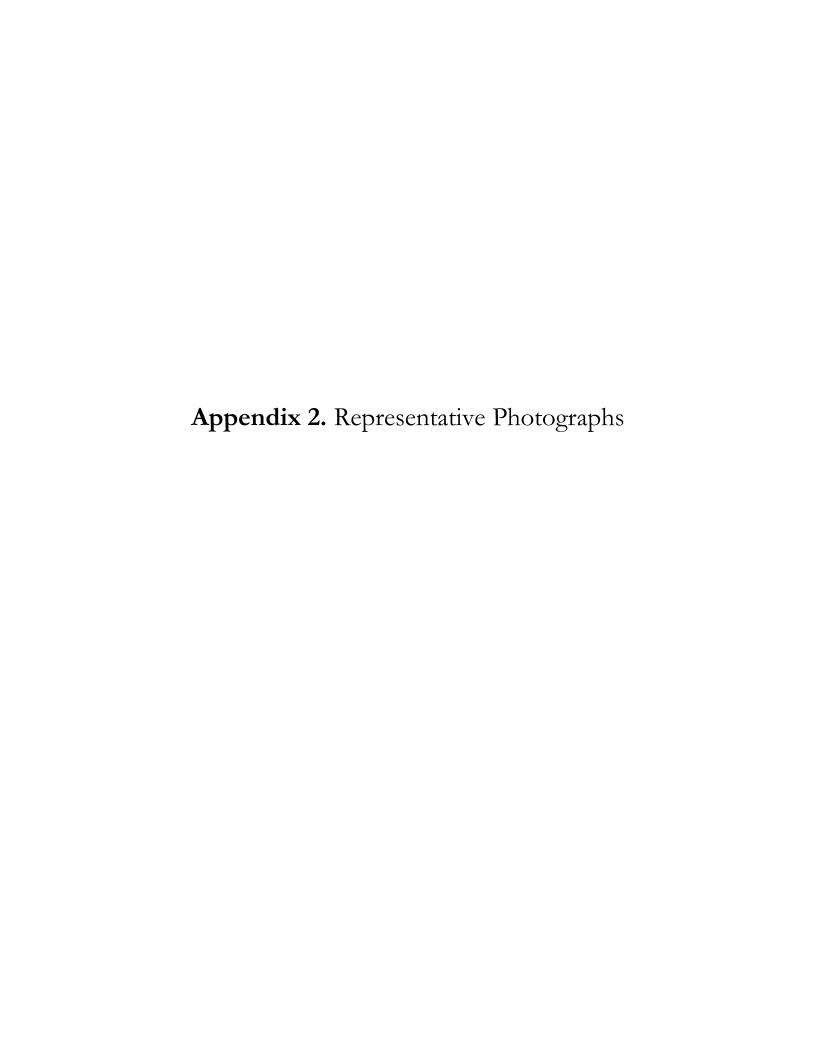




Photo 1. WODM4-3 - Sugar Maple Deciduous Woodland (WODM4-3), facing south (17 July 2023).



Photo 3. Sugar Maple Deciduous Woodland (WODM4-3), facing east (17 July 2023).



Photo 2. West side of the Subject Property (17 July 2023).



Photo 4. East side of Subject Property (17 July 2023).



Photo 5. Facing north from WODM4-3 (17 July 2023).



Photo 7. Dry - Fresh Deciduous Shrub Thicket (THDM2), facing south (17 July 2023).



Photo 6. Facing east from the edge of WODM4-3 (17 July 2023).



Photo 8. Pond at the back of the Subject Property, facing west (17 July 2023).



Photo 9. Pond at the back of the Subject Property, facing east (17 July 2023).



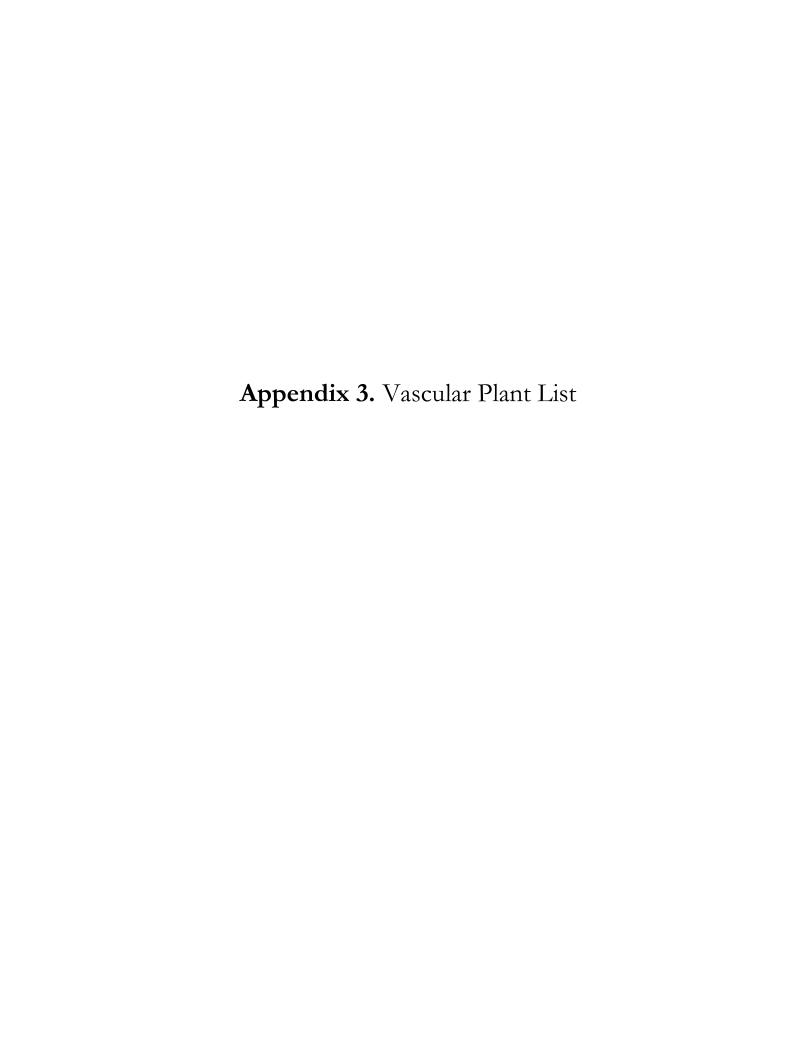
Photo 11. Sugar Maple Deciduous Woodland (WODM4-3) within the northwestern section of the Subject Property (17 July 2023).



Photo 10. Forb Mineral Meadow Marsh (MAMM2), facing east (17 July 2023).



Photo 12. Wetland (swamp and meadow marsh) within the northern side of the Subject Property (17 July 2023).



Appendix 3. Vascular Plant List

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Coefficient of Conservatism	Coefficient of Wetness	
Acer negundo	Manitoba Maple	Aceraceae	S5	0	0	
Acer platanoides	Norway Maple	Aceraceae	SNA	0	5	
Acer saccharum	Sugar Maple	Aceraceae	S5	4	3	
Acer x freemanii	Freeman's Maple	Aceraceae	SNA	6	-5	
Alliaria petiolata	Garlic Mustard	Brassicaceae	SNA	0	0	
Ambrosia artemisiifolia	Common Ragweed	Asteraceae	S5	0	3	
Asclepias incarnata	Swamp Milkweed	Asclepiadaceae	S5	6	-5	
Asclepias syriaca	Common Milkweed	Asclepiadaceae	S5	0	5	
Boehmeria cylindrica	False Nettle	Urticaceae	S5	4	-5	
Carex cristatella	Crested Sedge	Cyperaceae	S5	3	-3	
Carex granularis	Limestone Meadow Sedge	Cyperaceae	S5	3	-3	
Carex hystericina	Porcupine Sedge	Cyperaceae	S5	5	-5	
Carex vulpinoidea	Fox Sedge	Cyperaceae	S5	3	-5	
Cichorium intybus	Chicory	Asteraceae	SNA	0	5	
Cinna arundinacea	Stout Woodreed	Poaceae	S4	7	-3	
Circaea canadensis	Broad-leaved Enchanter's Nightshade	Onagraceae	S5	2	3	
Cirsium arvense	Canada Thistle	Asteraceae	SNA	0	3	
Cornus racemosa	Gray Dogwood	Cornaceae	S5	2	0	
Cornus rugosa	Round-leaved Dogwood	Cornaceae	S5	6	5	
Cuscuta gronovii var. gronovii	Swamp Dodder	Cuscutaceae	S5?	4	-3	
Dactylis glomerata	Orchard Grass	Poaceae	SNA	0	3	
Daucus carota	Wild Carrot	Apiaceae	SNA	0	5	
Echinocystis lobata	Wild Mock-cucumber	Cucurbitaceae	S5	3	-3	
Elaeagnus umbellata	Autumn Olive	Elaeagnaceae	SNA	0	3	
Eleocharis palustris	Creeping Spikerush	Cyperaceae	S5	6	-5	
Elymus repens	Creeping Wildrye	Poaceae	SNA	0	3	
Equisetum arvense	Field Horsetail	Equisetaceae	S5	0	0	
Erigeron philadelphicus	Philadelphia Fleabane	Asteraceae	S5	1	-3	
Euthamia graminifolia	Grass-leaved Goldenrod	Asteraceae	S5	2	0	
Eutrochium maculatum var. maculatum	Spotted Joe Pye Weed	Asteraceae	S5	3	-5	
Fragaria virginiana	Wild Strawberry	Rosaceae	S5	2	3	
Fraxinus pennsylvanica	Green Ash	Oleaceae	S4	3	-3	
Galium triflorum	Three-flowered Bedstraw	Rubiaceae	S5	4	3	
Geum canadense	White Avens	Rosaceae	S5	3	0	
Geum urbanum	Wood Avens	Rosaceae	SNA	0	5	
Glechoma hederacea	Ground Ivy	Lamiaceae	SNA	0	3	
Hedera helix	English Ivy	Araliaceae	SNA	0	3	
Hemerocallis fulva	Orange Daylily	Liliaceae	SNA	0	5	
Heracleum maximum	Cow-parsnip	Apiaceae	S5	3	-3	
Impatiens capensis	Spotted Jewelweed	Balsaminaceae	S5	4	-3	
Juglans nigra	Black Walnut	Juglandaceae	S4?	5	3	
Juncus dudleyi	Dudley's Rush	Juncaceae	S5	1	-3	

Page 1 of 3

Terrastory Environmental Consulting Inc. Appendix 3. Vascular Plant List

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Coefficient of Conservatism	Coefficient of Wetness	
Leersia oryzoides	Rice Cutgrass	Poaceae	S5	3	-5	
Leonurus cardiaca ssp. cardiaca	Common Motherwort	Lamiaceae	SNA	0	5	
Lonicera tatarica	Tartarian Honeysuckle	Caprifoliaceae	SNA	0	3	
Lysimachia ciliata	Fringed Loosestrife	Primulaceae	S5	4	-3	
Lythrum salicaria	Purple Loosestrife	Lythraceae	SNA	0	-5	
Malus pumila	Common Apple	Rosaceae	SNA	0	5	
Medicago lupulina	Black Medic	Fabaceae	SNA	0	3	
Morus alba	White Mulberry	Moraceae	SNA	0	0	
Myosotis scorpioides	True Forget-me-not	Boraginaceae	SNA	0	-5	
Nepeta cataria	Catnip	Lamiaceae	SNA	0	3	
Oenothera biennis	Common Evening Primrose	Onagraceae	S5	0	3	
Onoclea sensibilis	Sensitive Fern	Dryopteridaceae	S5	4	-3	
Oxalis stricta	Upright Yellow Wood-sorrel	Oxalidaceae	S5	0	3	
Parthenocissus vitacea	Thicket Creeper	Vitaceae	S5	4	3	
Phytolacca americana	Common Pokeweed	Phytolaccaceae	S4	3	3	
Picea glauca	White Spruce	Pinaceae	S5	6	3	
Plantago lanceolata	English Plantain	Plantaginaceae	SNA	0	3	
Plantago major	Common Plantain	Plantaginaceae	SNA	0	3	
Plantago rugelii	Rugel's Plantain	Plantaginaceae	S5	1	0	
Poa compressa	Canada Bluegrass	Poaceae	SNA	0	3	
Poa palustris	Fowl Bluegrass	Poaceae	S5	5	-3	
Poa pratensis ssp. pratensis	Kentucky Bluegrass	Poaceae	SNA	0	3	
Polygonum aviculare	Prostrate Knotweed	Polygonaceae	S4?	0	3	
Populus deltoides	Eastern Cottonwood	Salicaceae	S5	4	0	
Potamogeton crispus	Curly-leaved Pondweed	Potamogetonaceae	SNA	0	-5	
Prunella vulgaris	Heal-all	Lamiaceae	S5	0	0	
Prunus serotina	Black Cherry	Rosaceae	S5	3	3	
Rhamnus cathartica	Common Buckthorn	Rhamnaceae	SNA	0	0	
Robinia pseudoacacia	Black Locust	Fabaceae	SNA	0	3	
Rosa multiflora	Multiflora Rose	Rosaceae	SNA	0	3	
Rubus occidentalis	Black Raspberry	Rosaceae	S5	2	5	
Rumex crispus	Curly Dock	Polygonaceae	SNA	0	0	
Salix alba	White Willow	Salicaceae	SNA	0	-3	
Salix amygdaloides	Peach-leaved Willow	Salicaceae	S5	6	-3	
Salix eriocephala	Heart-leaved Willow	Salicaceae	S5	4	-3	
Salix interior	Sandbar Willow	Salicaceae	S5	1	-3	
Salix x fragilis	(Salix alba X Salix euxina)	Salicaceae	SNA	0	0	
Setaria pumila	Yellow Foxtail	Poaceae	SNA	0	0	
Silene latifolia	White Campion	Caryophyllaceae	SNA	0	5	
Solanum dulcamara	Bittersweet Nightshade	Solanaceae	SNA	0	0	
Solidago altissima	Tall Goldenrod	Asteraceae	S5	1	3	
Sonchus oleraceus	Common Sow-thistle	Asteraceae	SNA	0	3	

EIS – 139 Queensway West, Simcoe Project No.: 23037

Appendix 3. Vascular Plant List

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Coefficient of Conservatism	Coefficient of Wetness
Sorbus aucuparia	European Mountain-ash	Rosaceae	SNA	0	5
Stuckenia pectinata	Sago Pondweed	Potamogetonaceae	S5	4	-5
Symphyotrichum cordifolium	Heart-leaved Aster	Asteraceae	S5	5	5
Symphyotrichum firmum	Glossy-leaved Aster	Asteraceae	S4?	4	-3
Symphyotrichum lanceolatum	Panicled Aster	Asteraceae	S5	3	-3
Syringa vulgaris	Common Lilac	Oleaceae	SNA	0	5
Taraxacum officinale	Common Dandelion	Asteraceae	SNA	0	3
Thuja occidentalis	Eastern White Cedar	Cupressaceae	S5	4	-3
Trifolium pratense	Red Clover	Fabaceae	SNA	0	3
Trifolium repens	White Clover	Fabaceae	SNA	0	3
Ulmus americana	American Elm	Ulmaceae	S5	3	-3
Ulmus glabra	Wych Elm	Ulmaceae	SNA	0	3
Ulmus pumila	Siberian Elm	Ulmaceae	SNA	0	3
Urtica dioica ssp. gracilis	Slender Stinging Nettle	Urticaceae	S5	2	0
Verbena hastata	Blue Vervain	Verbenaceae	S5	4	-3
Verbena urticifolia	White Vervain	Verbenaceae	S5	4	0
Veronica officinalis	Common Speedwell	Scrophulariaceae	SNA	0	5
Vinca minor	Periwinkle	Apocynaceae	SNA	0	5
Viola sororia	Woolly Blue Violet	Violaceae	S5	4	0
Vitis riparia	Riverbank Grape	Vitaceae	S5	0	0

Appendix 4. Sign	nificant Wildlife Habitat Assessn	nent

environmental consulting inc.

1 SIGNIFICANT WILDLIFE HABITAT ASSESSMENT METHODOLGY

The PPS protects Significant Wildlife Habitat (SWH) from development and site alteration unless it can be demonstrated that no negative impacts on the feature or its function will occur. As outlined in the SWH Technical Guide (OMNR 2000) and supporting Ecoregion Criteria Schedules (OMNRF 2015), SWH is composed of four (4) principal components:

- Seasonal Concentration Areas of Animals
- Rare Vegetation Communities or Specialized Habitats;
- Habitat of Species of Conservation Concern; and
- Animal Movement Corridors.

The process for identifying SWH is outlined in s. 9.2.3 of the Natural Heritage Reference Manual (OMNR 2010). Step 1 considers the nature of the development application proposed and involves the assembly of background ecological information for the Study Area and Adjacent Lands. If the application triggers a need to protect SWH (e.g., change in land-use that requires approval under the Planning Act, etc.), a more thorough investigation of potential SWH features within the Study Area or Adjacent Lands must occur. Any confirmed SWH for the Study Area and Adjacent Lands as identified in relevant planning documents or by the MNRF should be noted at this stage. Where a need to protect SWH is triggered, step 2 involves undertaking a more thorough analysis of features, functions, and habitats within the Study Area via Ecological Land Classification (see Section 2.8). The list of ELC Ecosite codes generated for the Study Area is compared to those codes considered candidate SWH in the relevant Ecoregion Criterion Schedule (i.e., 5E, 6E, or 7E) in step 3. Where a positive match between an ELC Ecosite and candidate SWH exists, the area is considered candidate SWH.

Two options are available for candidate SWH: 1) the area may be protected without further study, or 2) the area may be evaluated to ascertain whether confirmed SWH is present. Evaluation may involve generating more detailed maps of vegetation cover, or conducting surveys of the wildlife population within the candidate SWH including reproductive, feeding, and movement patterns. If the area is confirmed SWH, the final step in the process is the completion of an impact assessment to demonstrate that no negative impacts to the confirmed SWH or its function will occur. The impact assessment process is assisted by SWH Mitigation Support Tool (OMNRF 2014).

2 RESULTS

 Table 1. Results of the Significant Wildlife Habitat Assessment.

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas o within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Seasonal Concentration Areas o	f Animals		
Waterfowl Stopover and Staging Areas (Terrestrial)	No. Meadows, fields, and/or thickets that annually flood during spring and could support significant congregations of migrating waterfowl are absent.		
Waterfowl Stopover and Staging Areas (Aquatic)	No. Large surface water features (e.g., ponds, lakes, bays, coastal inlets, large watercourses, etc.) and/or wetlands that annually flood during spring could support significant congregations of migrating waterfowl are absent.		
Shorebird Migratory Stopover Areas	No. Unvegetated open areas adjacent to surface water features (e.g., shorelines, beaches, mudflats, etc.) and could support significant congregations of migrating shorebirds are absent		
Raptor Wintering Areas	No. forest and meadow habitats are absent.		
Bat Hibernacula	No. Natural features and habitats that could support hibernating bats (e.g., caves, mine shafts, crevices, karsts, etc.) are absent.		
Bat Maternity Colonies	<u>No.</u> Mature deciduous and mixed forests with a high-density (i.e., >10/ha) of large-diameter (i.e., ≥25 cm DBH) trees containing cracks/cavities are absent.		
Turtle Wintering Areas	Yes. Surface water features and/or wetlands with soft muddy substrate which do not freeze to the bottom during winter are absent.	<u>Unknown.</u> Spring emergence surveys for turtles have not been conducted.	Negligible. Proposed development activities will occur a minimum of 50 m from the wetland boundary.
Reptile Hibernaculum	Yes. Features (e.g., small mammal burrows, rock crevices, etc.) and/or habitats (e.g., certain wetlands with a fluctuating water table, etc.) that could provide snakes with access below the frost line may be present.	<u>Unknown.</u> Emergence or hibernation surveys for snakes have not been conducted.	Negligible. Proposed development and disturbance are restricted from all on-site natural areas. Subject Property does not exhibit a high potential to support significant snake overwintering.
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	No. Features that could support nesting by Cliff Swallow and Northern Rough-winged swallow (e.g., eroding banks, sandy hills, borrow pits, steep slopes, cliff faces, etc.) are absent.		
Colonially - Nesting Bird Breeding Habitat Breeding Habitat (Tree/Shrubs)	No. Swamp and treed fen communities are absent.		
Colonially - Nesting Bird Breeding Habitat (Ground)	No. Rocky islands or peninsulas along lakes or large rivers are absent.		
Migratory Butterfly Stopover Areas	No. A mixture of fields and forests within 5 km from the shoreline of Lake Erie or Lake Ontario are absent.		
Landbird Migratory Stopover Areas	No. While migrating landbirds may temporarily stopover to feed and rest, the Subject Property is unlikely to support significant congregations of migrating landbirds as it is greater than 5 km from the shoreline of Lake Erie.		



Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas o within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Deer Winter Congregation Areas	No. The Subject Property and/or Adjacent Lands have not been identified as a deer wintering area by MNRF.		
Rare Vegetation Communities	or Specialized Habitats for Wildlife		
Cliffs and Talus Slopes	No. Cliffs and talus slope communities are absent.		
Sand Barren	No. Sand barren communities are absent.		
Alvar	No. Flora characteristic of alvars are absent.		
Old Growth Forest	No. Based on a review of historical aerial photographs, the deciduous forest has emerged recently and would not be expected to exhibit old-growth characteristics (e.g., old trees, abundant snags and downed woody debris, canopy gaps caused by species turnover, limited disturbance, etc.).		
Savannah	No. Flora characteristic of savannahs are absent.		
Tallgrass Prairie	No. Flora characteristic of tallgrass prairies are absent.		
Other Rare Vegetation Community	No. Provincially rare vegetation communities are absent.		
Waterfowl Nesting Area	No. Wetlands which may support nesting waterfowl are absent.		
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No. Forest communities adjacent to large surface water features are absent.		
Woodland Raptor Nesting Habitat	No. Forest communities that may support nesting raptors are absent.		
Turtle Nesting Areas	No. Exposed mineral soils adjacent to surface water features (e.g., lakes, ponds, etc.) and/or wetlands that may support turtles are absent.		
Seeps and Springs	No. Areas where groundwater emerges at the surface and may support specialized habitat for plants and wildlife are absent.		
Amphibian Breeding Habitat (Woodland)	No. Forests with wetlands, ponds, and/or pools that may support significant congregations of breeding amphibians are absent.		
Amphibian Breeding Habitat (Wetlands)	Yes. Wetlands and surface water features (e.g., ponds, lakes, etc.) that may support significant congregations of breeding amphibians are present.	<u>Unknown.</u> Anuran calling surveys have not been conducted.	Negligible. Proposed development activities will occur a minimum of 50 m from the wetland boundary.
Woodland Area-Sensitive Bird Breeding Habitat	No. Interior forest interior conditions (i.e., >200 m from edge) are absent.		

Habitat for Species of Conservation Concern

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas o within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Marsh Bird Breeding Habitat	No. Wetlands with shallow water and emergent aquatic vegetation are absent.		
Open Country Bird Breeding Habitat	No. Meadow habitats of sufficient size are absent.		
Shrub/Early Successional Bird Breeding Habitat	No. Shrub/early-successional habitats of sufficient size are absent.		
Terrestrial Crayfish	Yes. Marsh and swamp communities and/or wet fields are present	No. Terrestrial crayfish chimneys were not documented.	
Special Concern and Rare Wildlife Species	Yes. See Table 2 below.	Yes. See Table 2 below.	<u>Possible.</u> See Table 2 below.
Animal Movement Corridors			
Amphibian Movement Corridors	No. Significant amphibian breeding habitat is absent. Subject Property is not expected to act as a significant movement corridor between breeding and summer habitat for amphibians.		

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Table 2. Results of the Special Concern and Provincially Rare Species Assessment.

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Birds					
Barn Swallow (<i>Hirundo rustica</i>)	SC	OBBA	 Nests in barns, bridge/culvert undersides, awnings/overhangs on sides of buildings, and (historically) tree cavities. Forages in a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and above waterbodies. 	Negligible. While this species may forage over open areas on the Subject Property for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites within the Subject Property are absent.	
Common Nighthawk (Chordeiles minor)	SC	OBBA	 Breeds and forages in a variety of open habitats with sparse cover of woody vegetation. Also occupies urban areas and nests on flat roof tops. 	Negligible. While this species may forage over open areas on the Subject Property for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites within the Subject Property are absent	
Eastern Wood-pewee (Contopus virens)	SC	OBBA	 Breeds and forages in relatively open, deciduous and mixed forests of various sizes (including urban forest fragments) and along forest edges. 	<u>Unlikely.</u> While suitable breeding habitat is present within the Subject Property, and no formal breeding bird surveys were undertaken, no individuals were documented during the single site visit on 17 July 2023. This does not eliminate the possibility that this species is nesting within the Subject Property, but reduces the likelihood.	
Grasshopper Sparrow (Ammodramus savannarum)	SC	OBBA	 Breeds and forages in hayfields, savannahs, pastures, meadows, grasslands, and prairies. 	Negligible. Suitable breeding habitat is absent from the Subject Property.	
Purple Martin (<i>Progne subis</i>)	S3B	OBBA	 Forages over towns, cities, parks, open fields, dunes, streams, wet meadows, beaver ponds, and other open areas. Nests in cavities (both artificial and natural), though is almost entirely dependent on human constructed nesting structures (martin houses) in Ontario. 	Negligible. While this species may forage over open areas on the Subject Property for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites within the Subject Property are absent.	
Tufted Titmouse (Baeolophus bicolor)	S3B	eBird	 Breeds in deciduous woods or mixed evergreendeciduous woods, typically in areas with a dense canopy and many tree species. May also occupy orchards, parks, and suburban areas. 	<u>Unlikely.</u> While suitable breeding habitat is present within the Subject Property, and no formal breeding bird surveys were undertaken, no individuals were documented during the single site visit on 17 July 2023. This does not eliminate the possibility that this species is nesting within the Subject Property, but reduces the likelihood.	
Wood Thrush (Hylocichla mustelina)	SC	OBBA	Breeds and forages in second-growth and mature deciduous and mixed forests with a well-developed understory.	Negligible. Suitable breeding habitat is absent from the Subject Property.	
Insects					
American Bumble Bee (Bombus pensylvanicus)	SC	Species distribution and on-site habitats	 Occupies a range of open areas with nectaring sites. Nests above ground in dense mats of long grasses but has also been known to nest in abandoned rodent burrows and bird nests high above the ground. 	Possible. Species is a habitat generalist and occupies a wide range of areas.	Negligible. Proposed development and disturbance are restricted from all on-site natural areas, and are not expected to adversely affect nectaring or overwintering opportunities for this species.



Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Clamp-tipped Emerald (Somatochlora tenebrosa)	S3	NHIC	Occupies small, shaded forest streams.	Negligible. Suitable habitat is absent from the Subject Property.	
Clymene Moth (<i>Haploa clymene</i>)	S3S4	Found during site visit in 2023	 Occupies deciduous forests, wetlands, and fields where it nectars on a variety of flowers. Host plants include <i>Eupatorium</i>, <i>Ageratina altissima</i>, oaks (<i>Quercus</i> spp.), cherries/peaches (<i>Prunus</i> spp.), and willows (<i>Salix</i> spp.) 	Confirmed. One (1) Clymene Moth was observed during site visit on 17 July 2023.	
Finlayson's Oakworm Moth (Anisota finlaysoni)	S2	iNaturalist	Hostplants are oaks, including Chinkapin Oak (<i>Quercus muehlenbergii</i>) or sometimes chestnut (Castanea) or hazelnut (Corylus).	Negligible. Suitable habitat is absent from the Subject Property.	
Four-toothed Mason Wasp (Monobia quadridens)	S2?	iNaturalist	 Occupies a range of open areas with nectaring sites. Usually nests in wood borings, but sometimes burrows in dirt banks. Sometimes takes over abandoned nests of carpenter bees or ground bees, also <i>Sceliphron</i> (mud dauber) cells. 	Possible. Suitable foraging habitat and nesting habitat are present within the Subject Property.	Negligible. Proposed development and disturbance are restricted from all on-site natural areas, and are not expected to adversely affect nectaring or overwintering opportunities for this species.
Macropis Cuckoo Bee (Epeoloides pilosulus)	S1	NHIC	• This species is a habitat specialist, requiring both a suitable host (<i>Macropis</i> bees) and their host's foodplant (<i>Lysimachia</i> spp.) The foodplant requires moist habitat and the host bee requires sunny, sandy slopes for its nest site (Environment and Climate Change Canada. 2021).	<u>Unlikely.</u> Suitable habitat is absent from the Subject Property. However, a few host plants (<i>Lysimachia</i> spp.) were observed.	
Monarch (<i>Danaus plexippus</i>)	SC	iNaturalist	 Oviposits on Milkweeds (Asclepias spp.). Generalist foraging that nectars in most areas with wildflowers. 	Possible. Ovipositing sites (i.e., species in the genus Asclepias) are present, and species may forage on the Subject Property.	Negligible. Proposed development and disturbance are restricted from all on-site natural areas, and are not expected to adversely affect nectaring or ovipositing opportunities for this species.
One-banded Mason Wasp (Ancistrocerus unifasciatus)	S3	NHIC	 Nests in old Mud Dauber nests. Mud Dauber nests are built in all kinds of sheltered locations, incl. man-made structures, rock ledges. 	<u>Unlikely.</u> Suitable habitat is absent from the Subject Property.	
Painted Skimmer (<i>Libellula semifasciata</i>)	S3	NHIC	Occupies marshy ponds near woodlands.	<u>Possible</u> . Suitable habitat is present within the Subject Property.	Negligible. Areas of proposed development and disturbance will take place away from the pond located within the Subject Property. A setback from the provincially significant wetland will be established (120 m)
Parancistrocerus leionotus	S2	iNaturalist	 Occupies a range of open areas with nectaring sites. Nests in small cavities in rocks or concrete. 	<u>Unlikely.</u> May occasionally forage within the Subject Property but suitable nesting sites are absent.	
Yellow Banded Bumble Bee (Bombus terricola)	SC	Species distribution and on-site habitats	 Occupies a range of open areas with nectaring sites. Nests underground in abandoned rodent burrows or decomposing logs. 	Possible. Species is a habitat generalist and occupies a wide range of areas.	Negligible. Proposed development and disturbance are restricted from all on-site natural areas, and are not expected to adversely affect nectaring or overwintering opportunities for this species.

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Powdery Twig Lichen (Ramalina labiosorediata)	S3?	NHIC	 Occupies mature deciduous tree bark and Eastern White Cedar; sometimes on rockfaces in sheltered humid situations. 	Negligible. Suitable habitat is absent from the Subject Property.	
Mammals					
Woodland Vole (<i>Microtus pinetorum</i>)	SC	Species distribution and on-site habitats	 Occupies deciduous forests in areas of soft, friable, often sandy soil beneath deep humus to facilitate burrowing. 	Negligible. Suitable habitat is absent from the Subject Property.	
Plants					
Bird's-foot Violet (<i>Viola pedata</i>)	S1	NHIC	Occupies dry, sandy oak woods and savannas in southwestern Ontario.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Broad Beech Fern (Phegopteris hexagonoptera)	SC	NHIC	Occupies mature, moist to wet deciduous forests.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Carolina Vetch (Vicia caroliniana)	S2	NHIC	Occupies dry oak woods, thickets, and prairies in southwestern Ontario and formerly also in southeastern Ontario.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Cleistogamous Autumn Coralroot (Corallorhiza odontorhiza var. odontorhiza)	S2	NHIC	Occupies Moist to dry sandy woods, including old pine plantations.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Common Hoptree (<i>Ptelea trifoliata</i>)	SC	iNaturalist	Occupies forested to open dunes/beaches along Lake Erie, dry fields and bluffs, and floodplain forests.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Dwarf Chinquapin Oak (Quercus prinoides)	S2	NHIC	Occupies dry, open sandy woods and open areas in southwestern Ontario.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Fall Witchgrass (<i>Digitaria cognata</i>)	S1?	iNaturalist	Occupies dry sandy open ground in southwestern Ontario and locally east to Northumberland County	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Moss Phlox (<i>Phlox subulata</i>)	S1?	NHIC	Native in dry, sandy, open woods and open ground, particularly on the Norfolk Sand Plain of southwestern Ontario.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Northern Pin Oak (Quercus ellipsoidalis)	S3	iNaturalist	Occupies dry, sandy or rocky woods, roadsides, and fencerows in southwestern Ontario and northwestern Ontario	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Palmate-leaved Violet (Viola palmata)	S2	NHIC	Occupies dry oak and oak-hickory woods in southwestern Ontario.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Pignut Hickory (Carya glabra)	S3	NHIC	Occupies dry deciduous woods and savannahs, often on sandy soil with oaks, in the Carolinian Zone of southwestern Ontario.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Scarlet Beebalm (<i>Monarda didyma</i>)	S3	iNaturalist	 Occupies rich forests on banks and floodplains in the Carolinian Zone, but possibly native as far north as the southern Bruce Peninsula (Johnson 2016) and along the Nottawasaga River in Simcoe County (where it occurs in wild bottomlands far from houses and is surely native. 	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Swamp Rosemallow (Hibiscus moscheutos)	SC	NHIC, iNaturalist	Occupies shoreline marshes along the Great Lakes and Lake St. Clair.	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Walter's Barnyard Grass (Echinochloa walteri)	S3	NHIC	Occupies marshes and shorelines primarily in southwestern Ontario, but also sparingly in southeastern Ontario,	Negligible. Suitable habitat is absent from the Subject Property. Not observed during vascular plant survey on 17 July 2023.	
Reptiles					
Eastern Ribbonsnake (Thamnophis saurita)	SC	Ont. Herp Atlas.	 Occupies edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation. 	<u>Unlikely.</u> Suitable habitat is present within the Subject Property. There is one (1) historic record in atlas square 17NH54 from 1986	
Northern Map Turtle (Graptemys geographica)	SC	Ont. Herp Atlas.	 Occupies lakes and large rivers with slow moving currents. Nests in exposed, usually coarse, friable substrate. 	Negligible. Suitable habitat is absent within the Subject Property. There is one (1) historic record in atlas square 17NH54 from 1988.	
Snapping Turtle (<i>Chelydra serpentina</i>)	SC	NHIC	 Occupies a variety of aquatic habitats with slow moving water. Nests in exposed, usually coarse, friable substrate. Known to make long-distance overland movements (i.e., several kilometers) between habitats. 	Possible. Suitable habitat is present within the Subject Property. There is a recent record in atlas square 17NH54 from 2018.	Negligible. Proposed development activities will occur a minimum of 50 m from the wetland boundary.

¹ Likelihood categories should be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

<u>Unlikely</u>: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

<u>Possible</u>: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

Probable: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.

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Appendix 5. Endangered and Threatened Species Assessment

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Birds					
Bank Swallow (<i>Riparia riparia</i>)	THR	OBBA	 Nests in natural or anthropogenically derived exposed, sandy substrates on vertical or steep surfaces. Forages in a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and above waterbodies. 	Negligible. While this species may forage over open areas on the Subject Property for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites within the Subject Property are absent. Not observed during site visit in 2023.	
Bobolink (<i>Dolichonyx oryzivorus</i>)	THR	OBBA	 Breeds and forages in hayfields, pastures, meadows, grasslands, and prairies which are often (but not always) greater 4 ha. May be found in more marginal habitats (e.g., shrubby fields, smaller fields, etc.) during migration or following disturbance to breeding habitats (e.g., hay cutting). 	Negligible. No suitable breeding habitat within the Subject Property.	
Chimney Swift (<i>Chaetura pelagica</i>)	THR	NHIC, iNaturalist	 Nests in large, uncapped chimneys and (historically) tree cavities. May forage above a wide variety of anthropogenic (e.g., cities, towns) and natural (e.g., fields, forests) areas. 	Negligible. While this species may forage over open areas on the Subject Property for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites within the Subject Property are absent. Not observed during site visit in 2023.	
Eastern Meadowlark (Sturnella magna)	THR	NHIC	Breeds and forages in hayfields, savannahs, pastures, meadows, grasslands, prairies, and shrubby fields.	Negligible. No suitable breeding habitat within the Subject Property.	
Eastern Whip-poor-will (Caprimulgus vociferus)	THR	OBBA	Breeds and forages in semi-open deciduous forests and thickets, and their edges.	Negligible. No suitable breeding habitat within the Subject Property.	
Red-headed Woodpecker (Melanerpes erythrocephalus)	END	iNaturalist	Breeds and forages in open forests, savannahs, and forest edges that tend to contain large, mature trees.	Negligible. No suitable breeding habitat within the Subject Property. Not observed during site visit in 2023.	
Insects					
Davis's Shieldback (Atlanticus davisi)	THR	iNaturalist	Occupies oak woodland, oak savannah and sand barren sites with well-drained dry, sandy soils.	Negligible. Suitable habitat is absent within the Subject Property.	
Nine-Spotted Lady Beetle (Coccinella novemnotata)	END	Species distribution and on-site habitats	 Occupies a range of open natural areas, including gardens, parks, meadows and agricultural areas. Distribution is driven by prey availability, typically feeding on aphids which colonize crops and orchards. 	Negligible. Nine-Spotted Lady Beetle has not been documented in Ontario since 1987. Additionally, the prevalence of non-suitable plants on the site suggests that aphid densities necessary to support the species may not be present.	
Rusty-patched Bumble Bee (Bombus affinis)	END	NHIC	 Occupies a range of open areas with nectaring sites. Nests underground in abandoned rodent burrows or decomposing logs. 	Negligible. Most records in Ontario are historical (before 1970). The species was last observed from Pinery Provincial Park in 2009 (Colla and Taylor-Pindar 2011).	
Transverse Lady Beetle (Coccinella transversoguttata)	END	NHIC	 Habitat generalist, meaning it is able to live in a wide range of habitats, including agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows and riparian areas. 	Negligible. In Ontario, all records are historical, from 1990 and earlier (Linton, J., and D. McCorquodale. 2019). There has been one recent record from northern Ontario 2021.	

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Mammals					
American Badger (<i>Taxidea taxus</i>)	END	NHIC	 Occupies a variety of habitats, such as tallgrass prairie, sand barrens, and agricultural lands. Breeds and sleeps in burrows. 	Negligible. Suitable habitat is absent within the Subject Property.	
Eastern Small-footed Myotis (Myotis leibii)	END	Species distribution and on-site habitats	 Maternal roosting sites include exposed rock outcrops, crevices, and cliffs. Overwinters in caves and mines that maintain temperatures above 0°C. 	<u>Unlikely.</u> While species may forage above open habitats on the Subject Property or adjacent lands, potential maternal roosting habitat (e.g., rock outcrops, cliffs, etc.) is absent.	
Little Brown Myotis (<i>Myotis lucifugus</i>)	END	Species distribution and on-site habitats	 Maternity roosts sites most often include buildings and large diameter trees with cracks, crevices, and/or exfoliating bark. Overwinters in caves and mines that maintain temperatures above 0°C. 	Possible. Forest/woodland communities within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	Negligible. No tree removal is proposed within the Significant Woodland. A timing window restriction is applied to necessary tree removal activities outside the woodland to avoid impacting roosting bats. Additional mitigation measures for construction and detailed design are also provided. See report for greater details.
Northern Myotis (<i>Myotis septentrionalis</i>)	END	Species distribution and on-site habitats	 Maternity roosts most often include large diameter trees with cracks, crevices, and/or exfoliating bark (buildings rarely used). Overwinters in caves and mines that maintain temperatures above 0°C. 	Possible. Forest/woodland communities within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	Negligible. No tree removal is proposed within the Significant Woodland. A timing window restriction is applied to necessary tree removal activities outside the woodland to avoid impacting roosting bats. Additional mitigation measures for construction and detailed design are also provided. See report for greater details.
Tri-colored Bat (<i>Perimyotis subflavus</i>)	END	Species distribution and on-site habitats	 Maternal roosting sites include Maple (Aver spp.) and Oak (Quercus spp.) with dead/dying leaf clusters. Overwinters in caves and mines that maintain temperatures above 0°C. 	Possible. Some Maples are present within the Subject Property and on adjacent lands that may provide roosting opportunities for maternity colonies.	Negligible. No tree removal is proposed within the Significant Woodland. A timing window restriction is applied to necessary tree removal activities outside the woodland to avoid impacting roosting bats. Additional mitigation measures for construction and detailed design are also provided. See report for greater details.
Plants					
American Chestnut (Castanea dentata)	END	iNaturalist	Occupies dry deciduous forests.	Negligible. Species not documented during vascular plant surveys.	
American Ginseng (Panax quinquefolius)	END	Species distribution and on-site habitats	Occupies rich, relatively undisturbed deciduous forests.	Negligible. Species not documented during vascular plant surveys.	

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Black Ash (Fraxinus nigra)	END	NHIC	Occupies deciduous swamps (often peaty), floodplains, and wet woods.	Negligible. Species not documented during vascular plant surveys.	
Butternut (Juglans cinerea)	END	NHIC	Occupies a variety of treed habitats including mature forests, early- successional forests, and hedgerows.	Negligible. Species not documented during vascular plant surveys.	
Eastern Flowering Dogwood (Cornus florida)	END	Species distribution and on-site habitats	Dry (usually with Oak) to rich deciduous forests, often on hillsides and river banks.	Negligible. Species not documented during vascular plant surveys.	
Fern-leaved Yellow False Foxglove (Aureolaria pedicularia)	THR	NHIC	Occupies open savanna and woodland habitats, particularly those containing Black Oak (<i>Quercus velutina</i>)	Negligible. Species not documented during vascular plant surveys.	
Smooth Yellow False Foxglove (Aureolaria flava)	THR	NHIC	Occupies dry, open to semi-open upland oak forests typically with White Oak present, on well-drained soils.	Negligible. Species not documented during vascular plant surveys.	
Virginia Goat's-rue (<i>Tephrosia virginiana</i>)	END	NHIC	Occupies open, sunny areas with sandy soil, such as prairies, open oak and pine forests on sandy ridges, and sand dunes.	Negligible. Species not documented during vascular plant surveys.	
Virginia Mallow (Sida hermaphrodita)	END	iNaturalist	Occupies riparian habitats that are seasonally inundated with standing water and marshes with limited shade.	Negligible. Species not documented during vascular plant surveys.	
Reptiles					
Blanding's Turtle (<i>Emydoidea blandingii</i>)	THR	Ont. Herp Atlas	 Occupies freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes, and swamps. Nests in exposed, usually coarse, friable substrate. Known to make long-distance overland movements (i.e., several kilometers) between habitats. 	<u>Unlikely</u> . Only marginally suitable habitat is present, there are two (2) record in atlas square 17NH54 from 1986 and 2016; however, the Subject Property/Study Area is unlikely to support this species.	
Eastern Foxsnake (Pantherophis gloydi)	END (Carolinian population)	Ont. Herp Atlas	Occupies old fields, marshes, along hedgerows, drainage canals and shorelines.	<u>Unlikely.</u> While some suitable habitat is present, there is one (1) record in atlas square 17NH54 from 2014.	
Eastern Hog-nosed Snake (Heterodon platirhinos)	THR	Ont. Herp Atlas	Occupies a wide range of habitats generally occurring on sandy, well-drained soil with open vegetative cover	Negligible. Suitable habitat is absent from the Subject Property.	
Massasauga (Sistrurus catenatus)	THR	Ont. Herp Atlas	 Occupies generally open habitats including tallgrass prairies, peatlands, and shorelines. Two (2) extant populations in Ecoregion 7 (Ojibway Prairie and Wainfleet Bog). 	Negligible. Suitable habitat is absent from the Subject Property. There is one (1) historic record in atlas square 17NH54 from 1961.	

¹ Likelihood categories are to be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

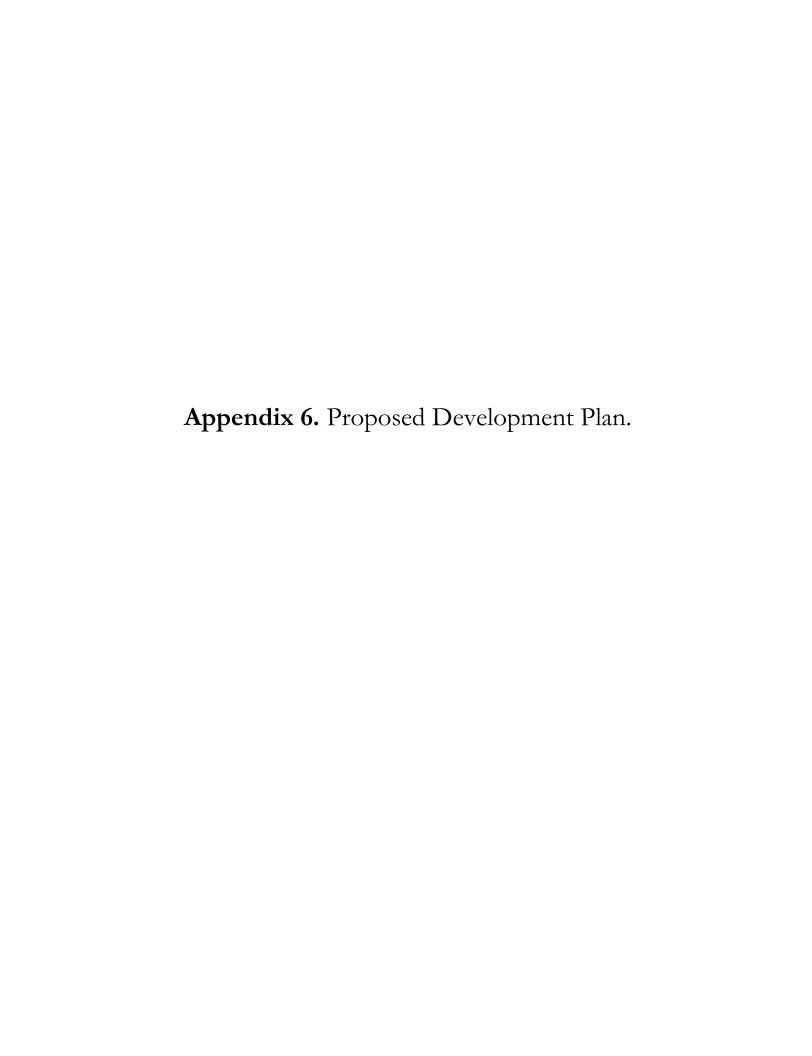
<u>Unlikely</u>: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

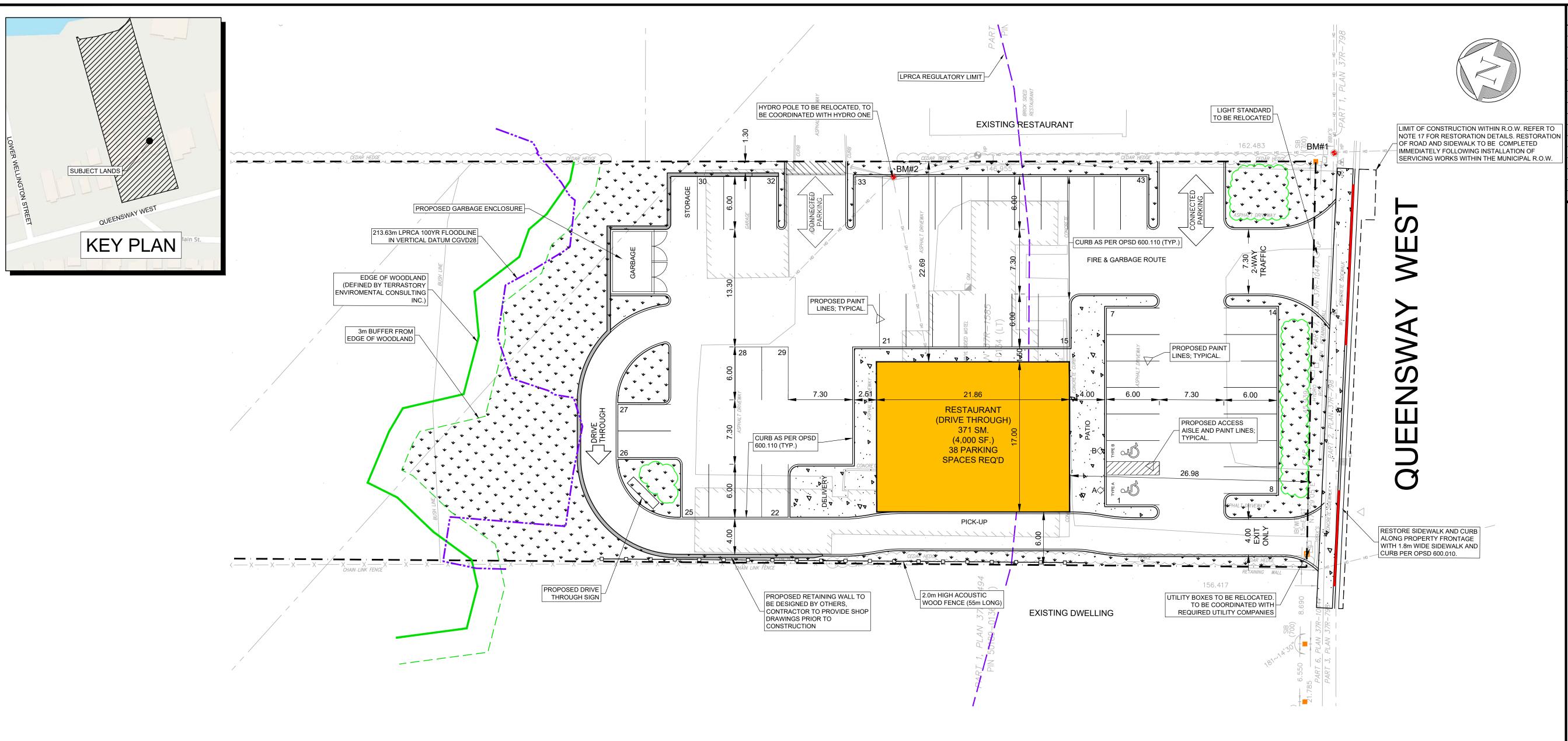
Possible: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

<u>Probable</u>: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.

EIS – 139 Queensway West, Simcoe Project No.: 23037





	1	06/28/2024	SPA SUBMISSION 1
	2	08/14/24	ISSUED FOR CLIENT REVIEW
	3	09/11/2024	SPA SUBMISSON 2
CTION WITHIN R.O.W. REFER TO ORATION DETAILS. RESTORATION			
WALK TO BE COMPLETED			
OWING INSTALLATION OF			
WITHIN THE MUNICIPAL R.O.W.			

DATE

0 03/18/2024

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REVISION

ISSUED FOR CLIENT REVIEW

LEGAL DESCRIPTION

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY 10TH, 2023

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS BM #1: SPIKE IN FACE OF HYDRO POLE

...215.38m BM #2: SPIKE IN FACE OF HYDRO POLE ..215.88m

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C100 SITE PLAN 18-057-C101 SERVICING PLAN 18-057-C102 GRADING PLAN

18-057-C103 EROSION AND SEDIMENT CONTROL PLAN 18-057-C104 REMOVALS PLAN 18-057-C105 OVERALL SITE PLAN

18-057-GN GENERAL NOTES 20-128-STM STORM DRAINAGE AREAS PLAN

PREGIMENTARY

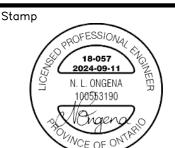
NOT TO BE USED FOR CONSTRUCTION



G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4

Architects & Planners

2024-09-11 N. L. ONGENA



(519) 426-6270

SITE PLAN LEGEND

PROPOSED ENTRANCE / EXIT

125mm CLASS C-2 CONCRETE

PROPOSED LANDSCAPED AREA

PROPOSED RETAINING WALL

PROPOSED DROPPED CURB AS PER OPSD 600.110

TAB BELOW AND SEPARATE

OPSD 600.110

— — — LPRCA REGULATION LIMIT

PROPERTY LINE

LPRCA 213.63m 100YR FLOODLINE

EDGE OF WOODLAND

— — — 3m SETBACK FROM EDGE OF WOODLAND

PROPOSED SNOW

STORAGE LOCATION

PROPOSED BUILDING

PTD. WHEELCHAIR SIGN ON ASPHALT

PROPOSED BARRIER CURB AS PER

Rb-93 SIGNAGE WITH "VAN ACCESSIBLE"

PROPOSED CONCRETE

150mm GRANULAR 'A'

100mm TOPSOIL & SOD

BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

SITE PLAN

Drawn By : Designed by : Checked by :

rawing Scale : AS SHOWN

18-057

NOTES:

PARKING AND AISLE PAVEMENT TO ADHERE TO PAVEMENT DESIGNS CONTAINED WITHIN THE NORFOLK COUNTY DESIGN CRITERIA:

150mm GRANULAR A 100% CRUSHED LIMESTONE 300mm GRANULAR B 100% CRUSHED LIMESTONE

GARBAGE AND RECYCLING STORAGE FENCING AS PER DETAILS ON DRAWINGS C108.

GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE SITE WITH THE COUNTY AND OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER NORFOLK COUNTY REQUIREMENTS.

GENERAL CONTRACTOR TO EXECUTE WORK TO CONSTRUCTION SITE ACCESS UNDER SUPERVISION OF THE ENGINEER. REFER TO ENTRANCE PERMIT REQUIREMENTS WHERE APPLICABLE. DRIVEWAY ENTRANCE TO BE MODIFIED OR INSTALLATION OF NEW ENTRANCE AS PER NORFOLK

. CONCRETE ISLAND / SIDEWALK WORK TO BE COORDINATED WITH OPSD 310.010, 310.020, 310.030, 310.031, 310.033, 310.040, 310.050, 552.010. RESTORATION OF CONCRETE SIDEWALK TO MATCH EXISTING CONDITIONS. PATCH AND REPAIR ALL DISTURBED CONCRETE SIDEWALK /

PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCHMARKS, ELEVATIONS, DIMENSIONS AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER.

B. AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES.

LIGHTING MUST BE DIRECTED ON SITE AND MUST NOT SPILL OVER TO ADJACENT PROPERTIES OR STREETS. PROVIDE "HOUSE SHIELD" WHERE NEEDED TO COMPLETELY ELIMINATE GLARE TO ADJACENT PROPERTIES. ALL EXTERIOR LIGHTING TO BE DARK SKY COMPLIANT.

10. COORDINATE WITH SITE GRADING PLAN FOR PROPOSED FINAL FINISH GRADE ELEVATIONS AND DRAINAGE SLOPES.

17. CONCRETE SPLASH PADS TO BE PROVIDED WHERE ROOF WATER LEADERS DISCHARGE TO GRADE.

18. OWNER TO OBTAIN SITE ALTERATION PERMIT PRIOR TO <u>ANY</u> WORK BEING PERFORMED. 19. ALL PROPOSED CONCRETE CURBS WITHIN THE SUBJECT LANDS TO CONFORM TO OPSD 600.110 UNLESS OTHERWISE NOTED.

11.	TRAFFIC CONTROL SHALL BE IMPLEMENTED BY THE CONTRACTOR IN ACCORDANCE WITH OTM TEMPORARY CONDITIONS BOOK 7. APPROVAL FOR THE TRAFFIC CONTROL WILL BE SOUGHT FROM THE MUNICIPALITY BY THE CONTRACTOR.
12.	THE OWNER'S CONTRACTOR WILL BE REQUIRED TO OBTAIN ROAD CUT PERMITS.
13.	FULL PUBLIC SERVICES ARE TO BE CONSTRUCTED, OR REPLACED IF DAMAGED (SIDEWALKS, BOULEVARDS, DRIVEWAY APPROACHES, ETC.).
14.	CONTRACTOR TO LOCATE AND ABANDON ANY SURPLUS SANITARY AND PRIVATE STORM DRAINS. SANITARY AND PRIVATE STORM DRAINS TO BE CAPPED IN CONCRETE AT THE PROPERTY LINE. ANY SURPLUS WATER SERVICES ARE TO BE ABANDONED AT THE MAIN AS PER MUNICIPALITY STANDARDS.
15.	CONTRACTOR TO OBTAIN A SANITARY LATERAL CONNECTION PERMIT FOR PROPOSED SANITARY SERVICE.
16.	CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT FOR ANY PROPOSED WORK IN THE MUNICIPALLY OWNED ROAD.

6.3 SERVICE COMMERCIAL ZUNE (CS) - THE ZUNING BY-LAW OF NORFOLK COUNTY					
PROVISION	DESCRIPTION	REQUIRED	PROVIDED	COMMENT	
		qq) RESTAURANT			
6.3.1	PERMITTED USES	rr) RESTAURANT, I	FAST-FOOD		
		ss) RESTAURANT, TAKE-OUT			
6.3.2 a) ii)	MINIMUM LOT AREA: INTERIOR LOT	450 sq. m	6995.43 sq. m	EXISTING CONDITION	
6.3.2 b) ii)	MINIMUM LOT FRONTAGE: INTERIOR LOT	15.0 m	45.96m	EXISTING CONDITION; ALONG QUEENSWAY WEST	
6.3.2 c)	MINIMUM FRONT YARD	3 m	30.48 m		
6.3.2 d)	MINIMUM EXTERIOR SIDE YARD	3 m	N/A		
6.3.2 e)	MINIMUM INTERIOR SIDE YARD	3 m	6.0 m		
6.3.2 f)	MINIMUM REAR YARD	9 m	100.46m		
6.3.2 g)	MINIMUM USABLE FLOOR AREA: FOR A DWELLING	40	N/A	NO PROPOSED DWELLING UNITS.	
	UNIT IN A NON-RESIDENTIAL UNIT	40 sq. m			
6.3.2 h)	MAXIMUM BUILDING HEIGHT	11 m	TBC	BUILDINGS STILL BEING DESIGNED; TO BE CONFIRMED	
6.3.2 i)	BAAMBALIBALOT COVERA CE	35%	371.60 sq. m		
	MAXIMUM LOT COVERAGE		(5.3%)		
6.3.2 j)	MAXIMUM USABLE FLOOR AREA: OF A FRUIT OR VEGETABLE OUTLET	200 sq. m	N/A	NO PROPOSED FRUIT AND VEGETABLE OUTLETS	

PROPOSED PARKING TABLE

TOTAL PROPOSED PARKING SPACES PROVIDED

REQUIRED ACCESSIBLE SPACES (NORFOLK BY-LAW 4.3.3)

ACCESSIBLE SPACES PROPOSED

USAGE

RESTAURANT, FAST FOOD WITH DRIVE-THRU

BUILDING

PROPOSED

AREA (sq. m)

371

REQUIRED PARKING

1 SPACE / 10 sq. m OF USABLE FLOOR AREA

(NORFOLK BY-LAW 4.9)

Total Spaces

43

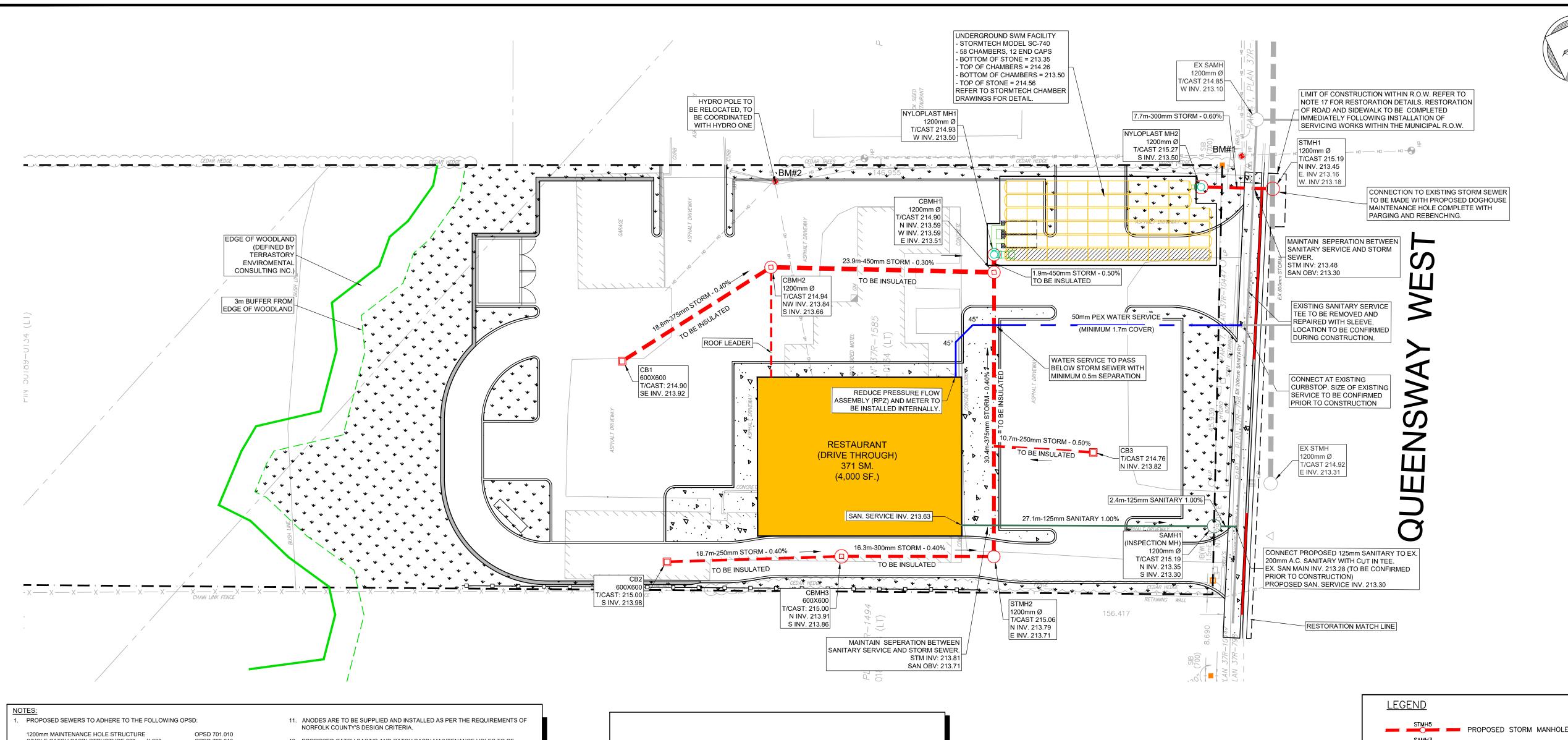
1 TYPE A

1 TYPE B

1 TYPE A

1 TYPE B

		ZONIN	IG TABLE			
6.3 SERVICE COMMERCIAL ZONE (CS) - THE ZONING BY-LAW OF NORFOLK COUNTY						
PROVISION	DESCRIPTION	REQUIRED	PROVIDED	COMMENT		
		qq) RESTAURANT				
6.3.1	PERMITTED USES	rr) RESTAURANT, FAST-FOOD				
		ss) RESTAURANT, TAKE-OUT				
6.3.2 a) ii)	MINIMUM LOT AREA: INTERIOR LOT	450 sq. m	6995.43 sq. m	EXISTING CONDITION		
6.3.2 b) ii)	MINIMUM LOT FRONTAGE: INTERIOR LOT	15.0 m	45.96m	EXISTING CONDITION; ALONG QUEENSWAY WEST		
6.3.2 c)	MINIMUM FRONT YARD	3 m	30.48 m			
6.3.2 d)	MINIMUM EXTERIOR SIDE YARD	3 m	N/A			
6.3.2 e)	MINIMUM INTERIOR SIDE YARD	3 m	6.0 m			
6.3.2 f)	MINIMUM REAR YARD	9 m	100.46m			
C 2 2 a)	MINIMUM USABLE FLOOR AREA: FOR A DWELLING	10	N/A	NO PROPOSED DWELLING UNITS.		
6.3.2 g)	UNIT IN A NON-RESIDENTIAL UNIT	40 sq. m				
6.3.2 h)	MAXIMUM BUILDING HEIGHT	11 m	TBC	BUILDINGS STILL BEING DESIGNED; TO BE CONFIRMED		
6.3.2 i)	MAXIMUM LOT COVERAGE	35%	371.60 sq. m			
			(5.3%)			
6.3.2j)	MAXIMUM USABLE FLOOR AREA: OF A FRUIT OR	200 55 55	N/A	NO PROPOSED FRUIT AND VEGETABLE OUTLETS		
	VEGETABLE OUTLET	200 sq. m				
5.3.2 k)	OUTDOOR STORAGE	SEE NOTE 1	N/A	NO OUTDOOR STORAGE PROPOSED		
NOTE 1:	PROHIBITED IN A FRONT YARD AND WITHIN 3 METRES OF ANY LOT LINE ADJOINING A RESIDENTIAL ZONE.					



SINGLE CATCH BASIN STRUCTURE 600mm X 600mm OPSD 705.010 12. PROPOSED CATCH BASINS AND CATCH BASIN MAINTENANCE HOLES TO BE DOUBLE CATCH BASIN STRUCTURE 1450mm X 600mm OPSD 705.020 INSTALLED WITH SUB-DRAINS AS PER DETAIL ON DRAWING GN 1200mm MAINTENANCE HOLE GRATE OPSD 401.010 13. REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY AND WATER METER TO 1200mm CATCH BASIN MAINTENANCE HOLE GRATE OPSD 400.020 BE PROVIDED WITHIN EACH OF THE PROPOSED UNITS. REFER TO MECHANICAL SINGLE CATCH BASIN GRATE 600mm X 600mm OPSD 400.020 DOUBLE CATCH BASIN GRATE 1450mm X 600mm OPSD 400.020 14. FIRE HYDRANTS TO BE AWWA C502 COMPLIANT, NON-DRAINING, OPEN LEFT AS ALL COMPONENTS OF THE PROPOSED SEWERS ARE TO ADHERE TO DIVISION 700 PER NORFOLK COUNTY'S DESIGN CRITERIA. PROPOSED SEWERS TO BE INSULATED AS INDICATED ON THIS PLAN. REFER TO 15. ALL WATER MAIN BENDS TO BE MANUFACTURED FITTINGS AS REQUIRED. DRAWING GN FOR TYPICAL INSULATION DETAIL. IF INSUFFICIENT COVER EXISTS 16 WATER MAIN FITTINGS SHALL BE MECHANICAL JOINT OR PUSH-ON JOINTS FOR THE TYPICAL INSULATION DETAIL, PRE-INSULATED PIPE IS TO BE USED. INSTALLED WITH APPROVED MECHANICAL THRUST RESTRAINTS. WATER MAINS TO ALL STORM SEWERS 450mm AND SMALLER IN DIAMETER TO BE HDPE WITH CLASS BE INSTALLED WITH ANODES AS PER SECTION 10.13.0 OF NORFOLK COUNTY'S B BEDDING. ALL STORM SEWERS 525mm AND ABOVE TO BE CONCRETE CLASS 65-D 17. ALL DISTURBED AREAS WITHIN THE RIGHT OF WAY TO BE RESTORED PER THE SANITARY SEWERS TO BE PVC SDR28 PIPE WITH CLASS 'B' BEDDING. FOR THE FOLLOWING DETAILS: LOCATION OF CONNECTION TO BUILDING, SEE MECHANICAL DRAWINGS. LANDSCAPED AREA: ALL WATER SERVICES BETWEEN 19mm AND 50mm TO BE SOFT COPPER TYPE 'K', 100mm TOPSOIL & SOD THIRD PARTY CERTIFIED WITH WARNOCK-HERSEY STAMP. ALL WATER MAINS AND WATER SERVICES ABOVE 50mm TO BE PVC DR18 BLUE BRUTE. ASPHALT AREA: 40mm HL3 PROVIDE 2.5m MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY EXISTING / 50mm HL8 PROPOSED WATER SERVICE AND ANY PROPOSED STORM / PROPOSED SANITARY 150mm GRANULAR 'A'

300mm GRANULAR 'B'

SEWER OR MAINTENANCE HOLES AS PER NORFOLK COUNTY DESIGN CRITERIA.

WHERE A WATER SERVICE CROSSES ABOVE OR BELOW A STORM OR SANITARY SEWER, A MINIMUM VERTICAL CLEARANCE OF 0.5m SHALL BE PROVIDED.

WHERE A STORM OR SANITARY SEWER CROSSES ANOTHER STORM OR SANITARY

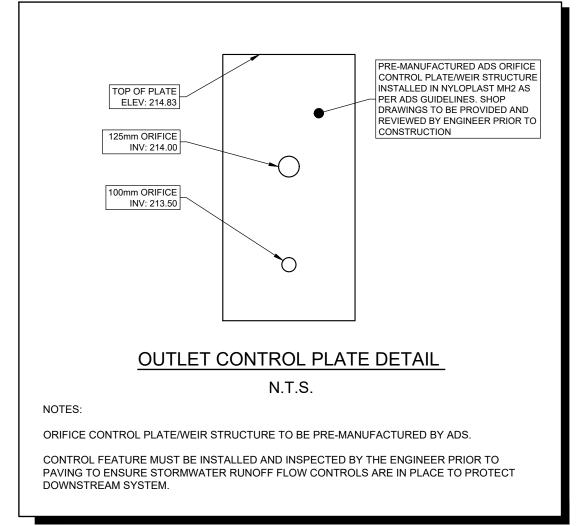
0. VALVES ARE TO BE INSTALLED 1.0m FROM THE PROPOSED BUILDING FOUNDATION

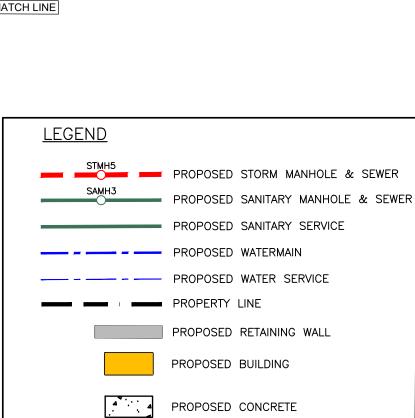
FOR EACH PROPOSED WATER SERVICE. VALVES AND VALVE BOXES ARE TO BE

SEWER, A MINIMUM VERTICAL CLEARANCE OF 0.15m SHALL BE PROVIDED.

WATER SERVICES SHALL MAINTAIN A MINIMUM COVER OF 1.7m.

SIZED TO MATCH THE WATER SERVICE SIZE.





REV. No.	DATE	REVISION
0	03/18/2024	ISSUED FOR CLIENT REVIEW
1	06/28/2024	SPA SUBMISSION 1
2	08/16/2024	ISSUED FOR CLIENT REVIEW
2	09/11/2024	SPA SUBMISSION 2

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LEGAL DESCRIPTION PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE

TOROGRAPHIC INTEGRALATION

TOPOGRAPHIC INFORMATION
SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY
10TH, 2023

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS BM #1: SPIKE IN FACE OF HYDRO POLE

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C100 SITE PLAN 18-057-C101 SERVICING PLAN 18-057-C102 GRADING PLAN

18-057-C103 EROSION AND SEDIMENT CONTROL PLAN 18-057-C104 REMOVALS PLAN 18-057-C105 OVERALL SITE PLAN

18-057-GN GENERAL NOTES 18-057-STM STORM DRAINAGE AREAS PLAN

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

SCALE: 5 10

HORIZONTAL: 1:250



G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

Stamp



roject Title

131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

Drawing Title
SERVICING PLAN

Designed by : Drawn By :

NLO/NBN

Checked by : Date Started :

rawing Scale :

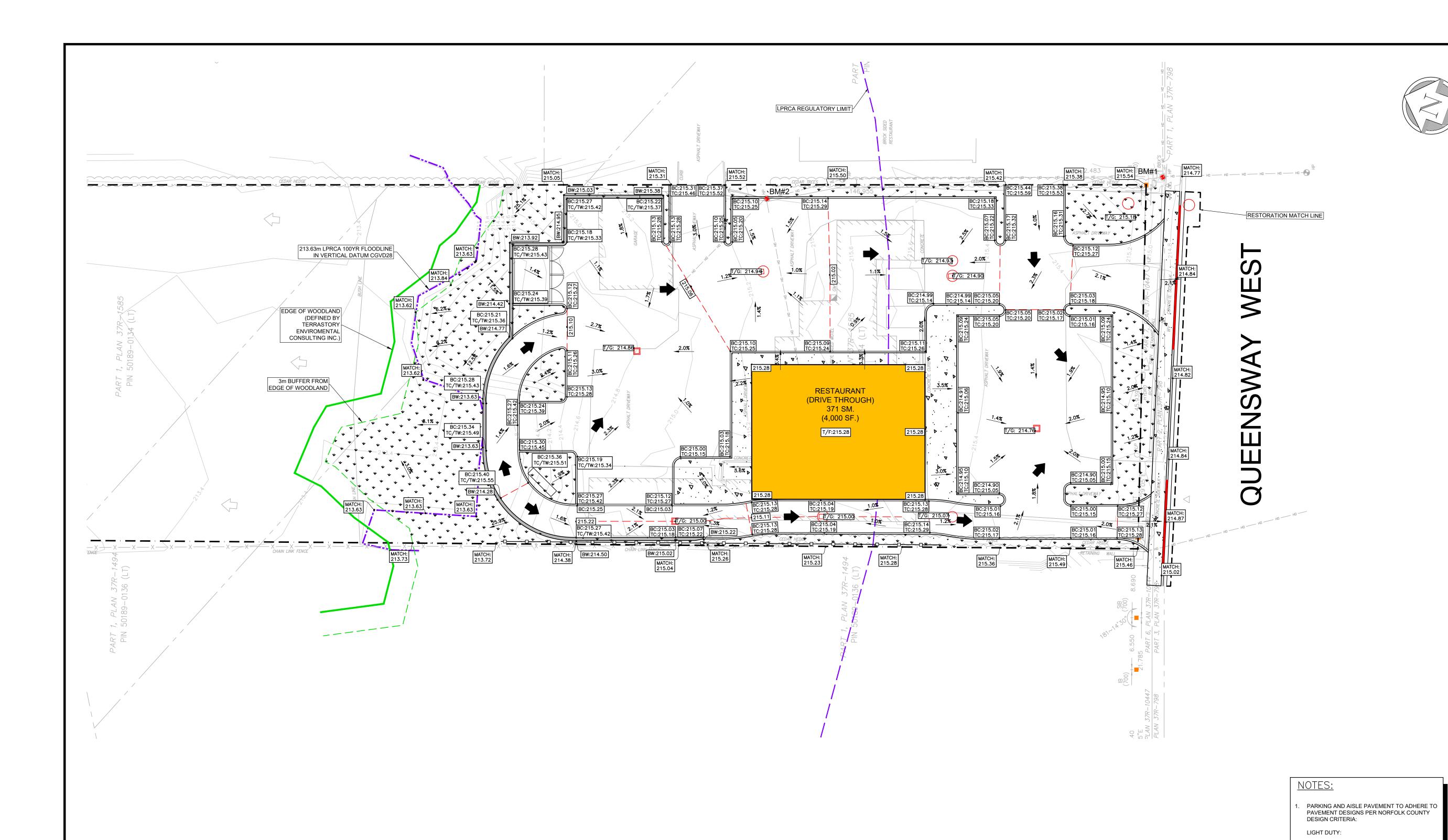
C10

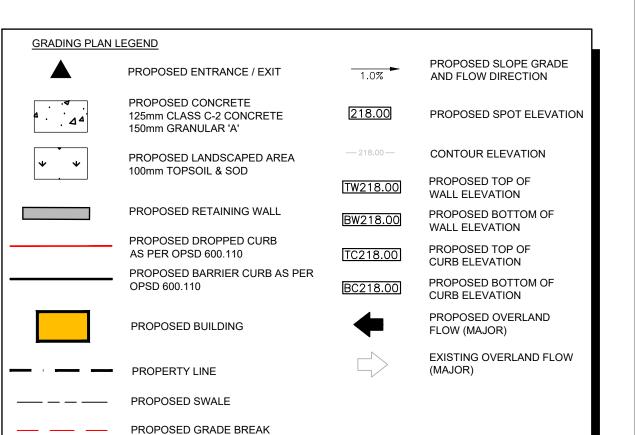
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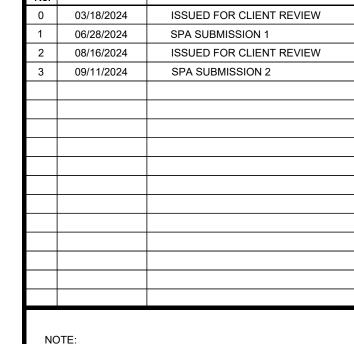
ATE LAST PLOTTED : September 13, 2024

Project No. 18-057

AS SHOWN







REVISION

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TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY 10TH, 2023 USING THE CAN-NET NETWORK, UTM ZONE 17 NAD83 HTv2.0 (2010) CGVD28.

APPLICANT INFORMATION

ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BM #1: SPIKE IN FACE OF HYDRO POLE

BM #2: SPIKE IN FACE OF HYDRO POLE

..215.88m

..215.38m

DRAWING LIST G. DOUGLAS VALLEE LIMITED DRAWINGS

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18-057-C102 GRADING PLAN 18-057-C103 EROSION AND SEDIMENT CONTROL PLAN

18-057-C104 REMOVALS PLAN

18-057-C105 OVERALL SITE PLAN 18-057-GN GENERAL NOTES

20-128-STM STORM DRAINAGE AREAS PLAN

PRELIMINARY

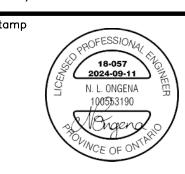
NOT TO BE USED FOR CONSTRUCTION

HORIZONTAL: 1:250



Consulting Engineers, Architects & Planners G. DOUGLAS VALLEE LIMITED

2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4 (519) 426-6270



40mm HL3

50mm HL8

150mm GRANULAR A

300mm GRANULAR B

REQUIREMENTS.

GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE SITE WITH THE COUNTY AND

GENERAL CONTRACTOR TO EXECUTE WORK TO

ENTRANCE PERMIT REQUIREMENTS WHERE

APPLICABLE. DRIVEWAY ENTRANCE TO BE MODIFIED OR INSTALLATION OF NEW

ENTRANCE CURBS TO MATCH EXISTING AS

ELEVATIONS, DIMENSIONS AND GRADES MUST

BE CHECKED BY THE CONTRACTOR AND ANY

DISCREPANCIES REPORTED TO THE ENGINEER.

AT LEAST TWO DIFFERENT BENCHMARKS MUST

COORDINATE WITH SITE GRADING PLAN FOR

PROPOSED FINAL FINISH GRADE ELEVATIONS

TRAFFIC CONTROL SHALL BE IMPLEMENTED BY

THE CONTRACTOR IN ACCORDANCE WITH OTM

TEMPORARY CONDITIONS BOOK 7. APPROVAL

FOR THE TRAFFIC CONTROL WILL BE SOUGHT

OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER NORFOLK COUNTY

CONSTRUCTION SITE ACCESS UNDER SUPERVISION OF THE ENGINEER. REFER TO

ENTRANCE AS PER NORFOLK COUNTY

REQUIREMENTS. PROVIDE NEW CONC.

PRIOR TO THE COMMENCEMENT OF

CONSTRUCTION, ALL BENCHMARKS,

BE REFERRED TO AT ALL TIMES.

FROM THE MUNICIPALITY BY THE

AND DRAINAGE SLOPES.

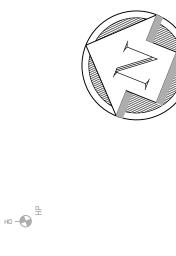
CONTRACTOR.

BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

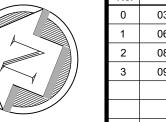
Drawn By: NLO/NBN Checked by : NLO/JTI 9/13/24

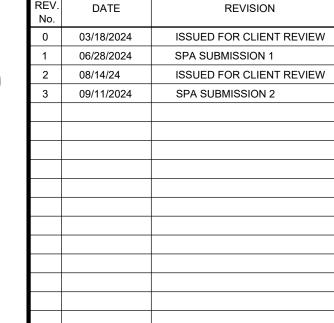
GRADING PLAN

rawing Scale :



FRAME AND





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LEGAL DESCRIPTION

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY 10TH, 2023

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS BM #1: SPIKE IN FACE OF HYDRO POLE

BM #2: SPIKE IN FACE OF HYDRO POLE

.....215.38m

..215.88m

DRAWING LIST

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18-057-GN GENERAL NOTES 20-128-STM STORM DRAINAGE AREAS PLAN

PREGININARY

NOT TO BE USED

FOR CONSTRUCTION

SCALE:



G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4

Architects & Planners



BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

Drawing Title **EROSION AND SEDIMENT CONTROL PLAN**

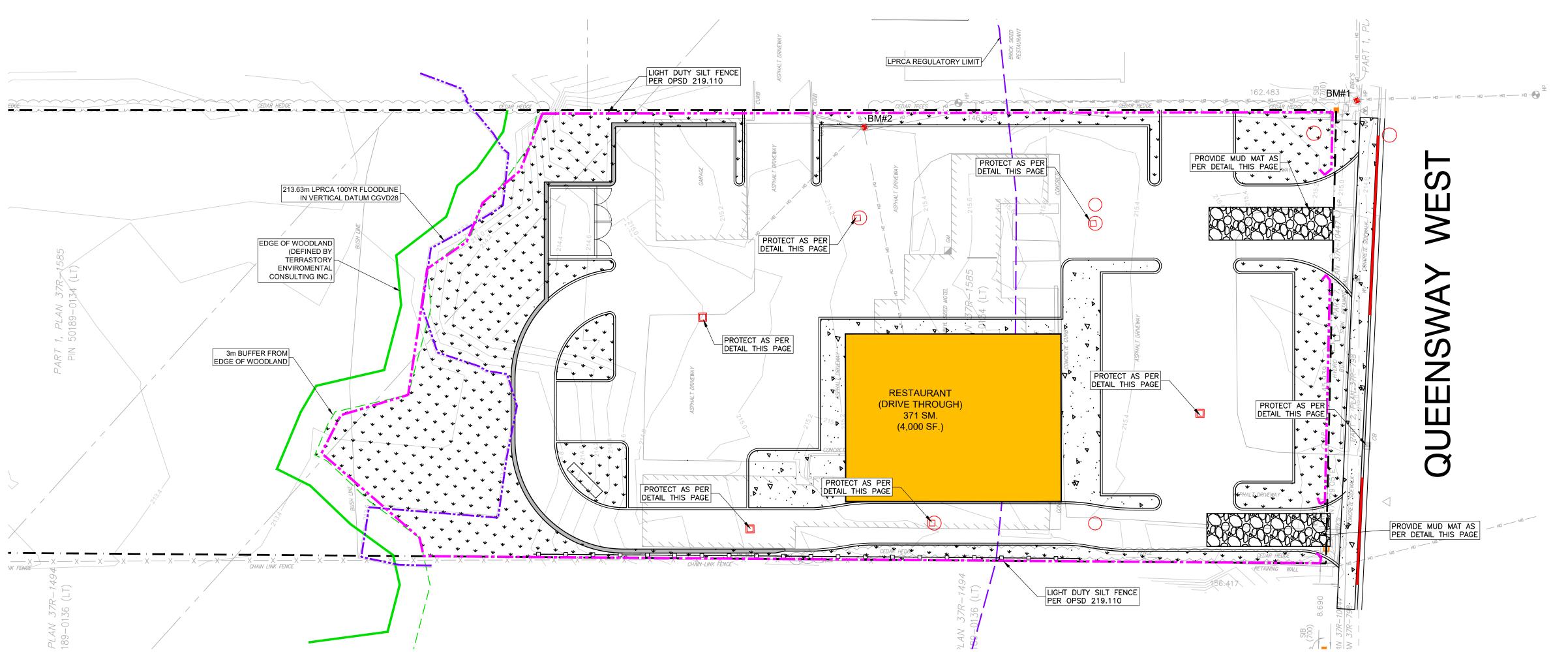
Designed by : Drawn By : NLO/NBN Checked by :

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Project No.

18-057

9/11/2



EROSION CONTROL NOTES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DESIGN BE REQUIRED TO PROTECT THE WORK SITE OR THE ADJACENT LANDS. REGARDLESS OF THE SOURCE OR ORIGIN OF EROSION OR SEDIMENTS. IF THE ENGINEER IS NOT SATISFIED WITH THE EXTENT OF THE MEASURES TAKEN, THE ENGINEER MAY DIRECT THAT ADDITIONAL CONTROLS BE PUT IN PLACE.

THE ENGINEER'S REQUIREMENTS FOR SEDIMENT AND EROSION CONTROL SHALL BE CONSIDERED ABSOLUTE MINIMUMS. THE ULTIMATE RESPONSIBILITY TO ENSURE THAT THE MEASURES ARE ADEQUATE SHALL LIE SOLELY ON THE CONTRACTOR. ANY DAMAGE RESULTING FROM FAILURE OF THESE MEASURES SHALL

BE REPAIRED AT THE CONTRACTOR'S EXPENSE. PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION.

ALL EROSION CONTROL MEASURES TO BE IN PLACE UNTIL RESTORATION IS COMPLETE.

MAINTAIN EROSION CONTROL MEASURES DURING

CONSTRUCTION.

AND PROVISION OF ALL SEDIMENT CONTROL MEASURES AS MAY

5. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED

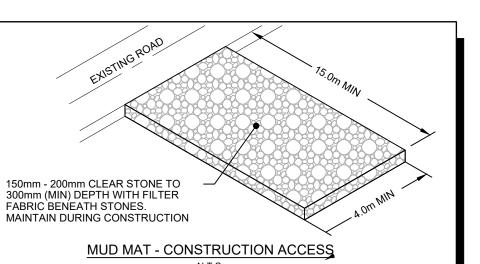
6. MINIMIZE AREA DISTURBED DURING CONSTRUCTION. 7. ALL DEWATERING TO BE DISPOSED OF IN AN APPROVED SEDIMENTATION BASIN.

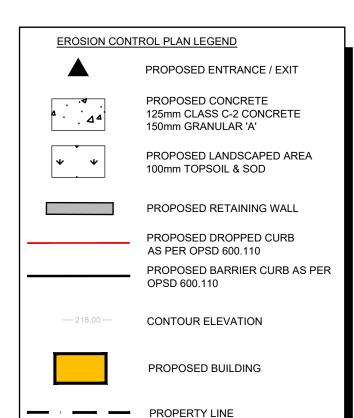
8. PROTECT ALL CATCH BASINS, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE AND MAINTAIN IN FREE FLOWING STATE (TERRAFIX 270R OR APPROVED EQUIVALENT). REFER TO DETAIL THIS PAGE.

9. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION INCLUDING OIL GRIT SEPARATOR.

10. PREVENT WIND-BLOWN DUST.

11. CONTRACTOR TO PROVIDE MUD MAT AT ALL CONSTRUCTION ENTRANCES.





PROPOSED LIGHT DUTY SILT FENCE AS PER OPSD 219.110

GRATE TO BE DOUBLE -WRAPPED WITH WOVEN

NOTES:

GEOTEXTILE

PRIOR TO PLACING STONE.

FILTER CLOTH WILL BE PLACED OVER THE ENTIRE AREA

WOVEN GEOTEXTILE TO HAVE A MINIMUM EQUIVALENT OPENING

WOVEN GEOTEXTILE TO BE REPLACED PERIODICALLY WHEN

ACCUMULATED SEDIMENTS INTERFERES WITH DRAINAGE.

TO PROTECT GEOTEXTILE FROM LARGE OBJECTS.

CLEAR STONE TO BE PLACED ON TOP OF WRAPPED CATCHBASIN

CATCHBASIN SEDIMENT PROTECTION DETAIL

N.T.S.

SIZE OF 0.15mm AND A MAXIMUM EQUIVALENT OPENING SIZE OF



REMOVALS LEGEND

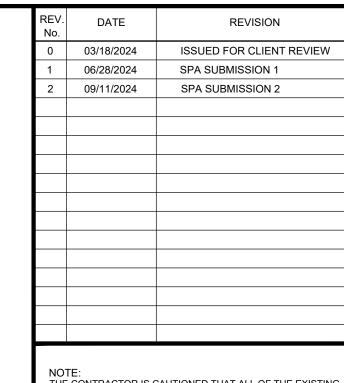
REMOVE EXISTING PAVEMENT STRUCTURE COMPLETE

BASE COMPLETE

COMPLETE

REMOVE EXISTING CONCRETE AND

REMOVE CONCRETE CURB AND BASE



THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G. DOUGLAS VALLEE LTD. CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.

LEGAL DESCRIPTION

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY

APPLICANT INFORMATION
APPLICANT: TOM DAICOS

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS BM #1: SPIKE IN FACE OF HYDRO POLE

BM #2: SPIKE IN FACE OF HYDRO POLE

..215.88m

.....215.38m

DRAWING LIST G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C100 SITE PLAN

18-057-C101 SERVICING PLAN 18-057-C102 GRADING PLAN

18-057-C103 EROSION AND SEDIMENT CONTROL PLAN 18-057-C104 REMOVALS PLAN 18-057-C105 OVERALL SITE PLAN 18-057-GN GENERAL NOTES

20-128-STM STORM DRAINAGE AREAS PLAN

PREDIMINARY

NOT TO BE USED



G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4 (519) 426-6270

Architects & Planners

Stamp



BARREL RESTAURANT

131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

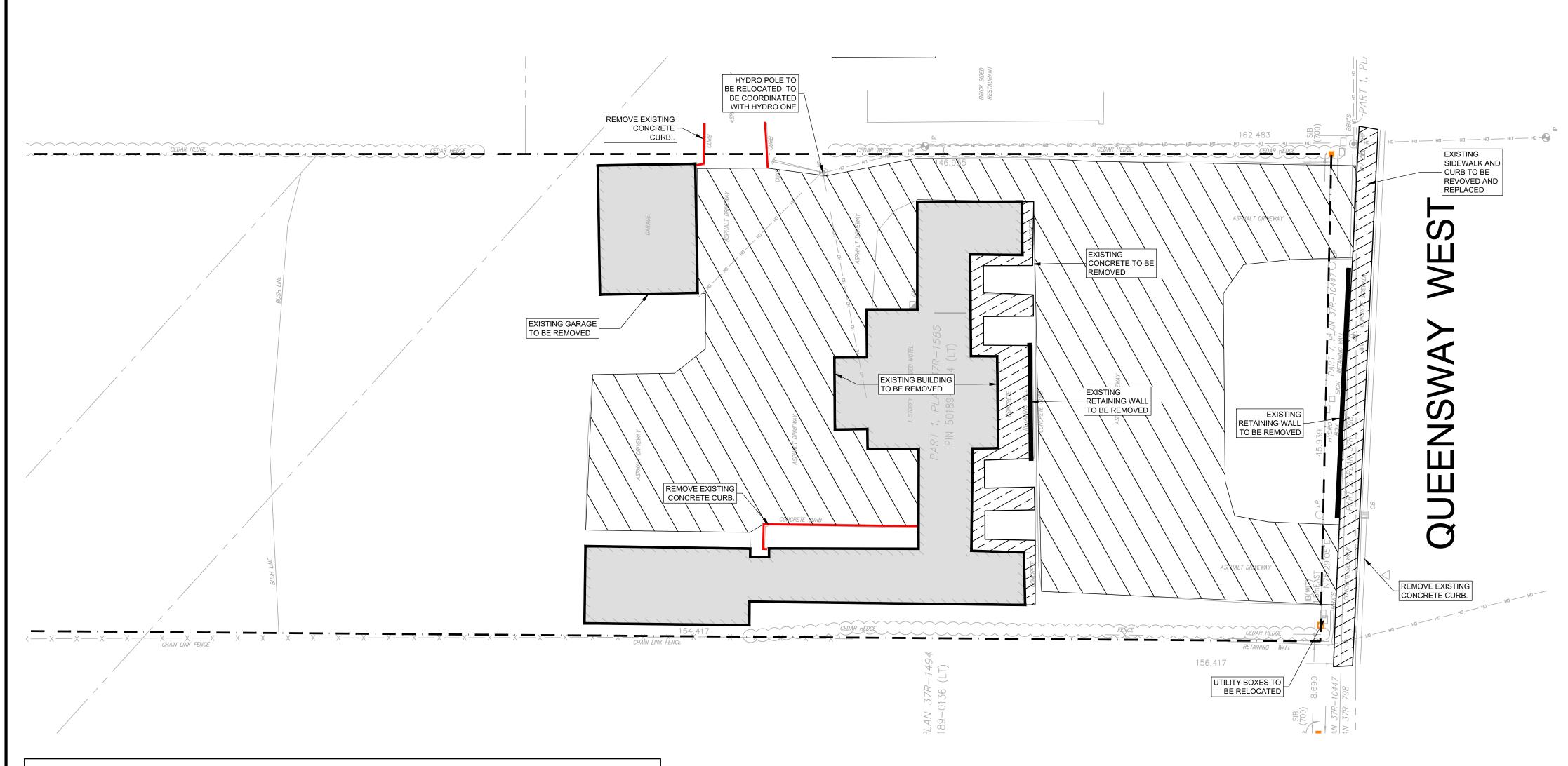
Drawing Title REMOVALS PLAN

18-057

Designed by : Drawn By : NLO/NBN

Checked by: NLO/JT 9/11/24

Orawing Scale : AS SHOWN



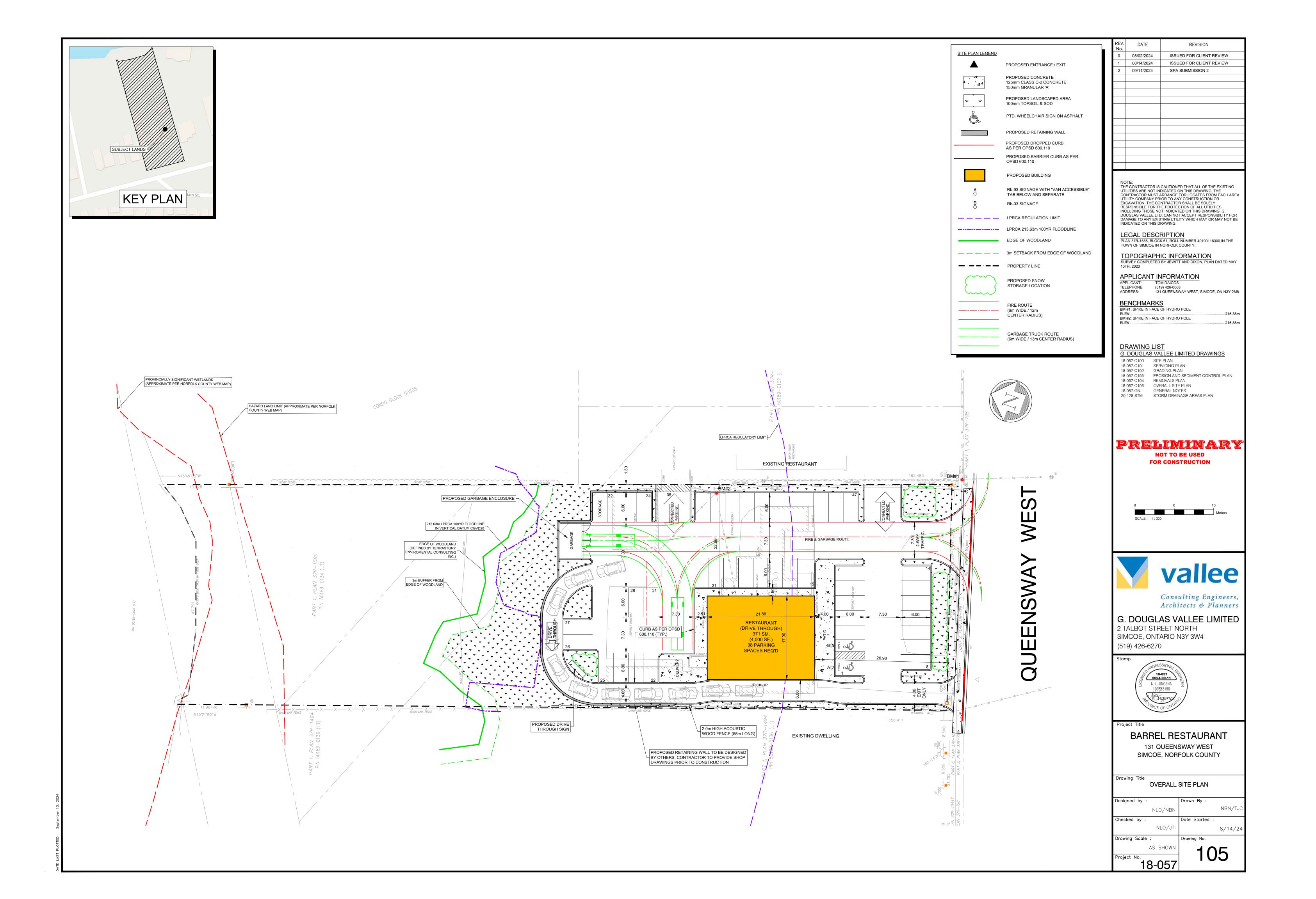
NOTES:

REMOVE ALL ITEMS THAT ARE IN CONFLICT WITH THE PROPOSED WORKS, OR AS DIRECTED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR REMOVALS THAT ARE NOT SPECIFICALLY NOTED ON THESE DRAWINGS.

PRIOR TO ANY TREE REMOVALS NORFOLK COUNTY FORESTRY STAFF MUST BE CONTACTED.

IF THE EXCESS SOIL IS TO BE REMOVED FROM THE SITE FOR OFF SITE RE-USE, THE FOLLOWING CONDITIONS MUST BE

- THE RECEIVING SITE FOR EC AND/OR SAR IMPACTED SOIL MUST BE A HIGHWAY SITE;
- THE WORK MUST BE COMPLETED IN ACCORDANCE WITH LOCAL BY-LAWS GOVERNING SOIL MOVEMENT AND/OR PLACEMENT AT OTHER SITES;
- ALL ANALYTICAL RESULTS AND ENVIRONMENTAL ASSESSMENT REPORTS MUST BE FULLY DISCLOSED TO THE RECEIVING SITE OWNERS/AUTHORITIES AND THEY HAVE AGREED TO RECEIVE THE MATERIAL;
- THE APPLICABLE SCSS FOR THE RECEIVING SITE HAVE BEEN DETERMINED, AS CONFIRMED BY THE ENVIRONMENTAL CONSULTANT AND THE SCSS ARE CONSISTENT WITH THE CHEMICAL QUALITY OF THE SOIL ORIGINATING AT THE SOURCE SITE;
- TRANSPORTATION AND PLACEMENT OF THE EXCESS SOIL IS MONITORED BY THE ENVIRONMENTAL CONSULTANT TO CHECK THE MATERIAL IS APPROPRIATELY PLACED AT THE PRE-APPROVED SITE;
- THE RECEIVING SITE MUST BE ARRANGED AND/OR APPROVED WELL IN ADVANCE OF EXCAVATION IN ORDER TO AVOID DELAYS DURING CONSTRUCTION. AS WELL, IT IS NOTED THE CHEMICAL TESTING REQUIREMENTS FOR VARIOUS RECEIVING SITES IS SITE-SPECIFIC AND ADDITIONAL TESTING MAY BE REQUIRED.
- THE EXCAVATION WORK SHOULD BE CONDUCTED IN ACCORDANCE WITH A WRITTEN SOIL MANAGEMENT PLAN PREPARED BY A QUALIFIED PROFESSIONAL TO ENSURE THAT ALL EXCESS EXCAVATED MATERIAL IS TESTED AND MANAGED APPROPRIATELY, AND THAT IMPORTED FILL MATERIAL IS OF SUITABLE QUALITY AND MEETS THE SCSS APPLICABLE TO THE SITE. RE-USE OF EXCESS EXCAVATED SOIL ON SITE IS ALSO SUBJECT TO ACCEPTANCE FOR RE-USE BY THE GEOTECHNICAL CONSULTANT AT THE TIME OF CONSTRUCTION BASED ON GEOTECHNICAL CONSIDERATIONS.
- IT IS RECOMMENDED THAT TRANSPORTATION OF FILL MATERIAL FROM THE SOURCE SITE(S) TO THE RECEIVING SITE(S) BE CARRIED OUT IN ACCORDANCE WITH THE MECP DOCUMENT MANAGEMENT OF EXCESS SOIL - A GUIDE FOR BEST MANAGEMENT PRACTICES DATED JANUARY 2014.



GENERAL NOTES

OF THE ENGINEER.

- 1. PRIOR TO CLOSING ANY STREET, THE CONTRACTOR SHALL OBTAIN CLEARANCE BY FILLING OUT THE COUNTY'S NOTICE OF ROAD CLOSURE FORM AND NOTIFY SCHOOL BUS OPERATORS OF STREETS USED FOR DETOUR AND THE DURATION OF THE DETOUR. THE CONTRACTOR MUST SUPPLY AND MAINTAIN ADEQUATE LOCAL DETOUR SIGNS AND LIGHTS. THE CONTRACTOR MUST MAINTAIN MAXIMUM ACCESS TO ALL PROPERTIES AS DIRECTED
- 2. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY MEASURES TO CONTROL SILT ENTERING THE STORM DRAINAGE SYSTEM TO THE SPECIFICATIONS OUTLINED IN THE GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES PREPARED BY THE MINISTRY OF NATURAL RESOURCES. THESE MEASURES ARE TO BE INSTALLED PRIOR TO COMMENCING ANY CONSTRUCTION FOR THIS STREET AND ARE TO REMAIN IN PLACE UNTIL CONSTRUCTION HAS BEEN COMPLETED TO THE SPECIFICATIONS OF THE ENGINEER.
- 3. THE CONTRACTOR IS TO MEET ALL THE REQUIREMENTS OF THE OWNERS OF THE UTILITIES ON THIS PLAN, AND MUST MAKE SATISFACTORY ARRANGEMENTS WITH THE UTILITY COMPANIES FOR CROSSING THEIR INSTALLATIONS AND FOR PROVIDING ADEQUATE PROTECTION DURING CONSTRUCTION.
- 4. PRIOR TO COMMENCING ANY CONSTRUCTION, ALL EXISTING UNDERGROUND UTILITIES SHALL BE LOCATED AND MARKED. ANY UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTORS EXPENSE.
- BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTORS EXPENSE.

 5. ALL ORGANIC, SUITABLE OR UNSUITABLE MATERIALS BENEATH THE ROAD ALLOWANCES MUST BE REMOVED AND THESE AREAS BACKFILLED WITH AN APPROVED FILL MATERIAL, ALL TO THE SATISFACTION
- 6. PRIOR TO COMMENCING ANY CONSTRUCTION, ALL EXISTING SEWER OUTLET INFORMATION, BENCHMARKS, DIMENSIONS, ELEVATIONS AND GRADES MUST BE CHECKED AND VERIFIED AND ANY DISCREPANCIES REPORTED TO THE ENGINEER IMMEDIATELY.
- 7. ALL CATCH BASIN LEADS FOR SINGLE CATCH BASINS SHALL BE 250mm Ø PVC SDR35 WITH CLASS 'B' BEDDING. ALL CATCH BASIN LEADS FOR TWIN INLET CATCH BASINS SHALL BE 300mm Ø PVC SDR35 WITH CLASS 'B' BEDDING.
- 8. ALL PVC WATERMAIN SHALL HAVE TWU 10 COPPER TRACING WIRE LAID ALONG ENTIRE LENGTH.
- WATERMAIN SHALL HAVE 1.7m TO 1.9m COVER WITH CLASS 'B' BEDDING.

 9. ALL 50mm WATER SERVICE TO BE BLUE904 SDR9 PEX AND ALL 150mm WATERMAIN TO BE
- PVC DR18 BLUE BRUTE WITH MANUFACTURED FITTINGS.
- 10. WATERMAIN FITTINGS SHALL BE MECHANICAL JOINT OR PUSH—ON JOINT INSTALLED WITH APPROVED MECHANICAL THRUST RESTRAINTS.
- 11. ALL MECHANICAL THRUST RESTRAINTS SHALL CONFORM TO CONTRACT DOCUMENT SPECIFICATIONS.
- 12. WHERE A WATERMAIN OR WATER SERVICE CROSSES ABOVE A STORM OR SANITARY SEWER, A MINIMUM VERTICAL CLEARANCE OF 0.15m SHALL BE PROVIDED. WHERE THE WATERMAIN OR WATER SERVICE IS UNABLE TO CROSS ABOVE THE SEWER, IT SHALL CROSS UNDERNEATH WHILE PROVIDING A MINIMUM SEPARATION OF 0.5m BETWEEN THE SEWER INVERT AND THE CROWN OF THE WATERMAIN OR WATER SERVICE. WHERE A STORM OR SANITARY SEWER CROSSES ANOTHER STORM OR SANITARY SEWER, A MINIMUM VERTICAL CLEARANCE BETWEEN PIPE BARRELS OF 0.15m SHALL BE PROVIDED.
- 13. PROPOSED SEWERS TO ADHERE TO THE FOLLOWING OPSD:

MAINTENANCE HOLE STRUCTURES

BENCHING
SINGLE CATCH BASIN STRUCTURE 600mm X 600mm
1200mm MAINTENANCE HOLE GRATE
1200mm CATCH BASIN MAINTENANCE HOLE GRATE
SINGLE CATCH BASIN GRATE 600mm X 600mm
OPSD 701.021
OPSD 705.010
OPSD 401.010
OPSD 400.020
OPSD 400.020

ALL COMPONENTS OF THE PROPOSED SEWERS ARE TO ADHERE TO DIVISION 700 OF THE OPSD.

- 14. ALL STORM SEWERS TO BE PVC DR35 WITH CLASS B BEDDING.
- 15. PROPOSED SANITARY TO BE PVC DR28 WITH CLASS 'B' BEDDING.
- 16. FIRE HYDRANTS TO BE AWWA G509 COMPLIANT, NON-DRAINING, OPEN LEFT.
- 17. MUNICIPALITY WATERMAIN PROCEDURES TO BE ADHERED TO FOR INSTALLATION OF WATERMAINS OR SERVICES.
- 18. WATERMAINS AND WATER SERVICES SHALL MAINTAIN A MINIMUM COVER OF 1.7m.
- 19. PROVIDE 2.5m MINIMUM HORIZONTAL CLEARANCE BETWEEN THE PROPOSED WATERMAIN AND ANY STORM OR SANITARY SEWERS OR MAINTENANCE HOLES.

LEGEND

	EX. STORM SEWER		PROPOSED WATERMAIN
_	PROPOSED STORM SEWER		EX. WATERMAIN
	EX. SANITARY SEWER		PROPOSED 3-WAY FIRE HYDRANT
	PROPOSED SANITARY SEWER	-	C/W STORZ CONNECTION
	DDODOGED OTODU MANUOLE		EX. FIRE HYDRANT
\bigcirc	PROPOSED STORM MANHOLE		
	PROPOSED SANITARY MANHOLE		PROPOSED WATERVALVE
	EX. MANHOLE		EX. WATERVALVE
	EA. MANHOLE		
	PROPOSED CATCHBASIN	G	EX. BURIED GAS LINE
	DDODOCED TAILL IN ET OATOUDACIN		
	PROPOSED TWIN INLET CATCHBASIN	В ———	EX. BURIED BELL LINE
	PROPOSED CATCHBASIN MANHOLE	CATV	EX. BURIED CABLE LINE
	THOI COLD CATOTICATION MATERIALE	57117	EX. BORIED CABLE LINE
	EX. CATCHBASIN	UH	EX. UNDERGROUND HYDRO LINE

GENERAL

SEDIMENT CONTROL MEASURES

- 1. PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION
- 2. ALL EROSION CONTROL MEASURES TO BE IN PLACE BEFORE STARTING CONSTRUCTION AND REMAIN IN PLACE UNTIL
- 3. MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
- 4. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED LOCATION
- 6. ALL DEWATERING TO BE DISPOSED OF IN AN APPROVED SEDIMENTATION BASIN

5. MINIMIZE AREA DISTURBED DURING CONSTRUCTION

- 7. PROTECT ALL CATCHBASINS, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUIVALENT)
- 8. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION
- 9. PREVENT WIND—BLOWN DUST

RESTORATION IS COMPLETE

10. STRAW BALES TO BE USED IN LOCALIZED AREAS AS SHOWN AND AND AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION

ROAD & BOULEVARD RESTORATION

- ALL DISTURBED AREAS SHALL BE RESTORED AS FOLLOWS:
 i. ALL ROAD CUTS SHALL BE RESTORED WITH

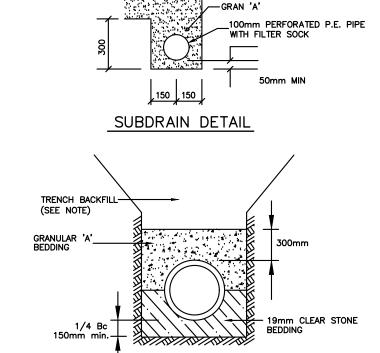
 -40mm HL3 SURFACE ASPHALT (97% MARSHALL)

 -50mm HL8 BASE ASPHALT (97% MARSHALL)

 -150mm GRANULAR "A" BASE (100% SPMDD)

 -300mm GRANULAR "B" TYPE 2 SUBBASE (100% SPMDD)

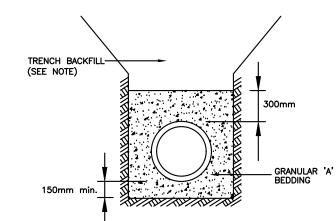
 GRANULAR "B" TO BE EXTENDED 0.3m BEHIND EDGE OF THE PAVEMENT
- ii. BOULEVARDS SHALL BE RESTORED WITH SOD OVER 100mm TOPSOIL (min) UNLESS OTHERWISE NOTED
 iii. ASPHALT DRIVEWAYS SHALL BE RESTORED WITH 150mm OF GRANULAR "A" (100% SPMDD) WITH 50mm OF HL3A ASPHALT (97% MARSHALL)
- iv. GRAVEL DRIVEWAYS SHALL BE RESTORED WITH 150mm OF GRANULAR "A" (100% SPMDD)
- v. CONCRETE DRIVEWAYS SHALL BE RESTORED WITH 150mm OF GRANULAR "A" (100% SPMDD) AND 150mm OF CONCRETE FOR RESIDENTIAL DRIVEWAYS AND 200mm OF CONCRETE FOR COMMERCIAL DRIVEWAYS (OPSS MIX. 30MPa MINIMUM)



NOTES:

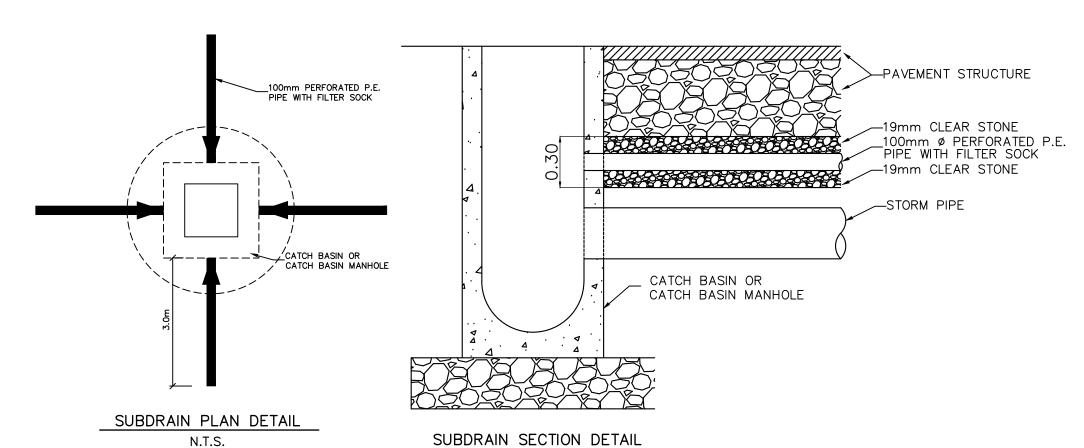
1. 19mm CLEAR STONE STONE BEDDING SHALL BE USED IN PLACE OF THE STANDARD BEDDING WHERE HIGH HYDRAULIC GRADIENT CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION.

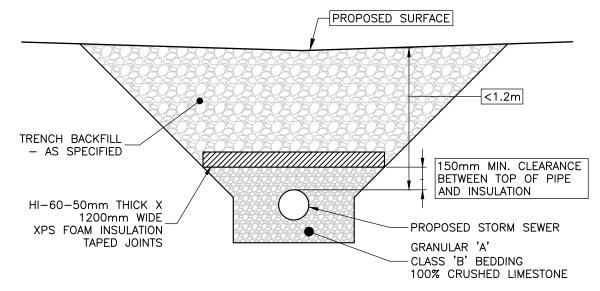
STONE BEDDING



CLASS B BEDDING

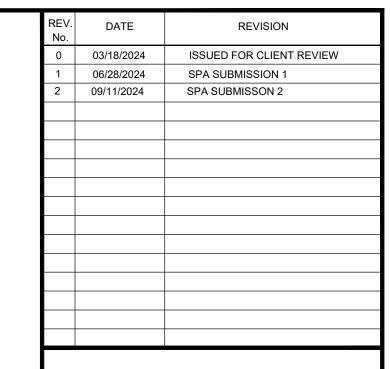
- PIPE BEDDING AS SPECIFIED ON PLAN AND PROFILE DRAWINGS COMPACTED TO 95% SPMDD IN LAYERS NOT EXCEEDING 150mm, TO 300mm ABOVE TOP OF PIPE.
- TRENCH BACKFILL FROM TOP OF PIPE BEDDING TO UNDERSIDE OF GRANULAR "B" SUBBASE SHALL CONSIST OF APPROVED NATIVE MATERIALS COMPACTED TO 95% SPMDD IN LAYERS NOT EXCEEDING 300mm.
- 3. PRIOR TO PLACING THE GRANULAR SUBBASE MATERIAL, ALL TOPSOIL, SOFT OR OTHERWISE COMPRESSIBLE MATERIAL MUST BE REMOVED FROM THE SUBGRADE AREA, AND THE SUBGRADE SHALL BE PROOF-ROLLED TO COMPACT ANY LOOSE SURFACE ZONES. ALL EXCAVATED AREAS MUST BE BACKFILLED WITH APPROVED ON-SITE NATIVE MATERIALS OR IMPORTED





N.T.S.

TYPICAL STORM INSULATION FOR STORM
WITH < 1.2m COVER



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LEGAL DESCRIPTION
PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE

TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION
SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY

APPLICANT INFORMATION

APPLICANT: TOM DAICOS
TELEPHONE: (519) 426-0068
ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y
BENCHMARKS

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C100 SITE PLAN

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20-128-STM STORM DRAINAGE AREAS PLAN

PREGINTARY

NOT TO BE USED
FOR CONSTRUCTION

SCALE:

0 5 10 15



Vallee
Consulting Engineers,

Architects & Planners

G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4

18-057 2024-09-11 100553190

(519) 426-6270

Project Title

BARREL RESTAURANT

131 QUEENSWAY WEST
SIMCOE, NORFOLK COUNTY

GENERAL NOTES & DETAILS

Designed by :

NLO/NBN

Checked by :

NLO/JTI

NLO/JTI

8/19/24

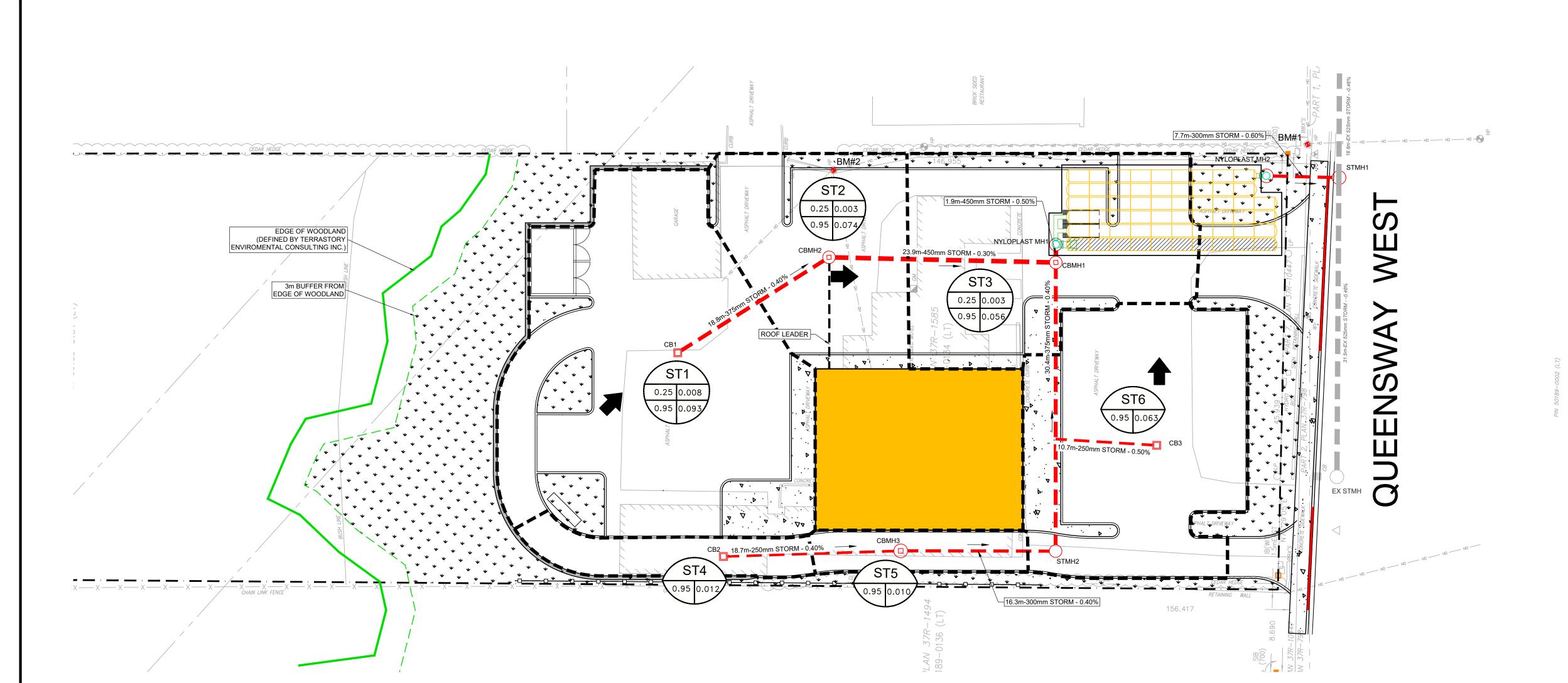
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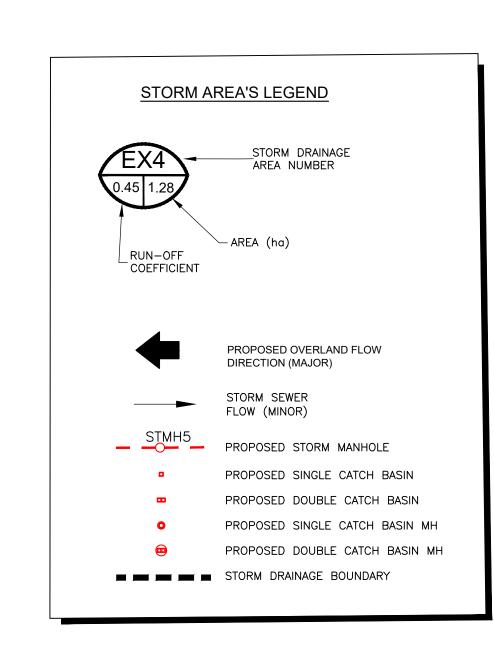
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TE LAST PLOTTED : Septemb



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	Project:	9/10/2024 18-057 Barrel Restau Simcoe/Norfolk Cour		ion		Return: A B C	100-year 801.041 1.501 0.657			Pipe Material: n Inlet Time Ca Multiplier	0.013 5	min)		Che	igned by: ecked by:	NLO	1	
	Location			Area (Ha)		Individual	Cumulative	Individual	Cumulative	Time of	Rainfall	Flow			Sewe	r Design			
Area	From	То		1.25 * C =		Area	Area	C*A	C*A	Concentration	mm/hr	2.78*I*A*C	Size	Slope	Capacity (Full)	Vel (Full)	Length	Time	С
Tica	1 1011	10	0.31	0.56	1.00	Ha	Ha			min		L/s	mm	%	L∕s	m/s	m	min	
ST1	CB1	CBMH2	0.080	•	0.093	0.17	0.17	0.12	0.12	5.00	234.17	76.8	375	0.40%	110.9	1.00	18.8	0.31	√ 6
ST2	CBMH2	CBMH1	0.003		0.074	0.08	0.25	0.07	0.19	5.31	227.06	121.8	450	0.30%	156.2	0.98	23.9	0.41	√ 7
ST4	CB2	СВМНЗ			0.012	0.01	0.01	0.01	0.01	5.00	234.17	7.8	250	0.40%	37.6	0.77	18.7	0.41	√ 2
ST5	СВМН3	STMH2			0.010	0.01	0.02	0.01	0.02	5.41	225.01	13.8	300	0.40%	61.2	0.87	16.3	0.31	√ 2
ST6	STMH2	CBMH1			0.063	0.06	0.09	0.06	0.09	5.72	218.54	51.6	375	0.40%	110.9	1.00	30.4	0.50	√ 4
ST3	CBMH1	NYLOPLAST MH1	0.003		0.056	0.06	0.39	0.06	0.33	6.23	209.05	194.6	450	0.50%	201.6	1.27	1.9	0.02	⊘ 9
	NYLOPLAST MH2	STMH1										41.0	300	0.60%	74.9	1.06	7.7	0.12	√ 5



REV. No.	DATE	REVISION
0	03/18/2024	ISSUED FOR CLIENT REVIEW
1	06/28/2024	SPA SUBMISSION 1
2	08/19/2024	ISSUED FOR CLIENT REVIEW
3	09/11/2024	SPA SUBMISSON 2

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LEGAL DESCRIPTION
PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 4 TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION
SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY
10TH, 2023

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068
ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS
BM #1: SPIKE IN FACE OF HYDRO POLE

ELEV.......215
BM #2: SPIKE IN FACE OF HYDRO POLE

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18-057-GN GENERAL NOTES 20-128-STM STORM DRAINAGE AREAS PLAN

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

SCALE:

0 5 10 15
HORIZONTAL: 1:250



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(519) 426-6270

Architects & Planners

Stamp

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Project Title

BARREL RESTAURANT

131 QUEENSWAY WEST
SIMCOE, NORFOLK COUNTY

Drawing Title
STORM DRAINAGE AREAS

Designed by : Drawn By :

Checked by:

NLO/JTI

Drawing Scale:

Date Started:

9/11/24

Drawing No.

18-057

AS SHOWN Project No.

STM

Appendix 7. Summary of Technical Recommendations



Natural Feature	Technical Recommendations (per Section 5 of report)
Wetlands	• Schedule work to avoid weather conditions which increase the potential for erosion and sedimentation (i.e., rain, strong wind, etc.).
	• Exposed soils will be restricted to the smallest area for the shortest period of time.
	Sediment fence will be installed prior to the commencement of site preparation and other construction-related activities as shown on Figure 3 Sediment fence will be installed properly (e.g., trenched in, etc.), inspected regularly (i.e., daily, following storm events, etc.), and repaired immediately when necessary (e.g., breaches eliminated, sediment accumulations removed, etc.).
	• Any necessary stockpiles or temporarily stored topsoil, fill, or aggregate material will be piled as low as practicable and isolated by sediment fence.
	Minimize storage of all fuels, construction materials, and other potentially deleterious substances (if needed) on-site.
	• Contractor will be prepared to immediately deploy spills response equipment (e.g., absorption pads, etc.) if necessary. All spills will be reported to the Ontario Spills Action Centre (1-800-268-6060) as soon as possible.
	 Non-biodegradable erosion and sediment control materials (including accumulated sediment if any) will be removed once construction is complete and disturbed areas are stabilized.
Significant Woodlands	• All proposed development features will be situated a minimum of 3 m from the dripline of the Significant Woodland, and all necessary grading and/or temporary disturbances will be restricted from the dripline as shown in Figure 3 .
	• A border of shrub plantings will be installed between the Significant Woodland dripline and limit of curbing to restrict human and/or pet encroachment into the natural area to the north
Significant Valleylands	• Potential for impacts will be addressed through full implementation of other overlapping mitigation measures.
Significant Wildlife Habitat	• Potential for impacts will be addressed through full implementation of other overlapping mitigation measures.
Habitat of Endangered and Threatened Species	• Any necessary tree removal within the proposed development envelopes will only take place between October 1 and April 30 to avoid the active season for bats. Should minor tree removal be required between May 1 and September 30, a qualified professional will complete an exit survey of suitable maternal roosting sites identified for removal a maximum of 24 hours before removal. The exit survey must make use of a bat detector and will occur for no less than the time period between sunset and 60 minutes after sunset. If an Endangered bat is identified during the survey, MECP should be contacted to obtain further direction prior to removal of the tree.
	• If construction activities occur during the active bat season (i.e., May 1 and September 30), work will be restricted to daylight hours only and the use of artificial lighting will be avoided.
	• Any lighting incorporated into the final building designs should be directed downward (i.e., towards the ground) and/or away from the adjacent woodlot (i.e., directed eastward) to the extent practicable.
Fish Habitat	Potential for impacts will be addressed through full implementation of other overlapping

EIS – 139 Queensway West, Simcoe Project No.: 23023

mitigation measures.

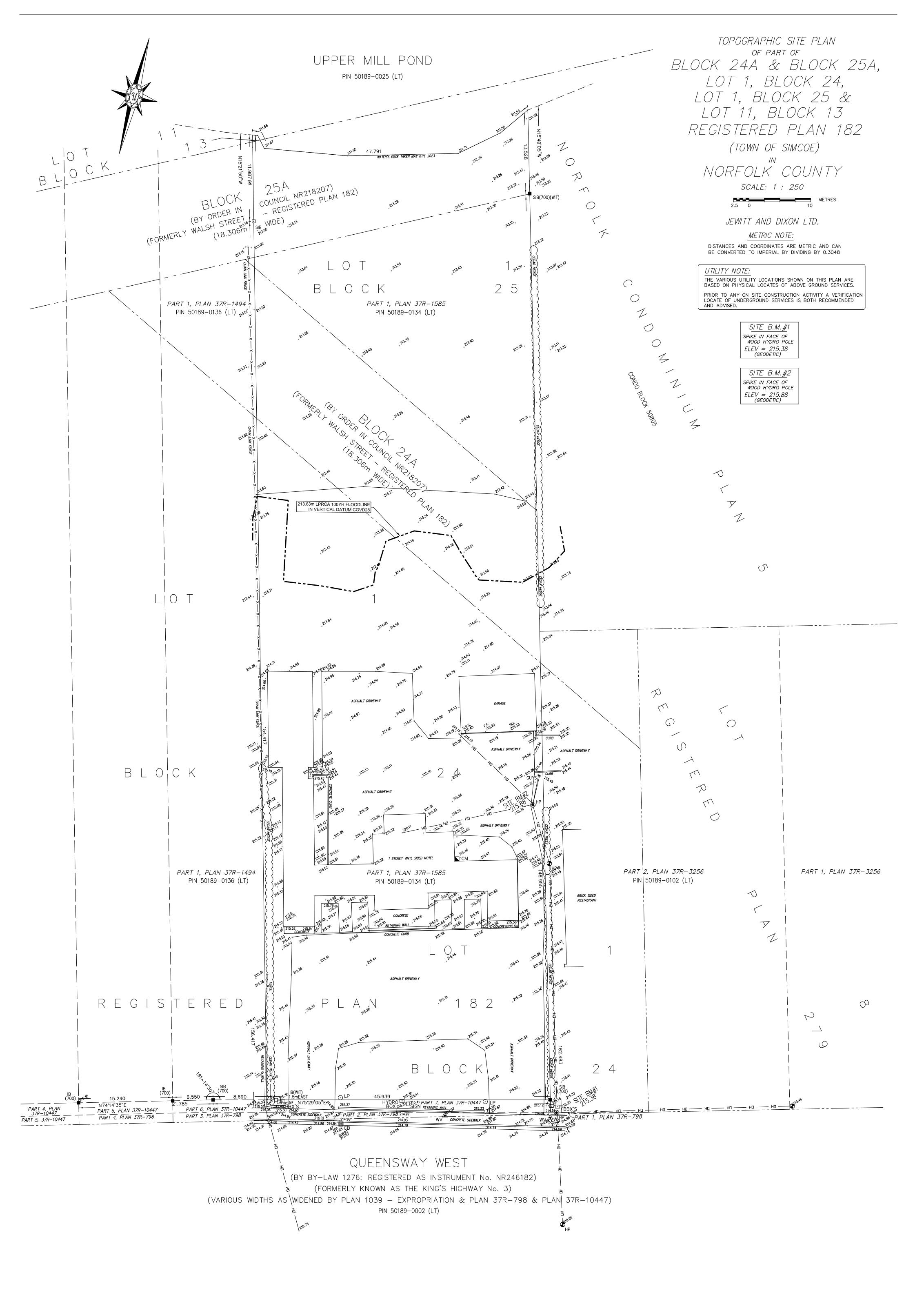
N	atural	Feature	
	aturai	Teature	5

Technical Recommendations (per Section 5 of report)

Other Natural Environment Considerations

- The removal of trees will be restricted to areas in direct conflict with the footprints of the proposed development features (e.g., residence, septic system, driveway, etc.) and grading, along with any hazardous trees in the immediate vicinity that pose an unacceptable risk to human life or property.
- All necessary vegetation removal (e.g., trees, meadow vegetation, etc.) will be completed outside the primary bird nesting period (i.e., to be completed between September 1 and March 31). Should minor vegetation removal be proposed during the bird nesting period, a bird nesting survey will be undertaken to confirm the presence or absence of nesting birds or bird nests within or adjacent to the areas subject to vegetation clearance. The survey is to take place within 48 hours of vegetation removal.
- Incorporation of Bird-Friendly Guidelines into the building design such as those published in City of Toronto's "Best Practices for Bird-Friendly Glass" and "Best Practices for Effective Lighting" should be considered at detailed design.
- Any Landscape Plans prepared as part of the development approval should incorporate species native to the local landscape.

Project No.: 23023



F.W. – J.R. LEGEND JEWITT AND DIXONLTD. TOP OF FOUNDATION ELEVATION SHOWN T.F.W. BOOK - LL-FILE UNDERSIDE OF SIDING ELEVATION SHOWN U.S.S. 2.5cm X 2.5cm X 1.2m STANDARD IRON BARS BEARINGS ARE GRID AND WERE DERIVED FROM SIMULTANEOUS GPS OBSERVATIONS CALC. - J.L.M. ONTARIO LAND SURVEYORS 1.6cm X 1.6cm X 0.6m IRON BARS SHOWN -□- IB FINISHED FLOOR ELEVATION SHOWN F.F. ON MONUMENT A TO B, SHOWN HEREON HAVING A BEARING OF N75~29'05"E PLAN - J.L.M. SHOWN -□- IB Ø 1.6cm ROUND X 0.6m DOOR SILL ELEVATION SHOWN SILL [UTM ZONE 17, (81~ WEST LONGITUDE) NAD83 (CSRS) (2010)] 51 PARK ROAD, SIMCOE, ONTARIO, N3Y 4J9 LOT LINES CHECK - K.H. BELL BOX SHOWN BBX □ TO CONVERT (P1) BEARINGS TO GRID BEARINGS DEED LINES SHOWN BENCH MARK SHOWN BM 🗨 - ADD 00~26'55" TO THE NORTHWEST BEARINGS FENCE LINES CATCH BASIN SHOWN CB CLIENT - KOKKOROS PHONE: (519) 426-0842 - SUBTRACT 00~26'55" FROM THE NORTHEAST BEARINGS OVERHEAD WIRES SHOWN SHOWN HP HYDRO POLE DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCES AND CAN BE ROAD LINES SHOWN R. C. DIXON, O.L.S. GAS METER SHOWN GM FOUND IRON BARS SHOWN - PLANTED IRON BARS SHOWN - JEWITT AND DIXON LTD. SHOWN (700) WITNESS MONUMENT SHOWN (WIT) E-mail: info@jewittdixon.com CONVERTED TO GRID DISTANCES BY MULTIPLYING BY 0.9996 23-3700-SP FOR JEWITT & DIXON LTD. SHOWN WV 🛦 WATER VALVE



September 10, 2025

The Barrel Restaurant 131 Queensway West Simcoe, Ontario N3Y 2M8

Attention: Mr. Tom Daicos

Reference: Functional Servicing Report

Barrel Restaurant Addition Simcoe – Norfolk County Our Project #18-057

Introduction

This functional servicing report has been prepared in support of the site plan application for a drive-thru restaurant addition for the Barrel Restaurant located in Simcoe, Norfolk County. This report presents the functional servicing for the proposed development, including sanitary, storm and domestic and fire water servicing. Note that indicated designs may be altered during detailed design to improve efficiency and produce cost savings. It is the intention to submit this report to Norfolk County for review and approval.

The 0.70 ha development site is located at 139 Queensway West in Simcoe – Norfolk County and is bound by Queensway West to the South, the existing Barrel Restaurant to the east, an existing residential dwelling to the west, and the Sutton Conservation Area to the north, which is designated as a provincially significant wetland (PSW) area. Approximately half of the development site is currently occupied by the Queensway Motel and parking lot, and the other half is open grassed and forested land. Refer to Figure 1.

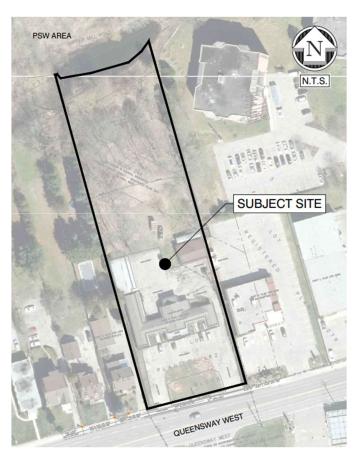


Figure 1 - Site Location

Land Use and Design Assumptions

The proposed development will consist of the following construction:

- Proposed drive-thru restaurant
- Parking lot and driveways
- Water, storm and sanitary infrastructure to support the proposed construction
- Stormwater management facility
- Curbs, sidewalks and other miscellaneous items to support the proposed construction

The following table outlines the mix of land use and calculates the anticipated population based on a commercial land use density of 90 people per hectare (pph) as described in the Norfolk County Design Criteria.

Table 1 Subject Lands – Estimate of Population				
Land Use Number of Units Population				
Commercial	0.70 ha @ 90 pph	63 people		

Sanitary Servicing

Norfolk County GIS mapping and record drawings indicate an existing 200mm diameter asbestos cement sanitary sewer on Queensway West which receives sanitary flows from the existing Queensway Motel on the subject property. Therefore, it is proposed that a new 125mm sanitary service be installed from the proposed restaurant building and connected to the existing 200mm sewer along Queensway West to service the proposed development. Refer to drawing C100 – Servicing Plan.

Sanitary design flows for the proposed development were calculated using the Norfolk County Design Criteria. Table 2 presents the flow information associated with each of the proposed development zones. In summary, the proposed development is anticipated to generate a total additional sanitary flow of approximately 1.31 L/s to the existing sanitary sewer on Queensway West. Detailed calculations are outlined in Appendix A.

Sanitary Design Flows Table 2					
Area	0.70 ha				
Population	63 persons				
Commercial Per Capita Flow	40 m ³ /hectare/day				
Peak Extraneous Flow	0.28 L/sec/ha				
Infiltration Flow	0.20 L/s				
Sewage Flow	0.32 L/s				
Peaking Factor	3.44				
Peak Design Flow	1.31 L/s				





It is reasonable to assume that the existing Queensway Motel contributes similar sanitary flows to the existing sanitary sewer along Queensway West. Therefore, the existing sanitary sewer likely has the capacity to support the proposed development. However, as noted in pre-consultation minutes, Vallee requests that Norfolk County confirm that the anticipated flows are within the allocated range for this site or advise if additional modeling is required to determine if there is capacity in the existing municipal infrastructure to support the proposed development.

Stormwater Management

Complete details of the stormwater management design are provided in the Barrel Restaurant Addition Stormwater Management Report dated September 10, 2024.

Water Servicing

Norfolk County GIS mapping and record drawings indicate an existing 400mm diameter watermain on Queensway West which services the existing Queensway Motel on the subject property. It is proposed that a new 50mm water service be installed from the proposed restaurant building and connected to the existing service curb stop on the property line to service the proposed development. Refer to drawing C100 – Servicing Plan.

Norfolk County's design criteria stipulates the following requirements for system pressures, and the system shall be designed to meet the greater of either of the following requirements;

- Fire flow conditions

 not less than 140 kPa
- Normal operating conditions not less than 280 kPa

Domestic Water Demand

Table 3 presents the domestic water flow information for the proposed development:

Table 3 Domestic Water Demands				
Population	63 persons			
Average Daily Demand	450 L/person /day			
Maximum Day Demand Factor	2.25			
Maximum Day Demand	0.74 L/s			
Peak Hourly Demand Factor	2			
Peak Hourly Demand	0.66 L/s			

In summary, the proposed development is anticipated to have a total maximum daily demand of 0.74 L/s and a maximum hourly demand of 0.66 L/s. Refer to Appendix B for detailed calculations.





Page 4

Fire Water Service

According to the County GIS online mapping, there is an existing fire hydrant on the south side of Queensway West, directly across from the proposed development. The hydrant is within the minimum distance required by the Ontario Building Code to adequately protect the proposed building; therefore, no new hydrants will be installed on the subject property.

Typically, available fire flow during the maximum day demand is the critical criteria when evaluating a watermain distribution system's ability to service a residential subdivision. Using the recommendations of the Fire Underwriters Survey – 2020 (FUS), the estimated fire flow required for the proposed development was determined to be 100 L/s. Refer to the complete calculations in Appendix B.

Information obtained from Norfolk County ISMP indicates that the existing municipal watermain along Queensway West has an available fire flow rate greater than 159 L/s as shown in Appendix B. Therefore, the existing infrastructure has sufficient flow to service the proposed development. However, as noted in the pre-consultation minutes Vallee requests that Norfolk County confirm that the anticipated flows are within the allocated range for this site or advise if additional modeling is required to determine if the existing water system has adequate system flows and pressure to provide the aforementioned fire flow demands.

Conclusions and Recommendations

The functional servicing design for the proposed development can be summarized as follows:

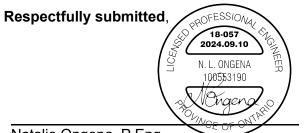
- A peak sanitary design flow of approximately 1.31 L/s is anticipated from the proposed development.
- Modelling from Norfolk County's consultant has been requested to determine if existing County infrastructure provides adequate capacity to accommodate the estimated sanitary design flow.
- Complete details of the stormwater management design are provided in the Barrel Restaurant Addition Stormwater Management Report dated September 10, 2024.
- The domestic maximum day demand and peak hourly demand were found to be 0.74 L/s and 0.66 L/s, respectively.
- The required fire flow demand for the proposed development was found to be 100 L/s using the FUS criteria.
- An analysis of the hydraulic modeling by the County consultants has been requested to determine the
 water servicing capacity and constraints on the existing water system to ensure adequate system flows
 and pressure for the aforementioned domestic and fire demands.

It is recommended that this report be provided to Norfolk County in support of the site plan application proposed development.

We trust that this information is complete and sufficient for submission. Should you have any questions or require further information please do not hesitate to contact us.







Natalie Ongena, P.Eng

G. DOUGLAS VALLEE LIMITED

Consulting Engineers, Architects and Planners

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List of Appendices

Appendix A

- Sanitary Flow Calculations

Appendix B

- Domestic Water Demand Calculations
- FUS Fire Flow Calculations
- DWG FIRE Fire Separation Distances
- Norfolk County ISMP Available Fire Flow





APPENDIX A

Sanitary Flow Calculations



Subject: Barrel Restaurant Addition

Date: 6/25/2024 Project #: 18-057 By: NLO Page: 1

Norfolk County Design Criteria Section 9.2 - Sanitary Sewage Flow

9.2.01 Tributary Population

Commercial:

Commercial Development: 90 persons/ha

Site Area: 0.70 ha

Number of Persons: 63 persons

9.2.02 Sewage Flow

Per Capita Flow: 40 m³/hectare/day

Average Sewage Flow: 0.32 L/s

9.2.03 Peak Sanitary Flow Factor

Commercial Peaking Factor Formula:

Me = $0.8(1+(14/(4+(Pe^0.5))))$

Pe= 0.063 M = 3.435

9.2.04 Infiltration Allowance

Infiltration Allowance: 0.28 L/s/ha Infiltration Allowance: 0.196 L/s

9.2.05 Design Flow

Design Flow:

Design Flow = (Average Sewage Flow * Peak Sanitary Flow Factor) + Infil. Allowance

Design Flow = 1.31 L/s

APPENDIX B

Domestic Water Demand Calculations FUS Fire Flow Calculations DWG FIRE – Fire Separation Distances Norfolk County ISMP Available Fire Flow



Date: Project #: 6/25/2024

Barrel Restaurant Addition

18057

Ву: _

NLO

Page: 1

Water Demand Calculations

Maximum Daily Demand

Area
Zoning of Land

Equiv. Population Density

Equiv. Population

Av. Daily Demand Per Capita

Maximum Daily Demand Peaking Factor

Maximum Daily Demand

0.70 ha

Commercial

90 ppl/ha

63

0.45 m³/capita/day

2.25

63.79 m³/day

0.74 l/s

Maximum Hourly Demand

Area

Zoning of Land

Equiv. Population Density

Equiv. Population

Av. Daily Demand Per Capita

Maximum Hourly Demand Peaking Factor

Maximum Hourly Demand

0.70 ha

Commercial

90 ppl/ha

63

0.45 m³/capita/day

2

2.36 m³/hour

0.66 l/s



Subject: Date: Project #: **Barrel Restaurant Addition**

6/25/2024 18-057 By: NLO Page: 1

Barrel Restaurant Addition

1) <u>Fire Flow Requirement</u>

 $F_1=220C(A^{1/2})$ (L/min)

C= 1.5 Wood Frame Construction

Af= 372 m^2 = main floor area

A= 372 Fire Area m²

 F_1 = 6367 L/min

F₁= 6000 L/min (Round to the nearest 1,000 l/min)

2) <u>Occupancy</u>

Occupancy Type: Mercantile Occupancy - Limited to Combustible Contents

Reduction: 0% Surcharge: 0%

 $F_2=F_1+(F_1*Reduction/Surcharge)$ (L/min)

F₂= 6000 L/min

3) <u>Sprinkler System</u>

Applicable (Assumes the building is protected by a complete automatic sprinkler Sprikler System:

system, conforming to NFPA 13 and other standards)

Reduction: 30%

 $F_3 = F_2 * Reduction$ (L/min)

F₃= 1800 L/min

4) <u>Seperation</u>

<u>Direction</u>	<u>irection</u> <u>Distance (n Surcharge</u>		Separation Surcharges	
North	> 30m	0%	0 to 3m	25%
East	25.8	10%	3.1m to 10m	20%
West	11.8	15%	10.1m to 20m	15%
South	> 30m	0%	20.1 to 30m	10%
	Total:	25%	Greater than 30m	0%

F4=(TOTAL)*F2 (L/min)
F₄= 1500 L/min

Total Fire Flow

 $F=F_2-F_3+F_4 = 5700 L/min$

= 6000 L/min (Round to the nearest 1,000 l/min)
= 100.0 L/s

Notes: 1) All calculations and factors from Part 2 "Water Supply for Public Fire Protection" by the Fire Underwriters Survey, 2020

Water Supply for Public Fire Protection - Fire Underwriters Survey 2020 Tables & Figures

Method for Determining Required Fire Flows

Fire Underwriters Survey defines Required Fire Flow as the amount and rate of water application required in firefighting to confine and control the fires possible in a building or group of buildings which comprise essentially the same fire area by virtue of immediate exposure. This may include as much as a city block.

To determine the estimated amount of water required to confine and control a fire in a building or group of buildings, Fire Underwriters Survey uses the following base formula

$$RFF = 220C\sqrt{A}$$

Where:

RFF = the Required Fire Flow in litres per minutes (LPM)

the Construction Coefficient is related to the type of construction of the building

A = the Total Effective Floor Area (effective building area) in square metres of the building

Construction Coefficient (C)

Note that the construction typology used by the insurance industry and public fire protection differs from the terms of reference in the National Building Code of Canada (NBC).

The following Construction Types and Coefficients are used in the required fire flow formula:

1.5 for Type V Wood Frame Construction

- 0.8 for Type IV-A Mass Timber Construction 0.9 for Type IV-B Mass Timber Construction
- 1.0 for Type IV-C Mass Timber Construction 1.5 for Type IV-D Mass Timber Construction
- 1.0 for Type III Ordinary Construction 0.8 for Type II Noncombustible Construction
- 0.6 for Type I Fire Resistive Construction

		72.00 cm - 12.00 cm - 12.00 cm		
Table 3 Recommended	Occupancy/Content	s Charges by Ma	ior Occupancy Example	es1

Group	Division	Description of Major Occupancies	Occupancy and Contents	Adjustmen Factor
Α	1	Assembly occupancies intended for the production and viewing of the performing arts	Combustible	096
Α	2	Assembly occupancies not elsewhere classified in Group A	Limited to Combustible	-15% to 09
A	3	Assembly occupancies of the arena type	Limited to Combustible	-15% to 0%
Α	4	Assembly occupancies in which occupants are gathered in the open air	Limited to Combustible	-15% to 09
В	1	Detention occupancies	Noncombustible to Limited	-25% to
В	2	Care and treatment occupancies	Noncombustible to Limited	-25% to -15%
В	3	Care occupancies	Limited	-15%
С		Residential occupancies	Limited	-15%
D		Business and personal services occupancies		
D	-	 Police stations without detention quarters 	Non-combustible	-20%
D	<u></u>	 Banks, Barber and hairdressing shops, Beauty parlours, Dental offices, Laundries (self-service), Medical offices, Offices, Radio stations 	Limited	-15%
D	1122	 Dry cleaning establishments (self- service, not using flammable or explosive solvents or cleaners), Small tool and appliance rental and service establishments 	Combustible	0%
E	7070	Mercantile occupancies		
E		Exhibition halls	Limited	-15%
E	777	Supermarkets	Limited	-15%
E		Shops/Stores	Limited to Combustible	-15% to 09
E	***	Markets	Combustible	0
E		Department stores	Free Burning	15%
F	1	High hazard industrial occupancies	Rapid Burning	+25%
F	2	Medium hazard industrial occupancies		
F	2	 Television studios not admitting a viewing audience 	Limited	-15%
F	2	Cold storage plants	Combustible	096
F	2	Electrical substations	Combustible	0%
F	2	 Helicopter landing areas on roofs 	Limited	-15%

[†] The values presented in this table are intended as a guideline and the occupancy/contents adjustment should be based on the actual severity of conditions within the risk structure.

Exposure Adjustment Charge

A percentage of water for the exposures should be added to the required fire flow for the subject building to provide adequate flow rates for hose streams used to reduce the spreading of fire from the subject building to exposed risks (ex. structures, stored materials, forest, etc.). The required fire flow of a subject building may be increased depending on the severity of exposed risks to the subject building and the distance between the exposed risks and the subject building. This charge considers the usage of water supplies to prevent exposed risks from igniting or being damaged during a major fire incident in the subject building.

The maximum Exposure Adjustment Charge to be applied to a subject building is 75% when summing the percentages for all sides of the building. Table 5 outlines the maximum Exposure Adjustment Charge to apply for any one side of the subject building based on the following separation distances between the subject building and the exposed risk (aka. exposure):

Table 5 Exposure Charges

Separation Distance	Maximum Exposure Adjustment Charge
0 m to 3 m	25%
3.1 m to 10 m	20%
10.1 m to 20 m	15%
20.1 m to 30 m	10%
Greater than 30	0%

Occupancy and Contents Adjustment Factor

The required fire flow may be reduced by as much as -25% for occupancies having contents with a very low fire hazard or may be increased by up to 25% for occupancies having contents with a high fire hazard. The Occupancy and Contents Adjustment Factor should not be made at greater than 25% or less than

- Noncombustible Contents
 - Includes merchandise or materials, including stock, or equipment, which in permissible quantities does not in themselves constitute an active fuel for the spread of fire.
 - May include limited or controlled amounts of compustible material, not exceeding 5% of the Total Effective Area of the occupancy. Combustible components of construction (ex. interior walls, finishes, etc.) should be included in the limit on combustible materials.
- Limited Combustible Contents -15%
 - o Includes merchandise or materials, including furniture, stock, or equipment, of low combustibility, with limited concentrations of combustible materials.
 - Combustible Contents 0% no adjustment
 - o Includes merchandise or materials, including furniture, stock, or equipment, of moderate combustibility.
 - Free Burning Contents +15%
 - Includes merchandise or materials, including furniture, stock, or equipment, which burn 0 freely, constituting an active fuel.
 - Rapid Burning Contents +25%
 - Includes merchandise or materials, including furniture, stock, or equipment, which either
 - . Burn with great intensity
 - spontaneously ignite and are difficult to extinguish
 - give off flammable or explosive vapors at ordinary temperatures

 - as a result of an industrial processing, produce large quantities of dust or other finely divided debris subject to flash fire or explosion

Total Effective Area (A)

To determine a required fire flow for an individual building, the Total Effective Area that would be affected during the design fire must be determined. The Total Effective Area is the largest Floor Area (in square metres) plus the following percentages of the total area of the other floors:

- For a building classified with a Construction Coefficient from 1.0 to 1.5:
 a) 100% of all Floor Areas are considered in determining the Total Effective Area to be used in the
- 2) For a building classified with a Construction Coefficient below 1.0:
 - a) if any vertical openings in the building (ex. interconnected floor spaces, atria, elevators, escalators, etc.) are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight; or
 - b) if all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.

Automatic Sprinkler Protection

The required fire flow may be reduced by up to 50 percent for complete Automatic Sprinkler Protection depending upon adequacy of the system. Where only part of a building is protected by Automatic Sprinkler Protection, credit should be interpolated by determining the percentage of the Total Floor Area being protected by the automatic sprinkler system.

To be able to apply the full 50 percent reduction, the following areas should be reviewed to determine the appropriate level of credit for having Automatic Sprinkler Protection as per the table below

Table 4 Sprinkler Credits

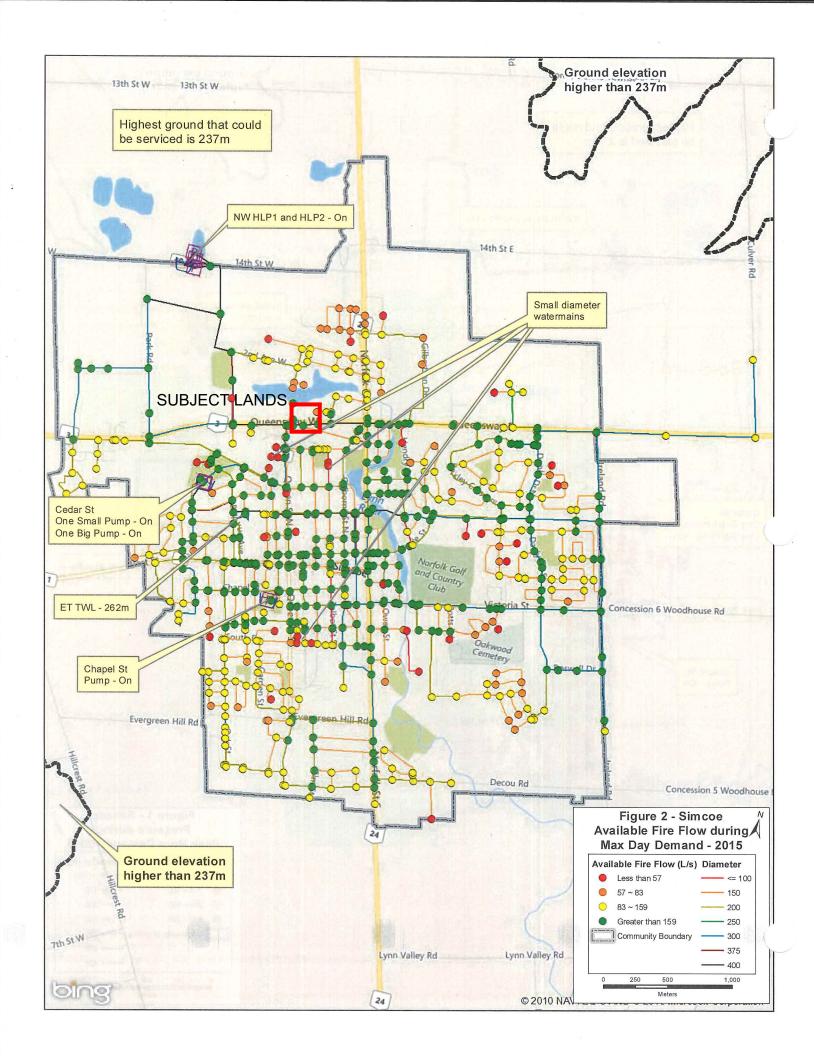
Automatic Sprinkler System Design	Credit				
	With complete building coverage	With partial building coverage of X%			
Automatic sprinkler protection designed and installed in accordance with NFPA 13	30%	30% × Percentage of Total Floor Area Serviced by Sprinkler System			
Water supply is standard for both the system and Fire Department hose lines	10%	10% × Percentage of Total Floor Area Serviced by Sprinkler System			
Fully supervised system	10%	10% × Percentage of Total Floor Area Serviced by Sprinkler System			

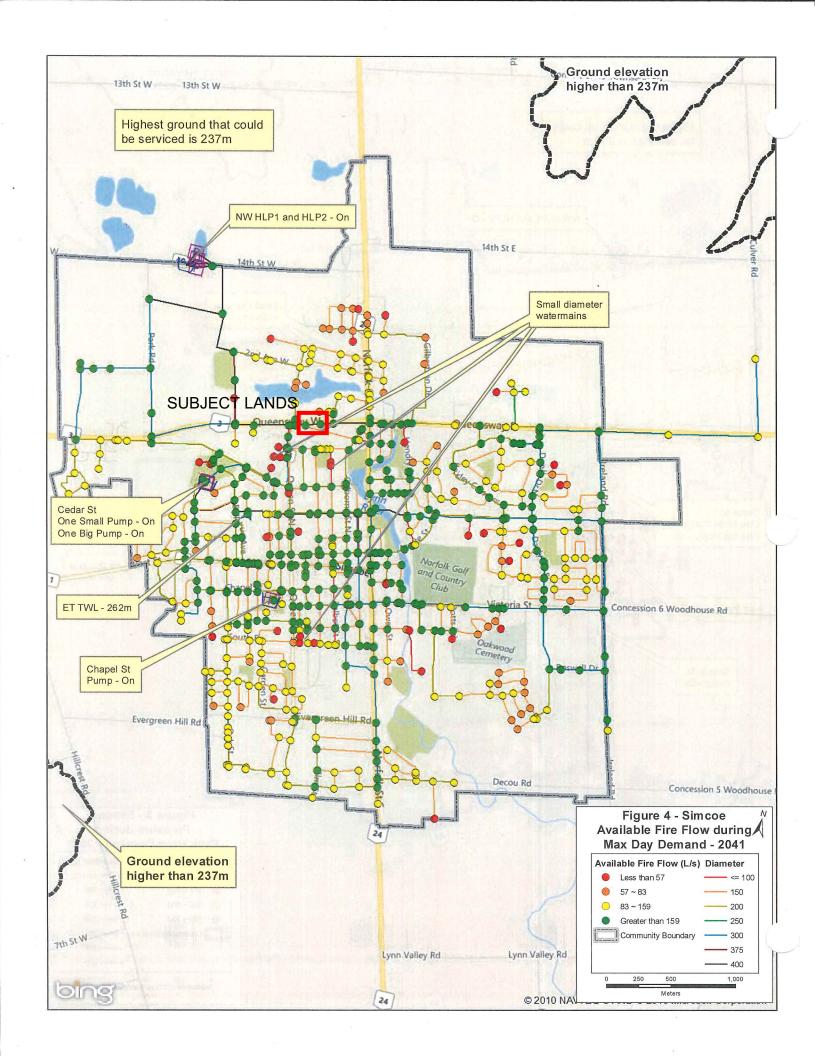
Table 6 Exposure Adjustment Charges for Subject Building considering Construction type of Exposed Building

Distance (m) to the Exposure	Length-height factor of exposing building face	Type V	Type III-IV ²	Type III-IV ³	Type I-II ²	Type I-II
	0-20	20%	15%	5%	10%	0%
	21-40	21%	16%	6%	11%	1%
02	41-60	22%	17%	7%	12%	2%
0 to 3	61-80	23%	18%	8%	13%	3%
	81-100	24%	19%	9%	14%	4%
	Over 100	25%	20%	10%	15%	5%
	0-20	15%	10%	3%	6%	0%
	21-40	16%	11%	4%	7%	0%
3.1 to 10	41-60	17%	12%	5%	8%	1%
5.1 10 10	61-80	18%	13%	6%	9%	2%
	81-100	19%	14%	7%	10%	3%
	Over 100	20%	15%	8%	11%	4%
	0-20	10%	5%	0%	3%	0%
	21-40	11%	6%	1%	4%	0%
10.1 to 20	41-60	12%	7%	2%	5%	0%
10.1 to 20	61-80	13%	8%	3%	6%	1%
	81-100	14%	9%	4%	7%	2%
	Over 100	15%	10%	5%	8%	3%
	0-20	0%	0%	0%	0%	0%
	21-40	2%	1%	0%	0%	0%
20.1 to 30	41-60	4%	2%	0%	1%	0%
20.1 to 50	61-80	6%	3%	1%	2%	0%
	81-100	8%	4%	2%	3%	0%
	Over 100	10%	5%	3%	4%	0%
Over 30 m	all sizes	0%	0%	0%	0%	0%



ATF I AST PLOTTFD : Septem







September 10, 2025

The Barrel Restaurant 131 Queensway West Simcoe, Ontario N3Y 2M8

Attention: Mr. Tom Daicos

Reference: Stormwater Management Report

Barrel Restaurant Addition Simcoe – Norfolk County Our Project #18-057

Introduction

This Stormwater Management Report (SWM) has been prepared in support of the site plan application for a drive-thru restaurant addition for the Barrel Restaurant located in Simcoe, Norfolk County. This report outlines the overall stormwater management design for the proposed development. Note that indicated designs may be altered during detailed design to improve efficiency and produce cost savings. It is the intention to submit this report to Norfolk County and the Long Point Region Conservation Authority (LPRCA) for review and approval.

The 0.70 ha development site is located at 139 Queensway West in Simcoe – Norfolk County and is bound by Queensway West to the South, the existing Barrel Restaurant to the east, an existing residential dwelling to the west, and the Sutton Conservation Area to the north, which is a provincially significant wetland (PSW) area. Approximately half of the development site is currently occupied by the Queensway Motel and parking lot, and the other half is open grassed and forested land. Refer to Figure 1.

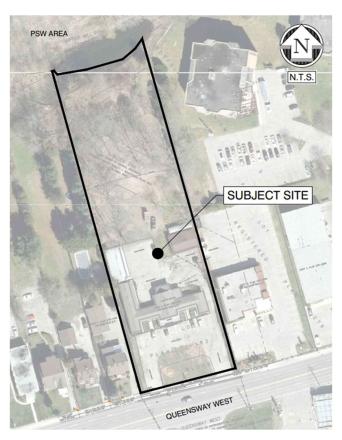


Figure 1 - Site Location

Stormwater Management Design Criteria

The design criteria for the proposed development are as follows:

- Quantity Control: Reduce or control the post-development peak flow rates from the site to levels that
 do not exceed the 2-year pre-development flow rate, for all storm events up to and including the 100year storm event.
- Quality Control: Stormwater to be treated to a Normal Protection Level as defined in the Ministry of the Environment's *Stormwater Management Practices Planning and Design Manual* (March 2003).

A Visual Otthymo computer model has been used to simulate the subject development site drainage areas under pre-development conditions and post-development conditions. The simulations were conducted using the 4-hour Chicago Distribution design storm of the 2-year, 5-year, 10-year, 25-year, 50-year and 100-year storm events. The Norfolk County rainfall IDF curve data has been used for the storm analysis using the parameters in Table 1 below.

Table 1 Norfolk County Rainfall IDF Parameters								
Event	Event A B C							
2-year	529.711	4.501	0.745					
5-year	583.017	3.007	0.703					
10-year	670.324	3.007	0.698					
25-year	721.533	2.253	0.679					
50-year	766.038	1.898	0.668					
100-year	801.041	1.501	0.657					

Pre-Development

Under existing pre-development conditions, the subject site is occupied by the Queensway Motel, asphalt driveways and parking areas, and a large area of open grassed and forested area. The post-development drainage areas are shown in Drawing POST- Post-Development Drainage Areas in Appendix E, and can generally be described as follows:

- Area PRE 1: Approximately 0.15 ha of the development site. Runoff from this area drains overland in
 a southerly direction towards the Queensway, where minor storm flows are collected by the existing
 525mm storm sewer along Queensway West, and major storm flows continue to flow overland in an
 easterly direction down Queensway West.
- Area PRE 2: Approximately 0.55 ha of the development site. Runoff from this area is conveyed overland in the northerly direction across the subject property towards the Sutton Conservation Area.

A Visual Otthymo computer model was used to simulate pre-development conditions for this area. The model uses a modified SCS procedure to estimate losses that occur naturally during a rainfall event such as evaporation and infiltration. At this time, no geotechnical information is available, therefore soil parameters were assumed based on Ontario Soil Mapping of the surrounding area. Directly connected impervious area was assumed to include sidewalks, driveways, and parking areas. Table 2 summarizes the pre-development catchment parameters with complete details included in Appendix A.





Table 2 Visual Otthymo Model Input – Pre-Development							
Parameter PRE 1 PRE 2							
Area	0.15 ha	0.55 ha					
Hydrologic Soil Group	E	3					
SCS Curve Number	Grass/Improved Land - 74						
Initial Abstraction	7.2 mm (IA/S _{0.05} = 0.05, with S _{0.05} = 1.33 * S _{0.20} ^1.15 in inches and S _{0.20} = 1000/CN-10 in inches)						
Impervious Percentage (%) 77% 60%							
Directly Connected Impervious Percentage (%)	26%	0%					

Table 3 summarizes the peak pre-development runoff that is conveyed to the Queensway from catchment Area PRE 1, based on the pre-development drainage patterns identified above.

Table 3 Peak Pre-Development Runoff (from Area PRE 1)			
Event Pre-Dev Peak Flows (m³/s)			
2-year	0.019		
5-year	0.029		
10-year	0.034		
25-year	0.042		
50-year	0.047		
100-year	0.053		

Post-Development

The overall stormwater management (SWM) strategy is to reduce post-development peak flow rates from the site to less than or equal to pre-development flow rates from catchment Area PRE 1 for all storm events up to and including the 100-year storm event. To meet this quantity control target, runoff from the majority of the proposed development site will be detained in an underground stormwater management chamber facility at the southeastern corner of the site and released at a rate such that the pre-development flow rates from catchment Area PRE1 are not exceeded. Minor and major storm events (2-year to 100-year storms) will be conveyed to the proposed SWM storage facility through a storm sewer network. Runoff released from the storage facility will be conveyed to the existing 525mm municipal storm sewer along Queensway West.





The post-development drainage areas are shown in Drawing POST- Post-Development Drainage Areas in Appendix E, and can generally be described as follows:

- Area POST 1: Approximately 0.34 ha of the development site. This area encompasses the majority of the proposed development. Flows from this area are conveyed to the proposed underground SWM chamber facility at the southeastern corner of the site via a proposed storm sewer network.
- Area POST 2: Approximately 0.03 ha of the development site. This area encompasses the frontage of the proposed development. Flows from this area will flow uncontrolled, overland towards Queensway West as they do under pre-development conditions.
- Area POST 3: Approximately 0.33 ha of the development site, which will remain undeveloped. Runoff
 from this area will flow uncontrolled, overland in the northerly direction across the subject property
 towards the Sutton Conservation Area, as it does under pre-development conditions. Under postdevelopment conditions, less area is directed northwards than under pre-development conditions.
 Therefore, no quantity control is proposed in this area.

Table 4 summarizes the post-development input parameters for the Visual OTTHYMO computer model with complete details included in Appendix A. The model uses a modified SCS procedure to estimate losses that occur naturally during a rainfall event such as evaporation and infiltration. At this time, no geotechnical information is available, therefore soil parameters were assumed based on Ontario Soil Mapping of the surrounding area. The directly connected impervious area was assumed to include the roof of the proposed building and all other impervious surfaces, such as sidewalks, driveways, and parking areas.

Table 4 Visual Otthymo Model Input – Post-Development								
Parameter POST1 POST2 POST3								
Area	0.34 ha	0.03 ha	0.33 ha					
Hydrologic Soil Group		В						
SCS Curve Number	Gra	ss/Improved Land	- 74					
Initial Abstraction	7.2 mm (IA/S _{0.05} = 0.05, with S _{0.05} = 1.33 * S _{0.20} ^1.15 in inches and S _{0.20} = 1000/CN-10 in inches)							
Impervious Percentage	95% 34% 0%							
Directly Connected Impervious Percentage	95%	34%	0%					

Stormwater Management Chamber Facility

An underground chamber system is proposed to provide stormwater storage for the subject site. To determine the storage volume required in the proposed system, the relationship between the storage volume and the discharge is defined by a rating curve. This rating curve is determined by calculating the expected discharge from the facility based on the water level in the system and the proposed outlet control configuration. Generally, orifices or weirs can control discharge from SWM facilities. Each of these control methods can be used by the singular control or they can be used in combination depending on the discharge characteristics desired. For this facility, two orifices are proposed with the following equation used to estimate discharge.





Sharp-Crested Circular Orifice

$$Q = C * A * \sqrt{2 * g * h}$$

where: Q = Discharge in cms

C = constant, 0.63

A = orifice area in m²

g = gravitational constant, 9.81 m/s²

h = height above orifice, m

The proposed underground chamber system utilizes 58 StormTech SC-740 chambers, with 12 end caps, a 300mm stone reservoir above the chambers, and a 152mm stone reservoir below. Drawings and specifications for the proposed StormTech chamber facility are found in Appendix C. However, due to the lack of geotechnical information at this time, no infiltration has been accounted for in the proposed system. Therefore the stone reservoir below the chambers has not been included in the storage volume, resulting in a total active storage volume of 139 m³.To control the release rate from the proposed facility, a 100mm orifice at an elevation of 213.50m and a 125mm orifice at an elevation of 214.00m will be installed in an outlet control structure. The complete discharge-to-storage rating curve is appended to this report as part of Appendix A.

Table 5 summarizes the peak post-development flow rates from the proposed SWM facility, and the total post-development site conveyed to Queensway West, and compares them to the allowable pre-development flow rates from Area PRE 1 for each storm event. The utilized storage volumes in the StormTech chamber facility and corresponding ponding depths and drawdown times for each storm event are also presented in Table 5.

Table 5 Post-Development Flow Rates, Storage Volumes, Ponding Depths & Drawdown									
	Pre	Utilized	Ponding						
Event	(m ³ /s)	From Chambers	I Atal		Intal Change		Storage Volume (m³)	Elevation (m)	
2-year	0.019	0.012	0.013	-0.006	58	213.85			
5-year	0.029	0.014	0.016	-0.013	75	213.93			
10-year	0.034	0.021	0.023	-0.011	92	214.07			
25-year	0.042	0.029	0.031	-0.011	105	214.17			
50-year	0.047	0.035	0.038	-0.009	115	214.29			
100-year	0.053	0.041	0.045	-0.008	127	214.42			

As shown in Table 5, the total peak post-development flow rates conveyed to Queensway West are attenuated to less than or equal to the allowable pre-development peak flow rates from Area PRE 1 for all design storm events. Complete details of all SWM calculations and the results from the Visual OTTHYMO analysis are outlined in Appendix A and E, respectively.





Quality Control

Chamber Facility Quality Control

The Ministry of the Environment's *Stormwater Management Practices Planning and Design Manual* (March 2003) was used in conjunction with requirements of the Norfolk County to determine the quality control design for the proposed SWM facility. For the proposed development the final stormwater outlet is the existing municipal storm sewer along Queensway West, therefore stormwater shall be treated to a Normal Protection Level, corresponding to a removal of 70% of total suspended solids.

Quality control will be provided by the StormTech Isolator PLUS Row, which is a row of standard StormTech chambers surrounded by filter fabric. The isolator row creates a detention basin that allows water to egress through the surrounding filter fabric while sediment is trapped within. In addition, a flared end ramp is attached to the inlet pipe inside of the chamber end cap to provide a smooth transition from pipe invert to fabric bottom. It is configured to improve chamber function performance over time by distributing sediment and debris that would otherwise collect at the inlet.

Each SC-740 isolator row chamber has an ETV-verified treated flow rate of 7.25 L/s corresponding to greater than 81% TSS removal. The proposed chamber facility features 10 isolator row chambers, which allows for a total treated inlet flow rate of approximately 73 L/s. Using Visual OTTHYMO, the maximum flow rate entering the chambers during the 25mm storm event (quality control event) was determined to be 45 L/s. Consequently, it can be concluded that the proposed chamber facility provides sufficient capacity to provide a normal level of water quality protection, corresponding to 70% TSS removal. The StormTech Isolator Row Sizing Chart can be found in Appendix A.

Inspection and maintenance are fundamental to the long-term performance of any stormwater quality treatment device. StormTech recommends that the chamber system be inspected annually at a minimum, and every six months for the first year of operation to determine the sediment accumulation rate. In subsequent years inspections can be based on observations or local requirements. The unit should be inspected immediately after an oil, fuel or chemical spill, and a licensed waste management company should remove oil and sediment for proper disposal.

Minimum Orifice Size

A minimum orifice of 75mm is recommended as per the MOE guidelines. For this facility, a 100mm orifice and a 125mm orifice are proposed.

Erosion and Sediment Control

During construction, the contractor is required to protect the worksite and all adjacent lands from sediment and erosion regardless of the source, to the satisfaction of all applicable parties. The measures installed by the contractor are to remain in place until such time as there is no further threat of damage and all vegetation is established. Measures that are to be put into place as an absolute minimum include silt fences, mud mats, and filter cloths over catch basins onsite.





Proposed SWM Facility Summary

The following summarizes the proposed SWM Facility for the HFW Hunt Street Residential Development:

- Storm sewers will convey stormwater from Area POST 1 to the proposed underground SWM chamber facility located at the southeast corner of the development.
- Runoff released from the SWM facility will be released to the existing 525mm municipal storm sewer along Queensway West.
- Runoff from area POST 2 and POST 3 will flow uncontrolled, overland to Queensway West and to the Sutton Conservation Area, respectively, as it does under pre-development conditions,
- The underground storage chamber facility uses 54 StormTech SC-740 chambers and has a total active storage volume of 139 m³.
- The required storage volume in the chamber facility ranges between 58 m³ to 127 m³ for the 2-year and 100-year storm events, respectively.
- Discharge from the chamber facility is controlled by a 100mm diameter orifice at an elevation of 213.50m and a 125mm diameter orifice at an elevation of 214.00m.
- During events greater than the 100-year storm, runoff from the site will surcharge the SWM facility, and flow overland towards Queensway West as it does under pre-development conditions.
- The proposed StormTech Isolator PLUS Row shall be utilized to achieve a normal level of water quality protection, corresponding to 70% TSS removal.

Conclusions and Recommendations

Based on the review presented by this Stormwater Management Report, it is concluded that:

- The total peak post-development flows from the development site have been controlled to less than pre-development levels for all storm events up to and including the 100-year storm event.
- The proposed SWM design meets the design guidelines outlined by the MOE's *Stormwater Management Practices Planning and Design Manual* (March 2003) for normal water quality protection.

It is recommended that this report be provided to Norfolk County and the Long Point Region Conservation Authority in support of the site plan application for the proposed development.

We trust that this information is complete and sufficient for submission. Should you have any questions or require further information please do not hesitate to contact us.



Respectfully submitted,



Natalie Ongena, P.Eng

G. DOUGLAS VALLEE LIMITED

Consulting Engineers, Architects and Planners

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List of Appendices

Appendix A

- Catchment Parameters
- Rating Curve
- Pre to Post Flows & Utilized Storage Volumes
- Quality Control

Appendix B

- Soil Parameters

Appendix C

ADS StormTech Chamber Drawings & Specifications

Appendix D

- Visual OTTHYMO Summary Outputs

Appendix E

- DWG PRE Pre-Development Drainage Areas
- DWG POST Post-Development Drainage Areas



APPENDIX A

Catchment Parameters Rating Curve Pre to Post Flows & Utilized Storage Volumes Quality Control



Project #:

Catchment Parameters

Date:

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SOIL PARAMETERS

 Soil Group
 B
 $S_{0.20} = 1000/\text{CN} - 10 \text{ (inches)}$

 CN
 74
 $S_{0.05} = 1.33 * S_{0.20}^{-1}.15 \text{ (inches)}$

 Initial Abstraction
 7.2 mm
 IA = $S_{0.05} * 0.05 * 25.4 \text{ (mm)}$

PRE-DEVELOPMENT CATCHMENT PARAMETERS

Drainage Area	Area (ha)	Imperv. Area (ha)	Directly Connected Imperv. (ha)	TIMP (%)	XIMP (%)
		(2)	(3)	(2)/(1)	(3)/(1)
PRE1	0.154	0.12	0.09	77%	60%
PRE2	0.546	0.14	0.00	26%	0%

POST-DEVELOPMENT CATCHMENT PARAMETERS

Drainage Area	Area (ha)	Imperv. Area (ha)	Directly Connected Imperv. (ha)	TIMP (%)	XIMP (%)	Control?
		(2)	(3)	(2)/(1)	(3)/(1)	
POST1	0.335	0.32	0.32	95%	95%	Controlled
POST2	0.029	0.01	0.01	34%	34%	Uncontrolled
POST3	0.335	0.00	0.00	0%	0%	Uncontrolled



Rating Curve

Date:

9/10/2024 18-057 _ By:

NLO 2

Project #:

____ Page

214.06 m

CHAMBER PARAMETERS

ORIFICE PARAMETERS

CL Elev.

Model Diameter SC-740 0.100 m **Number of Chambers** 0.0079 m2 58 Area Orifice #1 Number of End Caps 12 Invert Elev. 213.50 m Depth of Stone Above Chamber 213.55 m 300 mm CL Elev. Depth of Stone Below Chambers 152 mm (not used for storage) Base of Stone Elev. 213.35 m Diameter 0.125 m Base of Chamber Elev. 0.0123 m2 213.50 m Area Orifice #2 Invert Elev. 214.00 m Height of Chambers 762 mm

Top of Chamber Elv. 214.26 m Top of Stone Elev. 214.56 m

Min. Cover (For Vehicles) 0.55 m (min 450mm plus 100mm pavement layer)

Min Surface Elev. 214.81 m

Max. Cover 2.40 m

Max Surface Elev. 206.31 m

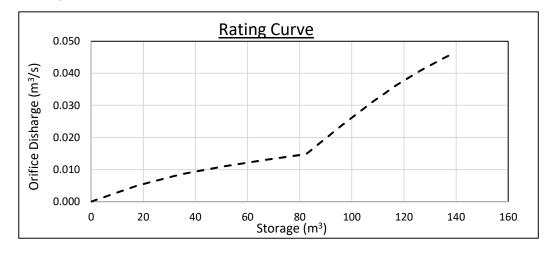
System Footprint 220.71 m2

Impermeable liner? No

RATING CURVE

Description	Elevation (m)	Stage (mm)	Stage (m)	Volume (m3)	Height Above Invert (m)	Q (m3/s) Orifice #1	Q (m3/s) Orifice #2	Q (m3/s) Total
Base of Chamber/Orifice 1	213.50	0	0.000	0.00	0.000	0.000	0.000	0.000
	213.60	102	0.102	17.58	0.102	0.005	0.000	0.005
	213.71	203	0.203	34.78	0.203	0.009	0.000	0.009
	213.81	305	0.305	51.45	0.305	0.011	0.000	0.011
	213.91	406	0.406	67.42	0.406	0.013	0.000	0.013
Orifice 2	214.01	508	0.508	82.50	0.508	0.015	0.000	0.015
	214.11	610	0.610	96.28	0.610	0.016	0.007	0.024
Top of Chamber	214.21	711	0.711	107.85	0.711	0.018	0.013	0.031
	214.32	813	0.813	117.03	0.813	0.019	0.017	0.036
	214.42	914	0.914	126.00	0.914	0.020	0.020	0.041
•	214.52	1016	1.016	134.96	1.016	0.022	0.023	0.045
Top of Stone Storage	214.57	1067	1.067	139.45	1.067	0.022	0.024	0.046

^{*}Storage volumes obtained from OTTHYMO





Pre to Post Flows and Utilized Storage Volumes

Date: Project #: 9/10/2024 By: 18-057 Page NLO 3

PRE TO POST DEVELOPMENT FLOWS

		Q (m3/s)					
Return Period	PRE	FROM CHAMBERS	TOTAL POST	NET	Check		
2	0.019	0.012	0.013	-0.006	✓		
5	0.029	0.014	0.016	-0.013	✓		
10	0.034	0.021	0.023	-0.011	✓		
25	0.042	0.029	0.031	-0.011	✓		
50	0.047	0.035	0.038	-0.009	✓		
100	0.053	0.041	0.045	-0.008	✓		

RATING CURVE

Description	Elevation (m)	Ponding Depth (m)	Total Volume (m3)	Total Q (m3/s)
Base of Chamber/Orifice 1	213.50	0.00	0.0	0.000
	213.60	0.10	17.6	0.005
	213.71	0.20	34.8	0.009
	213.81	0.31	51.4	0.011
	213.91	0.41	67.4	0.013
Orifice 2	214.01	0.51	82.5	0.015
	214.11	0.61	96.3	0.024
Top of Chamber	214.21	0.71	107.8	0.031
	214.32	0.81	117.0	0.036
	214.42	0.91	126.0	0.041
	214.52	1.02	135.0	0.045
Top of Stone Storage	214.57	1.07	139.4	0.046

^{*}Storage volumes obtained from AutoCAD Civil 3D

STORAGE & PONDING DEPTHS

Return Period	Flow From Chambers (m3/s)	Maximum Storage (m3)	Ponding Depth (m)	Elev. (m)
2	0.012	58	0.34	213.85
5	0.014	75	0.43	213.93
10	0.021	92	0.57	214.07
25	0.029	105	0.67	214.17
50	0.035	115	0.79	214.29
100	0.041	127	0.92	214.42



Subject: **Quality Control**

Date: 9/10/2024

By: Project #: 18-057

Page

NLO

Water Quality Control Provided by Stormtech Isolator Row

Inflow to Chambers During 25mm Quality Storm Event $0.045 \text{ m}^3/\text{s}$

45 L/s

Chamber Type SC-740

Treated Flowrate / Isolator Row Chamber 7.25 L/s

Required Number of Isolator Row Chambers 7

Provided Number of Isolator Row Chambers 10

Provided Treated Flowrate 73 L/s



StormTech Isolator Row Sizing Chart

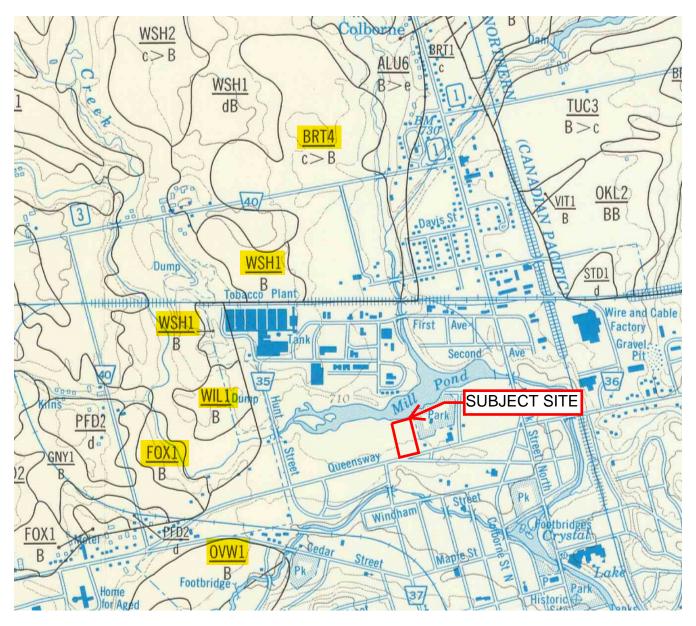
StormTech Isolator Row - Water Quality Flowrate for >81% TSS Removal								
	SC-160	SC-310	SC-740	DC-780	MC-3500	MC-4500	MC-7200	
Chamber Bottom Area (m²)	1.06	1.64	2.58	2.58	3.99	2.80	4.65	
Treated Flowrate / Chamber (L/s)	2.97	4.62	7.25	7.25	11.19	7.84	12.74	

- · Results per ETV verified results, independently verifed by VerifiGlobal: https://www.verifigiobal.com/media/knubjbej/verifigiobal-verification-statement-for-stormtech-isolator-row-plus-final-2020-10-27-for-posting.pdf
- ETV verified treated flowrate = 4.13 GPM/ft² (2.80 L/s/m²)
- · Above rates based on 81.2% removal of ETV/NJDEP particle size distribution.

APPENDIX B

Soil Parameters

18-057 Soil Parameters



BRT-Brant						
BRT 1	BRT	None	Mainly lacustrine silt loam		Well	
BRT 2	BRT.C	None	15-40 cm sandy textures over lacustrine silt loam		Well	
BRT 3	BRT	BRT.C.	see BRT 1	see BRT 2	Well	Well
BRT 4	BRT	TUC	see BRT 1	see TUC 1	Well	Imperfect

TUC - Tuscola						
TUC 1	TUC	None	Mainly lacustrine silt loam	Imperfect		

FOX - Fox					
FOX 1	FOX	None	Mainly lacustrine sand and loamy sand	Rapid to well	
WIL - Wils	onville				
WIL 1	WIL	None	Mainly gravelly sandy till	Rapid to well	
WSH-Wa	Isher				
WSH 1	WSH	None	40-100 cm sandy textures over lacus- trine silt loam	Well	
OVW - Oa	kview				
OVW 1	OVW	None	40-160 cm organic materials over mainly silts and loams	Very poor	

Design Chart 1.08: Hydrologic Soil Groups (Continued)

- Based on Soil Texture FOX1 & WIL1	
Sands, Sandy Loams and Gravels	7
- overlying sand, gravel or limestone bedrock, very well drained	A
- ditto, imperfectly drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	В
Medium to Coarse Loams	
- overlying sand, gravel or limestone, well drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	В
Medium Textured Loams	
- shallow, overlying limestone bedrock	В
- overlying medium textured subsoil	BC
Silt Loams, Some Loams	
- with good internal drainage TUC1 & OVW1	BC
- with slow internal drainage and good external drainage	С
Clays, Clay Loams, Silty Clay Loams	
- with good internal drainage	С
- with imperfect or poor external drainage	C
- with slow internal drainage and good external drainage	D

Due to the lack of soil information at the subject site, a "B" type soil group has been assumed based on the surrounding soil groups.

Source: U.S. Department of Agriculture (1972)

Design Chart 1.09: Soil Conservation Service Curve Numbers (Continued)

Land Use or Surface	Hydrologic Soil Group							
	Α	AB	В	ВС	С	CD	D	
Fallow (special cases only)	77	82	86	89	91	93	94	
Crop and other improved land	66** (62)	70** (68)	74	78	82	84	86 AMC I	
Pasture & other unimproved land	58* (38)	62* (51)	65	71	76	79	81	
Woodlots and forest	50* (30)	54* (44)	58	65	71	74	77	
Impervious areas (paved)							98	
Bare bedrock draining directly to stream by surface flow							98	
Bare bedrock draining indi	Bare bedrock draining indirectly to stream as groundwater (usual case)							
Lakes and wetlands							50	

Notes

- (i) All values are based on AMC II except those marked by * (AMC III) or ** (mean of AMC II and AMC III).
- (ii) Values in brackets are AMC II and are to be used only for special cases.
- (iii) Table is not applicable to frozen soils or to periods in which snowmelt contributes to runoff.

APPENDIX C

ADS StormTech Chamber Drawings & Specifications

PROJECT INFORMATION				
ENGINEERED PRODUCT MANAGER				
ADS SALES REP				
PROJECT NO.				





2024.06.28 18057 BARREL REV2

SIMCOE, ON, CANADA

SC-740 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH SC-740.
- 2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL BE CERTIFIED TO CSA B184, "POLYMERIC SUB-SURFACE STORMWATER MANAGEMENT STRUCTURES", AND MEET
 THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER
 COLLECTION CHAMBERS".
- 4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- 5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE CSA S6 CL-625 TRUCK AND THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- 6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- 7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 50 mm (2").
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 23° C / 73° F), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- 8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- 9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

- 1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- 2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- 4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- . JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- 6. MAINTAIN MINIMUM 150 mm (6") SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 20-50 mm (3/4-2").
- 8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

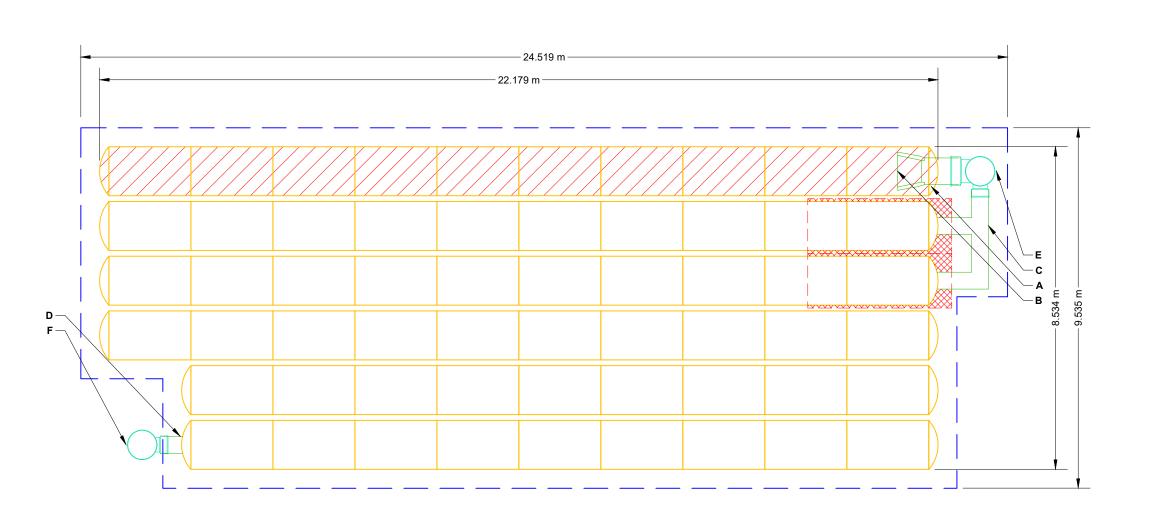
NOTES FOR CONSTRUCTION EQUIPMENT

- 1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- 2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- 3. FULL 900 mm (36") OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

	PROPOSED LAYOUT	PROPOSED ELEVATIONS:					T ABOVE BAS	E OF CHAMBE
58	STORMTECH SC-740 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	216.703	PART TYPE	ITEM OI		INVERT*	MAX FLOW
12 300	STONE ABOVE (mm)	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC): MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):		PREFABRICATED EZ END CAP	A	600 mm BOTTOM PREFABRICATED EZ END CAP, PART#: SC740ECEZ / TYP OF ALL 600 mm BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	3 mm	
152 40		MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT): MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	214.722 214.722	FLAMP MANIFOLD		INSTALL FLAMP ON 600 mm ACCESS PIPE / PART#: SC74024RAMP 375 mm x 375 mm TOP MANIFOLD, ADS N-12	229 mm	
153.5	(PERIMETER STONE INCLUDED)	TOP OF STONE: TOP OF SC-740 CHAMBER:	214.564 214.264	PIPE CONNECTION NYLOPLAST (INLET W/ ISO		375 mm BOTTOM CONNECTION	33 mm	
155.5	l'	375 mm x 375 mm TOP MANIFOLD INVERT: 375 mm BOTTOM CONNECTION INVERT:	213.535	[PLUS ROW)		750 mm DIAMETER (610 mm SUMP MIN)		159 L/s IN
220.7 68.1	` '	600 mm ISOLATOR ROW PLUS INVERT:	213.505	NYLOPLAST (OUTLET)	F	750 mm DIAMETER (DESIGN BY ENGINEER)		76 L/s OUT



ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 3.810 m OF ADSPLUS625 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BOTTOM OF STONE:

BED LIMITS

NOTES

MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING
THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.

NOT FOR CONSTRUCTION: THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

2024.06. DRW **StormTech**® Chamber System 4640 TRUEMAN BLVD HILLIARD, OH 43026 1-800-733-7473 100 Ш SCAL

SHEET

2 OF 6

REV2

.28 18057 BARREL

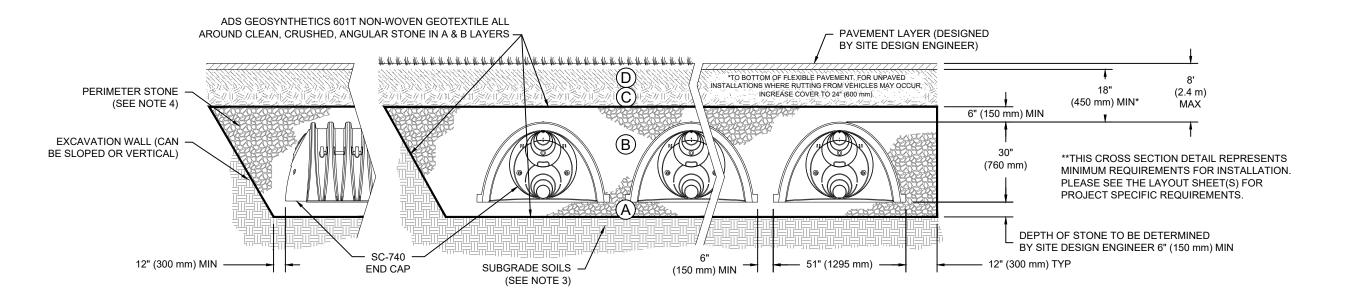
SIMCOE, ON, CANADA
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ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
С	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 ¹ A-1, A-2-4, A-3 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
В	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE⁵	AASHTO M43¹ 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
А	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE OR RECYCLED CONCRETE⁵	AASHTO M43¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{2,3}

PLEASE NOTE

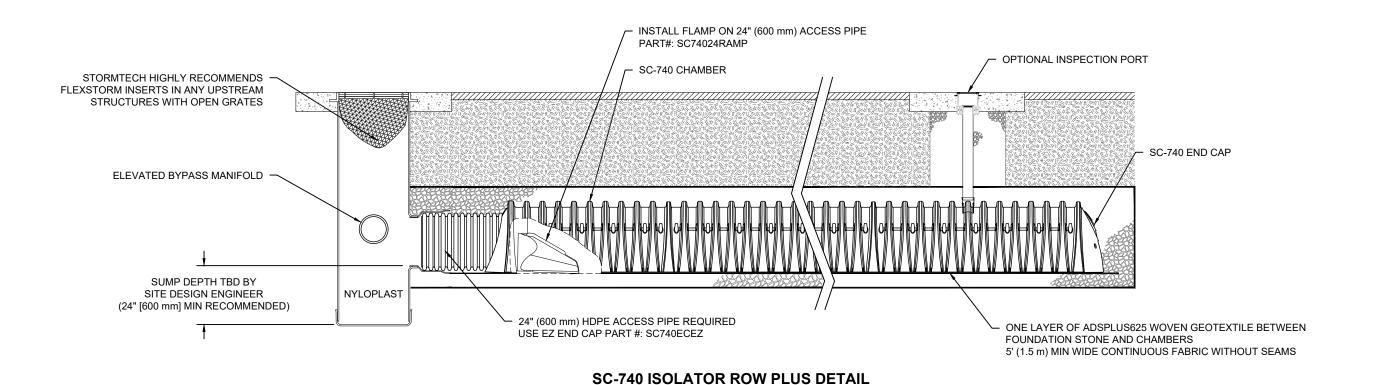
- 1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- 2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- 3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS
- 4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
- 5. WHERE RECYCLED CONCRETE AGGREGATE IS USED IN LAYERS 'A' OR 'B' THE MATERIAL SHOULD ALSO MEET THE ACCEPTABILITY CRITERIA OUTLINED IN TECHNICAL NOTE 6.20 "RECYCLED CONCRETE STRUCTURAL BACKFILL".



NOTES:

- 1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- 2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- 3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- 4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- 5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.





INSPECTION & MAINTENANCE

INSPECT ISOLATOR ROW PLUS FOR SEDIMENT

A. INSPECTION PORTS (IF PRESENT)

- REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

B. ALL ISOLATOR PLUS ROWS

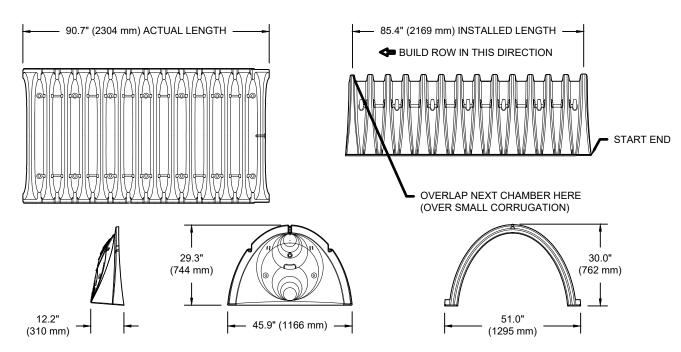
- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
- USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
 - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
 - A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
 - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - C. VACUUM STRUCTURE SUMP AS REQUIRED
- REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM. STEP 4)

NOTES

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- 2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 TECHNICAL SPECIFICATION



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH) CHAMBER STORAGE MINIMUM INSTALLED STORAGE* WEIGHT

NOMINAL END CAP SPECIFICATIONS

BETWEEN ROWS, 12" (305 mm) BEYOND END CAPS

SIZE (W X H X INSTALLED LENGTH) END CAP STORAGE MINIMUM INSTALLED STORAGE** WEIGHT

45.9" X 29.3" X 9.6" 2.6 CUBIC FEET 13.5 CUBIC FEET

51.0" X 30.0" X 85.4"

45.9 CUBIC FEET

74.9 CUBIC FEET

75.0 lbs.

11.7 lbs.

(1166 mm X 744 mm X 244 mm) (0.07 m^3)

(1295 mm X 762 mm X 2169 mm)

(0.38 m³) (5.3 kg) * ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS

(1.30 m³)

(2.12 m³)

(33.6 kg)

PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B" PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T" PRE-CORED END CAPS END WITH "PC"

**ASSUMES 6" (152 mm) STONE ABOVE AND BELOW END CAPS, 6" (152 mm)

PART#	STUB	Α	В	С
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	
SC740EPE06B / SC740EPE06BPC	0 (130 11111)	10.9 (211 11111)		0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	
SC740EPE08B / SC740EPE08BPC	6 (200 111111)	12.2 (31011111)		0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	10" (250 mm) 13.4" (340 mm)	14.5" (368 mm)	
SC740EPE10B / SC740EPE10BPC	10 (230 111111)			0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (200 mm)	2" (300 mm) 14.7" (373 mm)	12.5" (318 mm)	
SC740EPE12B / SC740EPE12BPC	12 (300 111111)			1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	40.4" (407)	9.0" (229 mm)	
SC740EPE15B / SC740EPE15BPC	15 (3/5 111111)	18.4" (467 mm)		1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	
SC740EPE18B / SC740EPE18BPC	16 (430 111111)	19.7 (300 11111)		1.6" (41 mm)
SC740ECEZ*	24" (600 mm)	18.5" (470 mm)		0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT

* FOR THE SC740ECEZ THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

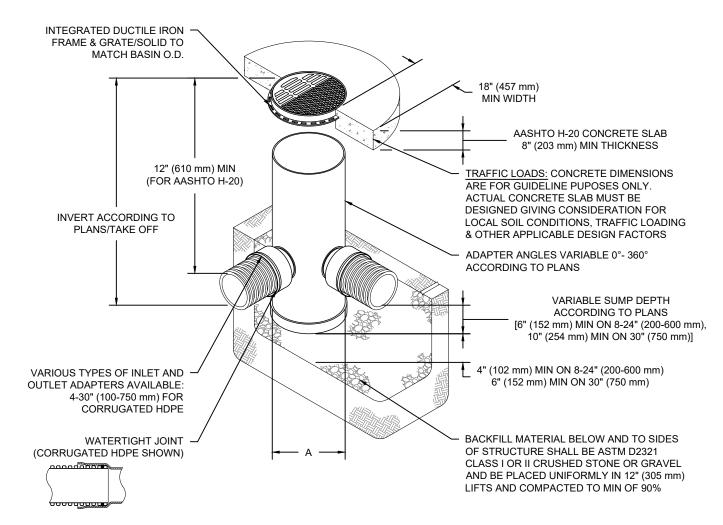
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2024 06 28 18057 BARREI	20.	SIMCOE,	DATE:	בי	PROJECT #:	L REVIEW THIS DRAWING PRIOR TC
					DESCRIPTION	ATIVE. THE SITE DESIGN ENGINEER SHAL AND PROJECT REQUIREMENTS.
					V CHK	ECT REPRESENTA ;, REGULATIONS, .
					DATE DRW CHK	OR OTHER PROJE APPLICABLE LAWS
	Storm Tork®		Chamber System		888-892-2694 WWW.STORMTECH.COM	AARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION, IT IS THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.
4640 IRUEMAN BLVD	1-800-733-7473					PARED BASED ON INFORMATION PROVID DESIGN ENGINEER TO ENSURE THAT THE

SHEET

5 OF 6

REV2

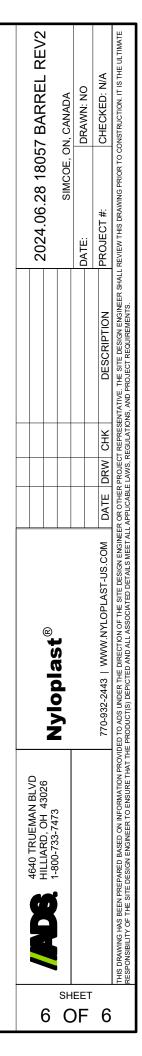
NYLOPLAST DRAIN BASIN



NOTES

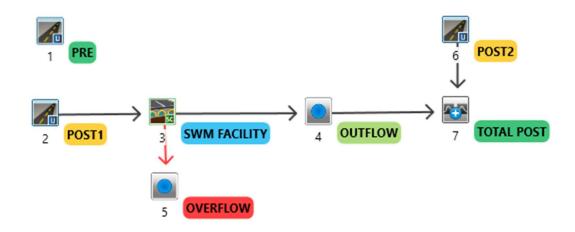
- 1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05 DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
- FOR COMPLETE DESIGN AND PRODUCT INFORMATION: WWW.NYLOPLAST-US.COM
- 6. TO ORDER CALL: 800-821-6710

Α	PART#	GRATE/SOLID COVER OPTIONS				
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY		
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY		
12"	2812AG	PEDESTRIAN	STANDARD AASHTO	SOLID		
(300 mm)		AASHTO H-10	H-20	AASHTO H-20		
15"	2815AG	PEDESTRIAN	STANDARD AASHTO	SOLID		
(375 mm)		AASHTO H-10	H-20	AASHTO H-20		
18"	2818AG	PEDESTRIAN	STANDARD AASHTO	SOLID		
(450 mm)		AASHTO H-10	H-20	AASHTO H-20		
24"	2824AG	PEDESTRIAN	STANDARD AASHTO	SOLID		
(600 mm)		AASHTO H-10	H-20	AASHTO H-20		
30"	2830AG	PEDESTRIAN	STANDARD AASHTO	SOLID		
(750 mm)		AASHTO H-20	H-20	AASHTO H-20		



APPENDIX D

Visual OTTHYMO Summary Outputs



2-YEAR STORM

V V I SSSS U U A A L (v 6.2.2017) V V I SS U U AAAAA L V V I SS U U AAAAA L V V I SS U U A A A L VV I SSSS UUUU A A A L VV I SSSS UUUU A A A L OOO TITTT TITTT H H Y Y M M OOO TM O O T T H H Y Y MM MM O O O O T T H H Y Y M M O O OOO T T H H Y Y M M OOO
V V I SS U U AAAAA L V V I SS U U A A L VV I SSSS UUUUU A A LLLLL OOO TTTTT TTTTT H H Y Y M M OOO TM O O T T H H Y Y MM MM O O O T T H H Y M M M O O
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VV I SSSS UUUUU A A LLLLL OOO TTTTT TTTTT H H Y Y M M OOO TM O O T T H H Y Y MM MM O O O O T T H H Y M M M O O
OOO TTTTT TTTTT H H Y Y M M OOO TM O O T T H H Y Y MM MM O O O O T T H H Y M M M O O
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***** DETAILED OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat Output filename: C:\Users\Natalie\AppData\Local\Civica\VH5\4fe0d901-c408-4e3a-868c-21131358d8ea\b643e0a5-6df2-4c82-a4ef-72f6c16e3230\scen Summary filename: C:\Users\Natalie\AppData\Local\Civica\VH5\4fe0d901-c408-4e3a-868c-21131358d8ea\b643e0a5-6df2-4c82-a4ef-72f6c16e3230\scen

DATE: 09/09/2024 TIME: 04:18:22

USER:

COMMENTS: _

*** SIMULATION : 01_2-Year Norfolk **

CHICAGO STORM Ptotal= 35.21 mm	-	ameters: A= 529.71 B= 4.50 C= 0.74 TENSITY = A / (t	15	
		torm = 4.00 hrs ep = 10.00 min ratio = 0.33		
TIME	RAIN TIME	RAIN TIME	RAIN TIME	RAIN
hrs	mm/hr hrs	mm/hr hrs	mm/hr hrs	mm/hr
0.00	2.68 1.00	17.69 2.00	5.90 3.00	3.14
0.17	3.04 1.17	72.24 2.17	5.09 3.17	2.94
0.33	3.53 1.33	22.78 2.33	4.50 3.33	2.76
0.50	4.26 1.50	12.62 2.50	4.04 3.50	2.60
0.67	5.49 1.67	8.98 2.67	3.68 3.67	2.47
0.83	8.02 1.83	7.08 2.83	3.39 3.83	2.35

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min		. Conn.(%)=	95.00

		IMPERVIOUS	PERVIOUS	(i)
Surface Area	(ha) =	0.32	0.02	
Dep. Storage	(mm) =	1.00	7.20	
Average Slope	(%)=	1.00	2.00	
Length	(m) =	47.40	40.00	
Mannings n	=	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

		TRA	NSFORMED HYETOGRA	PH	
TIME	RAIN	TIME	RAIN TIME	RAIN TIME	RAIN
hrs	mm/hr	hrs	mm/hr hrs	mm/hr hrs	mm/hr
0.083	2.68	1.083	17.69 2.083	5.90 3.08	3.14
0.167	2.68	1.167	17.69 2.167	5.90 3.17	3.14
0.250	3.04	1.250	72.24 2.250	5.09 3.25	2.94
0.333	3.04	1.333	72.24 2.333	5.09 3.33	2.94
0.417	3.53	1.417	22.78 2.417	4.50 3.42	2.76
0.500	3.53	1.500	22.78 2.500	4.50 3.50	2.76
0.583	4.26	1.583	12.62 2.583	4.04 3.58	2.60
0.667	4.26	1.667	12.62 2.667	4.04 3.67	2.60
			8.98 2.750		2.47
0.833	5.49	1.833	8.98 2.833	3.68 3.83	
			7.08 2.917		2.35
1.000	8.02	2.000	7.08 3.000	3.39 4.00	2.35
Max.Eff.Inten.(m					
		5.00			
Storage Coeff.	(min) =	1.86	(ii) 4.33 (ii)		
Unit Hyd. Tpeak	(min) =	5.00	5.00		
Unit Hyd. peak	(cms) =	0.32	0.23		
				TOTALS	
PEAK FLOW				0.064 (iii)	
TIME TO PEAK	(hrs) =	1.33	1.33	1.33	
			6.69		
TOTAL RAINFALL	(mm) =	35.21	35.21	35.21	
RUNOFF COEFFICIE	NT =	0.97	0.19	0.93	

(hrs)=	1.33	1.33	1.	
(mm) =	34.21	6.69	32.	
(mm) =	35.21	35.21	35.	
IENT =	0.97	0.19	0.	93
AGE COEFF. IS	SMALLER THAN	TIME S'	TEP!	
			∍)	
		R EQUAL		
		W IF AN	ſ.	
OUTFLOW: ON,	UNDERDRAIN	: OFF,	INFIL: OFF	
CHAMBER:				
MAX STO VOL	(cu.m.) = 139	.45 Bo	ttom Area(m2) = 220.71
DEPTH		1	DEPTH	
(mm)	(cu.m.)	- 1	(mm)	(cu.m.)
		1	559.00	89.57
25.00	4.42	1	584.00	92.98
51.00		1	610.00	96.28
76.00	13.21	1	635.00	99.46
102.00	17.58	i	660.00	102.49
	21.92	i	686.00	105.33
				107.85
		- 1	727.00	110.25
	30.32		757.00	112.54
	34.70		702.00	112.34
			/8/.00	114.79
	43.19		813.00	117.03
	47.34	!	838.00	119.27
	51.45			
	55.52	1		123.75
356.00	59.54		914.00	126.00
381.00	63.51	1	940.00	128.24
406.00	67.42	1	965.00	130.48
432.00				132.72
457.00	75.09			134.96
				137.20
	82.50	i	1067.00	139.45
533.00				0.00
DEPTH	DISCHARGE	1	DEPTH	DISCHARGE
(m)	(cms)	- 1	(m)	(cms)
0.000	0.000			0.024
0.102	0.005			0.031
0.203	0.009	1	0.813	0.036
0.305	0.011			0.041
0.406	0.013			0.045
0.508	0.015			0.046
AREA	QPEAK		TPEAK	R.V.
(ha)	(cms)		(hrs)	(mm)
	0.064		1.33	32.83
0.34				32.83
0.34	0.012		1.00	32.03
	(mm) = (m	(mm) = 34.21 (mm) = 35.21 IENT = 0.97 AGE COEFF. IS SMALLER THAN DURE SELECTED FOR PERVIOUS 74.0 Ia = Dep. Storage P (DT) SHOULD BE SMALLER O STORAGE COEFFICIENT. W DOES NOT INCLUDE BASEFLO OUTFLOW: ON, UNDERDRAIN CHAMBER: MAX STO VOL (cu.m.) = 139 DEPTH STORAGE (mm) (cu.m.) 0.00 0.00 25.00 4.42 51.00 8.83 76.00 13.21 102.00 17.58 127.00 21.92 152.00 26.24 178.00 30.52 203.00 34.78 229.00 39.00 254.00 43.19 279.00 43.19 279.00 47.34 305.00 51.45 330.00 55.52 336.00 59.54 381.00 63.51 406.00 67.42 432.00 71.28 457.00 75.09 483.00 78.83 508.00 82.50 533.00 82.50	(mm) = 34.21 6.69 (mm) = 35.21 35.21 IENT = 0.97 0.19 AGE COEFF. IS SMALLER THAN TIME STANDURE SELECTED FOR PERVIOUS LOSSES 74.0 Ia = Dep. Storage (Above P) (DT) SHOULD BE SMALLER OR EQUAL STORAGE COEFFICIENT. W DOES NOT INCLUDE BASEFLOW IF ANY. OUTFLOW: ON, UNDERDRAIN: OFF, CHAMBER: MAX STO VOL (cu.m.) = 139.45 Bot 100.00 0.00 0.00 0.00 0.00 0.00 0.00 0	(mm) = 34.21 6.69 32. (mm) = 35.21 35.21 35. IENT = 0.97 0.19 0. AGE COEFF. IS SMALLER THAN TIME STEP! DURE SELECTED FOR PERVIOUS LOSSES: 74.0 Ia = Dep. Storage (Above) P (DT) SHOULD BE SMALLER OR EQUAL STORAGE COEFFICIENT. W DOES NOT INCLUDE BASEFLOW IF ANY. OUTFLOW: ON, UNDERDRAIN: OFF, INFIL: OFF CHAMBER: MAX STO VOL (cu.m.) = 139.45 Bottom Area(m2 DEPTH (mm) (cu.m.) (mm) 0.00 559.00 25.00 4.42 584.00 559.00 25.00 4.42 584.00 660.00 102.00 17.58 660.00 127.00 127.00 21.92 686.00 127.00 152.00 26.24 711.00 178.00 203.00 34.78 762.00 224.00 229.00 39.00 787.00 225.00 254.00 43.19 813.00 227.00 255.00 47.34 838.00 305.00 152.00 26.24 91.00 194.00 178.00 30.52 737.00 203.00 229.00 39.00 787.00 239.00 235.00 59.54 914.00 250.00 247.00 73.00 63.51 940.00 406.00 67.42 965.00 331.00 63.51 940.00<

18-057 BARREL RESTAURANT ADDITION

TTHYMO MODEL

OVERFLOW:ID= 3 0.00 0.000 0.00	
Volume Reduction Rate[(RVin-RVout)/RVin](%)= Time to reach Max storage (Hr)= Volume of water for drawdown in LID (cu.m.)=	12 85
Volume of maximum water storage (cu.m.)= ***** After simulation, water volume is not	= 53.28 zero.
Junction Command(0005)	
AREA QPEAK TPEAK R.V. (ha) (cms) (hrs) (mm) (INFLOW: ID= 3(0003) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	
CALIB	
IMPERVIOUS PERVIOUS (i) Surface Area (ha) = 0.12 0.04	
Surface Area (ha)= 0.12 0.04 Dep. Storage (mm)= 9.00 7.20 Average Slope (%)= 1.00 2.00 Length (m)= 32.04 40.00 Mannings n = 0.013 0.250	
NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME	STEP.
TRANSFORMED HYETOGRAPH	
TIME RAIN TIME RAIN! TIME F mm/hr! hrs	RAIN TIME RAIN h/hr hrs mm/hr 90 3.08 3.14 90 3.17 3.14 90 3.25 2.94 0.9 3.35 2.94 50 3.50 2.76 0.4 3.58 2.60 0.4 3.58 2.60 0.4 3.67 2.60
Max.Eff.Inten.(mm/hr) = 72.24 28.79	
Max.Eff.Inten.(mm/hr) = 72.24 28.79 over (min) 5.00 15.00 Storage Coeff. (min) = 1.47 (ii) 13.08 (ii) Unit Hyd. Tpeak (min) = 5.00 15.00 Unit Hyd. peak (cms) = 0.33 0.08	
PEAK FLOW (cms)= 0.02 0.00 TIME TO PEAK (hrs)= 1.33 1.50 RUNOFF VOLUME (mm)= 26.21 11.72 TOTAL RAINFALL (mm)= 35.21 35.21 RUNOFF COEFFICIENT = 0.74 0.33	*TOTALS* 0.019 (iii) 1.33 20.36 35.21 0.58
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!	
(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 74.0 Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT. (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.	
Junction Command(0004)	
AREA QPEAK TPEAK R.V. (ha) (cms) (hrs) (mm) INFLOW: ID= 1(0003) 0.34 0.01 1.58 32.83 OUTFLOW: ID= 2(0004) 0.34 0.01 1.58 32.83	
CALIB	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	= 34.00
IMPERVIOUS PERVIOUS (i)	
NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME	STEP.
0.167	RAIN TIME RAIN

6.63 25.00

72.24 5.00

Max.Eff.Inten.(mm/hr)=

Unit Hyd. Tpeak	(min) =	0.89 (ii) 5.00 0.34	21.79 (ii) 25.00 0.05	
onic nyu. peak	(Citis) =	0.34	0.05	*TOTALS*
PEAK FLOW	(cms) =	0.00	0.00	0.002 (iii)
TIME TO PEAK	(hrs) =	1.33	1.75	1.33
RUNOFF VOLUME	(mm) =	34.21	6.69	15.68
TOTAL RAINFALL	(mm) =	35.21	35.21	35.21
RUNOFF COEFFICIE	NT =	0.97	0.19	0.45

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

 CN* = 74.0 Ia = Dep. Storage (Above)

 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

 THAN THE STORAGE COEFFICIENT.

 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0007)	AREA	OPEAK	TPEAK	R.V.
ID1= 1 (0004):		(cms) 0.012 0.002	(hrs) 1.58 1.33	(mm) 32.83 15.68
ID = 3 (0007):			1.33	31.47
NOTE: PEAK FLOWS DO N	OT INCL	JDE BASEFI	LOWS IF A	NY.

18-057 BARREL RESTAURANT ADDITION

VISUAL OTTHYMO MODEL

5-YEAR STORM

SSSSS U U A L (v 6.2.2017) U U A A L U U AAAAA L SS SS SS U U A A L SSSSS UUUUU A A LLLLL vv Y M M 000 TTTTT TTTTT H H Y 000 TTTT TTTTT H H Y Y
T T H H Y Y
T T H H Y MM MM 0 0 M M 0 0 M M 000 0 000

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***** DETAILED OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
Output filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a868c-21131358d8ea\79e5e8bf-8abl-447a-alfa-25938faff9cc\scen
Summary filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a-868c-21131358d8ea\79e5e8bf-8ab1-447a-a1fa-25938faff9cc\scen

DATE: 09/09/2024 TIME: 04:18:22

USER:

COMMENTS: __

CHICAGO STORM | Ptotal= 49.03 mm |

IDF curve parameters: A= 583.017 B= 3.007 C= 0.703

used in: INTENSITY = A / (t + B) ^C

Duration of storm = 4.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME	RAIN		TIME	RAIN	1.	TIME	RAIN	TIME	RAIN
hrs	mm/hr	1	hrs	mm/hr	1'	hrs	mm/hr	hrs	mm/hr
0.00	4.20		1.00	23.22	1	2.00	8.64	3.00	4.87
0.17	4.72		1.17	96.03		2.17	7.56	3.17	4.58
0.33	5.42		1.33	29.33	1	2.33	6.76	3.33	4.32
0.50	6.44	1	1.50	17.13	1	2.50	6.13	3.50	4.10
0.67	8.09		1.67	12.62	1	2.67	5.63	3.67	3.90
0.83	11.39	1	1.83	10.19	1	2.83	5.22 I	3.83	3.72

--- TRANSFORMED HYETOGRAPH ----

CALIB

| STANDHYD (0002)| |ID= 1 DT= 5.0 min | (ha)= 0 34 Total Imp(%) = 95.00 Dir. Conn.(%) = 95.00

		IMPERVIOUS	PERVIOUS	(1,
Surface Area	(ha) =	0.32	0.02	
Dep. Storage	(mm) =	1.00	7.20	
Average Slope	(%)=	1.00	2.00	
Length	(m) =	47.40	40.00	
Mannings n	=	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

TIME	RAIN	TIME	RAIN TIME	RAIN TIME	RAIN
hrs	mm/hr	hrs	mm/hr ' hrs	mm/hr hrs	mm/hr
0.083	4.20	1.083	23.22 2.083	8.64 3.08	4.87
0.167	4.20	1.167	23.22 2.167	8.64 3.17	4.87
0.250	4.72	1.250	96.03 2.250	7.56 3.25	4.58
0.333	4.72	1.333	96.03 2.333	7.56 3.33	4.58
0.417	5.42	1.417	29.33 2.417	6.76 3.42	4.32
0.500	5.42	1.500	29.33 2.500	6.76 3.50	4.32
0.583	6.44	1.583	17.13 2.583	6.13 3.58	4.10
0.667	6.44	1.667	17.13 2.667	6.13 3.67	4.10
0.750	8.09	1.750	12.62 2.750	5.63 3.75	3.90
0.833	8.09	1.833	12.62 2.833	5.63 3.83	3.90
0.917	11.39	1.917	10.19 2.917	5.22 3.92	3.72
1.000	11.39	2.000	10.19 3.000	5.22 4.00	3.72
Max.Eff.Inten.(m	nm/hr)=	96.03	20.02		
			5.00		
			(ii) 3.87 (iii)		
Unit Hyd. Tpeak					
Unit Hyd. peak					
F	(/			*TOTALS*	
PEAK FLOW	(cms) =	0.09	0.00	0.086 (iii)	
			1.33		
			13.35		
			49.03		
			0.27		

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 Ia = Dep. Storage (Above (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. | CHAMBER(0003)| OUTFLOW: ON, UNDERDRAIN: OFF, INFIL: OFF | INH= 2--> OUT= 3 | CHAMBER: | DT= 5.0 min | MAX STO VOL (cu.m.)= 139.45 Bottom Area(m2) = 220.71 STORAGE (mm) (cu.m.) (mm) (cu.m.) 0 00 0.00 89.57 559 00 25.00 92.98 51.00 8.83 610.00 96.28 13.21 17.58 635.00 660.00 76.00 99.46 102.00 102.49 127.00 21.92 26.24 686.00 105.33 152.00 711.00 737.00 30.52 34.78 39.00 178.00 110.25 203.00 762.00 787.00 813.00 254.00 43.19 117.03 47.34 51.45 838.00 864.00 119.27 121.51 279.00 330.00 55.52 889.00 123.75 59.54 63.51 67.42 914.00 940.00 965.00 356.00 381.00 126.00 128.24 406.00 130.48 432.00 457.00 1016.00 75.09 134.96 483.00 78.83 1041.00 137.20 533.00 86.08 0.00 0.00 DISCHARGE (m) (cms) (m) (cms) 0.000 0.005 0 000 0.610 0.024 0.203 0.009 0.813 0.036 0.305 0.011 0.914 0.041 0.015 0.508 1.067 0.046 AREA QPEAK (ha) 0.34 (cms) 0.086 (hrs) 1.33 (mm) 46.30 INFLOW:ID= 2
OUTFLOW:ID= 1 0.34 0.014 46.30 OVERFLOW: ID= 3 0.00 0.000 0.00 Volume Reduction Rate[(RVin-RVout)/RVin](%)= 0.00 Volume Reduction Rate[[Kvln-Kvout]/Kvln][s]=
Time to reach Max storage
Volume of water for drawdown in LID (cu.m.)=
Volume of maximum water storage
***** After simulation, water volume is not zero. 74.37 | Junction Command(0005) | (ha) (cms) (hrs) (mm) INFLOW: ID= 3(0003) 0.00 0.00 0.00 0.00 OUTFLOW: ID= 2(0005)

| CALIB | STANDHYD (0001) | Area (ha)= 0.15 |ID= 1 DT= 5.0 min | Total Imp(%)= 77.00 Dir. Conn.(%)= 60.00

		IMPERVIOUS	PERVIOUS	í
Surface Area	(ha) =	0.12	0.04	
Dep. Storage	(mm) =	9.00	7.20	
Average Slope	(%) =	1.00	2.00	
Length	(m) =	32.04	40.00	
Mannings n	=	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

		TD	NSEODME	ED HYETOGRA	DH		
TIME	E RAIN I		RAIN		RATN I	TIME	RATN
hrs		hrs	mm/hr		mm/hr	hrs	mm/hr
0.083	3 4.20 i	1.083	23.22	1 2.083	8.64 I	3.08	4.87
0.16	7 4.20	1.167	23.22	2.167	8.64	3.17	4.87
0.250	4.72	1.250	96.03	2.250	7.56	3.25	4.58
0.333	3 4.72	1.333	96.03	2.333	7.56	3.33	4.58
0.417	7 5.42	1.417	29.33	2.417	6.76	3.42	4.32
0.500	5.42	1.500	29.33	2.500	6.76	3.50	4.32
0.583	6.44	1.583	17.13	2.583	6.13	3.58	4.10
0.667	7 6.44	1.667	17.13	2.667	6.13	3.67	4.10
0.750	8.09	1.750	12.62	2.750	5.63	3.75	3.90
0.833	8.09	1.833	12.62	2.833	5.63	3.83	3.90
0.917	7 11.39	1.917	10.19	2.917	5.22	3.92	3.72
1.000	11.39	2.000	10.19	3.000	5.22	4.00	3.72
Max.Eff.Inten.(r	nm/hr)=	96.03		63.78			
over	(min)	5.00		10.00			
Storage Coeff.	(min) =	1.31	(ii)	6.20 (ii)			
Unit Hyd. Tpeak	(min) =	5.00		10.00			
Unit Hyd. peak	(cms) =	0.33		0.15			
					TOTAL	LS	
PEAK FLOW	(cms) =	0.02		0.00	0.02	29 (iii)	
TIME TO PEAK	(hrs) =	1.33		1.42	1.3	33	
RUNOFF VOLUME	(mm) =	40.03		20.95	32.3	37	
TOTAL RAINFALL	(mm) =	49.03		49.03	49.0	03	
RUNOFF COEFFICIE	ENT =	0.82		0.43	0.0	56	

**** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- CN* = 74.0 Ia = Dep. Storage (Above (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| Junction Command(0004) |

QPEAK (cms) 0.01 R.V. (mm) 46.30 AREA TPEAK (hrs) 1.67 1.67 (ha) 0.34 INFLOW: ID= 1(0003) 0.34 OUTFLOW: ID= 2(0004) 0.34 46.30

| CALIB

Area (ha)= 0.03
Total Imp(%)= 34.00
Dir. Conn.(%)= 34.00

| CALIB | STANDHYD (0006)| |ID= 1 DT= 5.0 min | IMPERVIOUS PERVIOUS (i)

Surface Area (ha) =
Dep. Storage (mm) =
Average Slope (%) =
Length (m) =
Mannings n = 0.01 1.00 1.00 13.90 0.02 7.20 2.00 13.90 40.00 0.013 0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

		TR	ANSFORMED HYETOGR	APH		
TIME	RAIN	TIME	RAIN TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr ' hrs	mm/hr	hrs	mm/hr
0.083	4.20	1.083	23.22 2.083	8.64	3.08	4.87
0.167	4.20	1.167	23.22 2.167	8.64	3.17	4.87
0.250	4.72	1.250	96.03 2.250	7.56	3.25	4.58
0.333	4.72	1.333	96.03 2.333	7.56	3.33	4.58
0.417	5.42	1.417	29.33 2.417	6.76	3.42	4.32
0.500	5.42	1.500	29.33 2.500	6.76	3.50	4.32
0.583	6.44	1.583	17.13 2.583	6.13	3.58	4.10
0.667	6.44	1.667	17.13 2.667	6.13	3.67	4.10
0.750	8.09	1.750	12.62 2.750	5.63	3.75	3.90
0.833	8.09	1.833	12.62 2.833	5.63	3.83	3.90
0.917	11.39	1.917	10.19 2.917	5.22	3.92	3.72
1.000	11.39	2.000	10.19 3.000	5.22	4.00	3.72

Max.Eff.Inten.(r	nm/hr)=	96.03	16.67			
over	(min)	5.00	20.00			
Storage Coeff.	(min) =	0.79	(ii) 15.25	(ii)		
Unit Hyd. Tpeak	(min) =	5.00	20.00			
Unit Hyd. peak	(cms) =	0.34	0.07			
					*TOTALS	+
PEAK FLOW	(cms) =	0.00	0.00		0.003	(iii)
TIME TO PEAK	(hrs) =	1.33	1.58		1.33	
RUNOFF VOLUME	(mm) =	48.03	13.35		24.76	
TOTAL RAINFALL	(mm) =	49.03	49.03		49.03	
RUNOFF COEFFICIA	ENT =	0.98	0.27		0.50	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

 CN* = 74.0 Ia = Dep. Storage (Above)

 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

 THAN THE STORAGE COEFFICIENT.

 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| ADD HYD (0007) | | 1 + 2 = 3 | | ID1= 1 (0004): + ID2= 2 (0006): R.V. QPEAK AREA TPEAK (mm) 46.30 (hrs) 1.67 1.33 (ha) 0.34 (cms) 0.014 44.59 ID = 3 (0007): 0.37 0.016 1.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

18-057 BARREL RESTAURANT ADDITION

VISUAL OTTHYMO MODEL

10-YEAR STORM			
V V I SSSSS U V V I SS U VV I SS U	U A L U A A L U AAAAA L U A A L UU A A L	(v 6.2.	2017)
OOO TTTTT TTTTT H OOO T T H OOO T T H Developed and Distributed by Smc Copyright 2007 - 2022 Smart City All rights reserved.	H Y Y M H Y Y MM H H Y M H Y M art City Water	M 000 TM MM 0 0 M 0 0 M 000	
***** DET	A I L E D O	U T P U T ****	
Input filename: C:\Program ! Output filename: C:\Users\Nat 868c-21131358d8ea\e78f9ba4-6348- Summary filename: C:\Users\Nat 868c-21131358d8ea\e78f9ba4-6348-	talie\AppData\ -451d-9cb3-0ba talie\AppData\	Local\Civica\VH5\4f a360cb924\scen Local\Civica\VH5\4f	e0d901-c408-4e3a
DATE: 09/09/2024	TI	ME: 04:18:22	
USER:			
COMMENTS:			
** SIMULATION : 03_10-Year No.	rfolk	**	
CHICAGO STORM IDF curr		A= 670.324 B= 3.007 C= 0.698 = A / (t + B)^C	
Storm t	n of storm = ime step = peak ratio =	10.00 min	
hrs mm/hr 0.00 5.04 0.17 5.66 0.33 6.49	hrs mm/hr 1.00 27.43 1.17 111.84	TIME RAIN 1 hrs mm/hr 2.00 10.30 2.17 9.03 2.33 8.07 2.50 7.33 2.67 6.74 2.83 6.25	hrs mm/hr 3.00 5.84 3.17 5.49 3.33 5.18
CALIB	(ha) = 0.34 p(%) = 95.00	Dir. Conn.(%) = 95	.00
Surface Area (ha) = Dep. Storage (mm) = Average Slope (%) = Length (m) = Mannings n =	0.32 1.00 1.00 47.40 0.013	ERVIOUS (i) 0.02 7.20 2.00 40.00 0.250	
NOTE: RAINFALL WAS TRA	ANSFORMED TO	5.0 MIN. TIME STEE	٠.
TIME RAIN hrs mm/hr 0.083 5.04 0.167 5.04 0.250 5.66 0.232 5	TIME RAIN hrs mm/hr 1.083 27.43 1.167 27.43 1.250 111.84	ED HYETOGRAPH ' TIME RAIN ' hrs mm/hr 2.083 10.30 2.167 10.30 2.250 9.03 2.333 9.03 2.417 8.07 2.5583 7.33 2.267 7.33 2.2750 6.74 2.833 6.74 2.917 6.25 3.000 6.25	hrs mm/hr 3.08 5.84 3.17 5.84 3.25 5.49
<pre>Max.Eff.Inten.(mm/hr)=</pre>	111.84 5.00 1.56 (ii) 5.00 0.33	28.74 5.00 3.64 (ii) 5.00 0.25	T.C+
PEAK FLOW (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =		*TOTE 0.00 0.1 1.33 1. 18.39 55. 57.94 57. 0.32 0.	01 (iii) 33 02 94

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: $\begin{array}{cccc} \text{CN}^{\star} &=& 74.0 & \text{Ia} = \text{Dep. Storage} & (\text{Above}) \\ \text{(ii)} & \text{TIME STEP (DT) SHOULD BE SMALLER OR EQUAL} \\ & \text{THAN THE STORAGE COEFFICIENT.} \end{array}$

(iii) PEAK FLO					
CHAMBER (0003)	OUTFLOW: ON,	UNDERDRAIN	: OFF,	INFIL: OFF	
N= 2> OUT= 3 DT= 5.0 min	CHAMBER:	, , , , , , , , , , , , , , , , , , , ,	45 5		= 220.71
	DEPTH	STORAGE	1	DEPTH	STORAGE
	(mm)	STORAGE (cu.m.)	į	(mm)	(cu.m.)
	0.00 25.00	0.00 4.42		559.00 584.00	89.57 92.98
	51.00 76.00	8.83	1	610.00	96.28
	102.00	17.58	i	660.00	102.49
	127.00 152.00	21.92 26.24	1	686.00 711 00	105.33
	178.00	30.52	į	737.00	110.25
	203.00 229.00	34.78	ł	787.00	112.54
	254.00 279.00	43.19 47 34	1	813.00 838.00	117.03 119.27
	305.00	51.45	į	864.00	121.51
	330.00 356.00	59.54	i	914.00	126.00
	381.00 406.00	63.51 67.42	- 1	940.00	128.24
	432.00	71.28	į	991.00	132.72
	457.00 483.00	75.09 78.83		1016.00 1041.00	134.96 137.20
	508.00 533.00	82.50 86.08	1	1067.00	139.45
	DEPTH	STORAGE (cu.m.)= 139 STORAGE (cu.m.) 0.00 4.42 8.83 13.21 17.58 21.92 26.24 30.52 34.78 39.00 43.19 47.34 51.45 55.52 67.42 71.28 75.09 78.83 82.50 86.08 DISCHARGE (cms) 0.000 0.005 0.009 0.011 0.013 0.015		DEPTH I	DISCHARGE
	0.000	0.000	- !	0.610	0.024
	0.102	0.005		0.813	0.031
	0.305	0.011		0.914	0.041
	0.508	0.015	i	1.067	0.046
	AREA (ha)	QPEAK (cms)		TPEAK (hrs)	R.V. (mm)
<pre>INFLOW:ID= 2 OUTFLOW:ID= 1</pre>		0.101 0.021			55.02 55.02
OVERFLOW:ID= 3		0.000		0.00	0.00
Volu Time Volu	me Reduction to reach Max me of water f	Rate[(RVin-RV storage for drawdown i	n LID (cu.m.)=	0.00 1.50 30.06
Volu Time Volu Volu ****	me Reduction to reach Max me of water f me of maximum * After simul d(0005)	For drawdown in water storage action, water	n LID ((e ((volume :	cu.m.)= cu.m.)= is not zero.	1.50 30.06 85.42
Volu Time Volu Volu ****	me Reduction to reach Max me of water f me of maximum * After simul d(0005)	For drawdown in water storage action, water	n LID ((e ((volume :	cu.m.)= cu.m.)= is not zero.	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu I Junction Comman INFLOW: ID= 3(OUTFLOW: ID= 2(CALIB CALIB STANDHYD (0001) D= 1 DT= 5.0 min	me Reduction to reach Max me of water f me of maximun * After simul d(0005)	QPEAK T (cms) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	n LID ((ee ((volume :	cu.m.)= cu.m.)= is not zero. R.V. (nm) 0.00 0.00 0.00	1.50 30.06 85.42
Volu Time Volu Volu Volu **** Junction Comman INFLOW: ID= 3 (OUTFLOW: ID= 2 (CALIB STANDHYD (0001) D= 1 DT= 5.0 min Surface Area	me Reduction to reach Max me of water f me of maxim * After simul	QPEAK (cms) 0 0.00 0 0.00 (ha)= 0.15 0(%)= 77.00 APERVIOUS P. 0.12	n LID ((ee ((volume :	cu.m.)= cu.m.)= is not zero. R.V. (nm) 0.00 0.00 0.00	1.50 30.06 85.42
Volu Time Volu Volu Volu **** Junction Comman INFLOW: ID= 3 (OUTFLOW: ID= 2 (CALIB STANDHYD (0001) D= 1 DT= 5.0 min Surface Area Dep. Storage	me Reduction to reach Max me of water f me of maxim * After simul	QPEAK T (cms) 0 0.00 0.00 0 0.	Dir. Co	cu.m.)= cu.m.)= is not zero. R.V. (nm) 0.00 0.00 0.00	1.50 30.06 85.42
Volu Time Volu Volu Volu **** Junction Comman INFLOW: ID= 3 (OUTFLOW: ID= 2 (CALIB STANDHYD (0001) D= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length	me Reduction to reach Max me of water f me of maximun * After simul d(0005)	QPEAK (cms) 0 0.00 0 0.00 0 0.00 0 0.15 0(%) = 77.00 4PERVIOUS P: 0.12 9.00 1.00 32.04	Dir. Co	cu.m.)= cu.m.)= is not zero. R.V. (nm) 0.00 0.00 0.00	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Volu	me Reduction to reach Max me of water f me of maximun * After simul	QPEAK T (cms) 0 0.00 0.00 0.00 0 0.00	Dir. Co	cu.m.)= cu.m.)= is not zero. R.V. (mm) 0.00 0.00 conn.(%)= 60.	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Volu	me Reduction to reach Max me of water f me of maximun * After simul	QPEAK (cms) 0 0.00 0 0.00 0 0.00 0 0.15 0(%) = 77.00 4PERVIOUS P: 0.12 9.00 1.00 32.04	Dir. Co	cu.m.)= cu.m.)= is not zero. R.V. (mm) 0.00 0.00 conn.(%)= 60.	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu **** Junction Comman INFLOW: ID= 3(OUTFLOW: ID= 2(CALIB STANDHYD (0001) D= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length Mannings n NOTE: RAI	me Reduction to reach Max me of water im me of maxim * After simul	QPEAK T. (cms) 0 0.00 0	PEAK (hrs) 0.00 0.00 0.00 2.00 40.00 0.250 MIN	<pre>R.V. (mm) 0.00 0.00 onn.(%)= 60. (i)</pre>	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Voli Voli Voli Voli Voli Voli Voli Voli	me Reduction to reach Max me of water if me of maximum * After simul	QPEAK T (cms) 0 0.00 0	Dir. Company of the c	Cu.m.)= Cu.m.)= is not zero. R.V. (mm) 0.00 0.00 conn.(%)= 60. (i) N. TIME STEP. OGRAPH ME RAIN	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Volu	me Reduction to reach Max me of water if me of maximum * After simul	QPEAK T (cms) 0 0.00 0	Dir. Company of the c	Cu.m.)= Cu.m.)= is not zero. R.V. (mm) 0.00 0.00 conn.(%)= 60. (i) N. TIME STEP. OGRAPH ME RAIN	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Volu	me Reduction to reach Max me of water if me of maximum * After simul	QPEAK T (cms) 0 0.00 0	Dir. Company of the c	Cu.m.)= Cu.m.)= is not zero. R.V. (mm) 0.00 0.00 conn.(%)= 60. (i) N. TIME STEP. OGRAPH ME RAIN	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Voli Voli Voli Voli Voli Voli Voli Voli	me Reduction to reach Max me of water if me of maximum * After simul	QPEAK T (cms) 0 0.00 0	Dir. Co	Cu.m.)= Cu.m.)= is not zero. R.V. (mm) 0.00 0.00 conn.(%)= 60. (i) N. TIME STEP. OGRAPH ME RAIN	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Volu	me Reduction to reach May me of water if me of maximum * After simul AREA (ha) 0003) 0.00 0005) 0.00 Area Total Imp - (%) = (mm) = (%) = mFALL WAS TRF ME RAIN rs mm/hr 83 5.04 167 5.04 50 5.66 17 6.49 00 6.49 18 7.70 67 7.70 67 7.70 67 7.70 67 7.70 67 7.70 67 7.70 67 7.70 68 33 9.66 17 13.55 18 35 17 13.55 18 35 18 35 19 9.66 17 13.55 18 35 18 35 19 9.66 17 13.55 18 35 18	QPEAK T (cms) 0 0.00 0	Dir. Co ERVIOUS 0.04 7.20 2.00 0.250 5.0 MIN ED HYETT ' I' hi 2.08 2.16' 2.25' 2.33: 2.41' 2.58: 2.66' 2.75' 2.83: 2.66' 3.000 85.19	Cu.m.)= Cu.m.)= is not zero. R.V. (mm) 0.00 0.00 conn.(%)= 60. (i) N. TIME STEP. OGRAPH ME RAIN	1.50 30.06 85.42
Volu Time Volu Volu Volu Volu Volu Volu Volu Volu Volu Volu ID Junction Comman INFLOW: ID= 3(OUTFLOW: ID= 2(me Reduction to reach May me of water if me of maximum * After simul AREA (ha) 0003) 0.00 0005) 0.00 Area Total Imp - (%) = (mm) = (%) = mFALL WAS TRF ME RAIN rs mm/hr 83 5.04 167 5.04 50 5.66 17 6.49 00 6.49 18 7.70 67 7.70 67 7.70 67 7.70 67 7.70 67 7.70 67 7.70 67 7.70 68 33 9.66 17 13.55 18 35 17 13.55 18 35 18 35 19 9.66 17 13.55 18 35 18 35 19 9.66 17 13.55 18 35 18	QPEAK T (cms) 0 0.00 0	Dir. Co ERVIOUS 0.00 0.00 Dir. Co ERVIOUS 0.04 7.20 0.250 5.0 MIN 1 TI 1 L.08: 2.16: 2.25: 2.33: 2.16: 2.25: 2.33: 2.16: 3.00: 85.19 85.19	Cu.m.) = cu.m.) = is not zero. R.V. (mm) 0.00 0.00 conn.(%) = 60. (i) N. TIME STEP. COGRAPH ME RAIN 13 10.30 7 10.30 0 9.03 3 9.03 7 10.30 0 9.03 3 7 7.33 0 6.74 7 6.25 0 6.25 (ii)	TIME RAIN mm/hr 3.08 5.84 3.17 5.84 3.25 5.49 3.33 5.49 3.42 5.18 3.50 5.18 3.50 5.18 3.50 4.68 3.58 4.92 3.75 4.68 3.92 4.47 4.00 4.47
Volu Time Volu Volu Volu Volu Volu Volu Volu Volu	me Reduction to reach Max me of water if me of maximum * After simul d(0005) AREA (ha) 0003) 0.00 0005) 0.00 Area Total Imp - Min (%) = (mm) = NFALL WAS TRF ME RAIN 183 5.04 167 5.04 50 5.66 137 6.49 00 6.49 183 7.70 67 7.70 50 9.66 17 6.49 00 6.49 183 7.70 67 7.70 68 7 7.70 69 9.66 17 13.55 18 37 7.70 19 9.66 17 13.55 18 37 7.70 19 9.66 17 13.55 18 37 7.70 19 9.66 17 13.55 18 37 7.70 19 9.66 19 9.66 10 13.55 10 (mm/hr) = r (min) k (min) =	QPEAK T. (cms) 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0.00 0 0 0 0.00 0 0 0 0	Dir. Company of the control of the c	Cu.m.) = cu.m.) = is not zero. R.V. (mm) 0.00 0.00 0.00 0.00 (i) N. TIME STEP. COGRAPH ME RAIN 13 10.30 7 10.30 0 9.03 3 9.03 7 10.30 0 8.07 7 8.07 0 8.07 0 8.07 0 7 7.33 0 7 7.33 0 8.07 0 9.03 0 9	1.50 30.06 85.42

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

| Junction Command(0004) |

		A	REA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
INFLOW : ID=	1(0	0003)	0.34	0.02	1.50	55.02
OUTFLOW: ID=	21 0	1004)	0.34	0.02	1 50	55 02

| CALIB | STANDHYD (0006)| |ID= 1 DT= 5.0 min | Area (ha) = 0.03 Total Imp(%) = 34.00 Dir. Conn.(%) = 34.00

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

			TR	ANSFORM	ΞD	HYETOGE	RAPH		
TIME	RAIN	- [TIME	RAIN		' TIME	RAIN	TIME	RAIN
hrs	mm/hr	1	hrs	mm/hr		' hrs	mm/hr	hrs	mm/hr
0.083	5.04	1	1.083	27.43	1	2.083	10.30	3.08	5.84
0.167	5.04	1	1.167	27.43		2.167	10.30	3.17	5.84
0.250	5.66	1	1.250	111.84	1	2.250	9.03	3.25	5.49
0.333	5.66	1	1.333	111.84	1	2.333	9.03	3.33	5.49
0.417	6.49	1	1.417	34.58	1	2.417	8.07	3.42	5.18
0.500	6.49	1	1.500	34.58	1	2.500	8.07	3.50	5.18
0.583	7.70	1	1.583	20.31	1	2.583	7.33	3.58	4.92
0.667	7.70	1	1.667	20.31	1	2.667	7.33	3.67	4.92
0.750	9.66	i	1.750	15.00	i	2.750	6.74	3.75	4.68
0.833	9.66	1	1.833	15.00	1	2.833	6.74	3.83	4.68
0.917	13.55	i	1.917	12.13	i	2.917	6.25 i	3.92	4.47
1.000	13.55	i	2.000	12.13	Ĺ	3.000	6.25 I	4.00	4.47
nten.(m	m/hr)=		111.84		2	3.71			
over	(min)		5.00		1	5.00			
oeff.	(min) =		0.75	(ii)	1	3.30 (ii	L)		
Tpeak	(min) =		5.00		1	5.00			
-			0.34			n ne			

Max.Eff.Inten.(111.84	23.71	
over	(min)	5.00	15.00	
Storage Coeff.	(min) =	0.75	(ii) 13.30	(ii)
Jnit Hyd. Tpeak	(min) =	5.00	15.00	
Jnit Hyd. peak	(cms) =	0.34	0.08	
				TOTALS
PEAK FLOW	(cms) =	0.00	0.00	0.003 (iii
TIME TO PEAK	(hrs) =	1.33	1.50	1.33
RUNOFF VOLUME	(mm) =	56.94	18.39	31.25
FOTAL RAINFALL	(mm) =	57.94	57.94	57.94
RUNOFF COEFFICI	ENT =	0.98	0.32	0.54

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

 CN* = 74.0 Ia = Dep. Storage (Above)

 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

 THAN THE STORAGE COEFFICIENT.

 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0007)			
1 + 2 = 3	AREA QPEAK	TPEAK	R.V.
	(ha) (cms)	(hrs)	(mm)
ID1= 1 (0004):	0.34 0.021	1.50	55.02
+ ID2= 2 (0006):	0.03 0.003	1.33	31.25
=======================================			
ID = 3 (0007):	0.37 0.023	1.50	53.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

25-YEAR STORM

SSSSS U U A L (v 6.2.2017) I SS U U AAAA L
I SS U U AAAAA L
I SS U U A A I SS U U A A L I SSSSS UUUUU A A LLLLL vv Y M M OOO TTTTT TTTTT H H Y 000 T T H H Y Y MM MM O O
T T H H Y M M OOO
T T H H Y M M OOO 0 000 Developed and Distributed by Smart City Water Inc Copyright 2007 - 2022 Smart City Water Inc

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***** DETAILED OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
Output filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a868-21131388d8a\05a58258-2a92-ddb0-9ae4-051922e6338f\scen
Summary filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a-

868c-21131358d8ea\05a58258-2a92-4db0-9ae4-05192e26338f\scen

DATE: 09/09/2024

TIME: 04:18:22

USER:

COMMENTS: _

CHICAGO STORM | Ptotal= 69.38 mm |

IDF curve parameters: A= 721.533 B= 2.253 C= 0.679 used in: INTENSITY = A / (t + B) ^C

Duration of storm = 4.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME	RAIN		TIME	RAIN	Τ,	TIME	RAIN	TIME	RAIN
hrs	mm/hr	1	hrs	mm/hr	1.	hrs	mm/hr	hrs	mm/hr
0.00	6.34	1	1.00	31.84	1	2.00	12.58	3.00	7.30
0.17	7.08	1	1.17	131.63		2.17	11.08	3.17	6.87
0.33	8.07	1	1.33	39.74	1	2.33	9.96	3.33	6.50
0.50	9.51	1	1.50	23.97	1	2.50	9.08	3.50	6.18
0.67	11.82	1	1.67	17.98	1	2.67	8.38	3.67	5.90
0.83	16 33	1	1 83	14 70	1	2 83	7 79 1	3 83	5 64

CALIB | STANDHYD (0002)| |ID= 1 DT= 5.0 min |

Area (ha) = 0.34Total Imp(%)= 95.00 Dir. Conn.(%)= 95.00

TMPERVIOUS PERVIOUS (i) (ha)= 0.32 0.02 1.00 7.20 1.00 2.00 Surface Area Dep. Storage Average Slope (mm) = (%) = 40.00 Length (m) = 47.40 0.250 0.013

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

		TR	ANSFORMED HYETOGR	APH		
TIME	RAIN	TIME	RAIN TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr ' hrs	mm/hr	hrs	mm/hr
0.083	6.34	1.083	31.84 2.083	12.58	3.08	7.30
0.167	6.34	1.167	31.84 2.167	12.58	3.17	7.30
0.250	7.08	1.250	131.63 2.250	11.08	3.25	6.87
0.333	7.08	1.333	131.63 2.333	11.08	3.33	6.87
0.417	8.07	1.417	39.74 2.417	9.96	3.42	6.50
0.500	8.07	1.500	39.74 2.500	9.96	3.50	6.50
0.583	9.51	1.583	23.97 2.583	9.08	3.58	6.18
0.667	9.51	1.667	23.97 2.667	9.08	3.67	6.18
0.750	11.82	1.750	17.98 2.750	8.38	3.75	5.90
0.833	11.82	1.833	17.98 2.833	8.38	3.83	5.90
0.917	16.33	1.917	14.70 2.917	7.79	3.92	5.64
1.000	16.33	2.000	14.70 3.000	7.79	4.00	5.64
Max.Eff.Inten.(mm,	/hr)=	131.63	41.11			

Max.Eff.Inten.(n	nm/hr)=	131.63	41.11		
over	(min)	5.00	5.00		
Storage Coeff.	(min) =	1.46	(ii) 3.41	(ii)	
Unit Hyd. Tpeak	(min) =	5.00	5.00		
Unit Hyd. peak	(cms) =	0.33	0.26		
				*TOTALS	*
PEAK FLOW	(cms) =	0.12	0.00	0.119	(iii)
TIME TO PEAK	(hrs) =	1.33	1.33	1.33	
RUNOFF VOLUME	(mm) =	68.38	25.53	66.23	
TOTAL RAINFALL	(mm) =	69.38	69.38	69.38	
RUNOFF COEFFICIE	ENT =	0.99	0.37	0.95	

***** WARNING. STORAGE COEFF IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 Ia = Dep. Storage (Above THAN THE STORAGE COEFFICIENT.

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| CHAMBER(0003)| OUTFLOW: ON, UNDERDRAIN: OFF, INFIL: OFF | INH= 2--> OUT= 3 | CHAMBER: | DT= 5.0 min | MAX STO VOL (cu.m.)= 139.45 Bottom Area(m2) = 220.71 DEPTH STORAGE (mm) (cu.m.) (mm) (cu.m.) 0.00 0 00 89 57 559 00 25.00 92.98 51.00 8.83 610.00 96.28 13.21 17.58 635.00 660.00 76.00 99.46 102.00 102.49 127.00 21.92 686.00 105.33

152.00 711.00 737.00 178.00 30.52 110.25 203.00 34.78 39.00 762.00 787.00 813.00 254.00 43.19 117.03 47.34 51.45 838.00 864.00 279.00 119.27 330.00 55.52 889.00 123.75 59.54 63.51 67.42 914.00 940.00 965.00 356.00 381.00 126.00 128.24 406.00 130.48 1016.00 457.00 134.96 75.09 483.00 78.83 1041.00 137.20 533.00 86.08 0.00 0.00 DISCHARGE (cms) (m) (m) (cms) 0 000

0.000 0.005 0.610 0.024 0.203 0.009 0.813 0.036 0.011 0.013 0.015 0.305 0.914 1.067 0.508 0.046 AREA QPEAK (ha) 0.34 (cms) 0.119 (hrs) 1.33 (mm) INFLOW:ID= 2
OUTFLOW:ID= 1 0.34 0.029 66.23 0.000 OVERFLOW: ID= 3 0.00 0.00

> Volume Reduction Rate[(RVin-RVout)/RVin](%)= Volume Reduction Rate[[Rvin-Rvout]/Rvin][8]=
> Time to reach Max storage
> Volume of water for drawdown in LID (cu.m.)=
> Volume of maximum water storage
> ***** After simulation, water volume is not zero. 1.50 96.17

> > Area (ha) = 0.15Total Imp(%) = 77.00 Dir. Conn.(%) = 60.00

(ha) (cms) (hrs) (mm) INFLOW: ID= 3(0003) 0.00 0.00 0.00 0.00 OUTFLOW: ID= 2(0005) 0.00

| CALIB

| STANDHYD (0001)| |ID= 1 DT= 5.0 min |

IMPERVIOUS PERVIOUS (i) Surface Area (ha) = 0.12 9.00 1.00 0.04 7.20 (mm) = 0.12 (mm) = 9.00 (%) = 1.00 (m) = 32.04 = 0.013 Dep. Storage Average Slope Length 40.00

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

--- TRANSFORMED HYETOGRAPH -RAIN | TIME RAIN | TIME mm/hr | hrs mm/hr | hrs hrs mm/hr | hrs mm/hr 6.34 | 1.083 6.34 | 1.167 31.84 | 2.083 31.84 | 2.167 12.58 | 12.58 | 0.083 3.08 7.30 1.250 131.63 | 2.250 0.250 7.08 I 11.08 I 0 333 7 08 1 1.333 131.63 | 2.333 11 08 1 3 33 2.417 0.417 1.417 39.74 0.500 8.07 1.500 39.74 1 2.500 9.96 3.50 6.50 0 583 9 51 1.583 1 2.583 9 08 3 58 1.667 9.08 0.667 9.51 23.97 | 2.667 6.18 17.98 | 2.750 17.98 | 2.833 14.70 | 2.917 0.750 11.82 1 1.750 8.38 5.90 0.833 11.82 | 1.833 8.38 3.83 5.90 0.917 16.33 | 1.917 7.79 3.92 5.64 1 000 16 33 | 2 000 14 70 | 3 000 5 64

iii)

**** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- CN* = 74.0 Ia = Dep. Storage (Above (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| Junction Command(0004) |

			AREA	QPEAK	TPEAK	R.V.
			(ha)	(cms)	(hrs)	(mm)
INFLOW :	ID= 1(0003)	0.34	0.03	1.50	66.23
OUTFLOW:	ID= 2(0004)	0.34	0.03	1.50	66.23

| CALIB

| STANDHYD (0006)| |ID= 1 DT= 5.0 min | Area (ha)= 0.03
Total Imp(%)= 34.00 Dir. Conn.(%)= 34.00

IMPERVIOUS PERVIOUS (i)

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

			TR	ANSFORMI	ΞD	HYETOGRA	APH		
TIME	RAIN	1	TIME	RAIN	1	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	1	hrs	mm/hr	1	' hrs	mm/hr	hrs	mm/hr
0.083	6.34	1	1.083	31.84	1	2.083	12.58	3.08	7.30
0.167	6.34	1	1.167	31.84	1	2.167	12.58	3.17	7.30
0.250	7.08	1	1.250	131.63	1	2.250	11.08	3.25	6.87
0.333	7.08	1	1.333	131.63	1	2.333	11.08	3.33	6.87
0.417	8.07	1	1.417	39.74	1	2.417	9.96	3.42	6.50
0.500	8.07	1	1.500	39.74	1	2.500	9.96	3.50	6.50
0.583	9.51	1	1.583	23.97	1	2.583	9.08	3.58	6.18
0.667	9.51	1	1.667	23.97	1	2.667	9.08	3.67	6.18
0.750	11.82	1	1.750	17.98	1	2.750	8.38	3.75	5.90
0.833	11.82	1	1.833	17.98	1	2.833	8.38	3.83	5.90
0.917	16.33	1	1.917	14.70	1	2.917	7.79	3.92	5.64
1.000	16.33	1	2.000	14.70	1	3.000	7.79	4.00	5.64
nten.(m	m/hr) =		131.63		3	3.42			
	(min)		5.00			5.00			
beff.	(min) =		0.70	(ii)	1	1.64 (ii)			

Max.Eff.Inten.(mm/hr)=	131.63	33.42	
over (min)	5.00	15.00	
Storage Coeff. (min) =	0.70 (ii)	11.64 (ii)	
Unit Hyd. Tpeak (min) =	5.00	15.00	
Unit Hyd. peak (cms)=	0.34	0.09	
			TOTALS
PEAK FLOW (cms)=	0.00	0.00	0.004 (iii)
TIME TO PEAK (hrs)=	1.33	1.50	1.33
RUNOFF VOLUME (mm) =	68.38	25.53	39.81
TOTAL RAINFALL (mm) =	69.38	69.38	69.38
RUNOFF COEFFICIENT =	0.99	0.37	0.57

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

| ADD HYD (0007) | | 1 + 2 = 3 | | ID1= 1 (0004): | + ID2= 2 (0006): R.V. AREA QPEAK TPEAK (mm) 66.23 (cms) 0.029 0.004 (hrs) 1.50 1.33 (ha) 0.34 1.50 ID = 3 (0007): 0.37 0.031 64.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

50-YEAR STORM

SSSSS U U A L (v 6.2.2017) I SS U U AAAAA L I SS U U A AA L I SS U U AAAAA L I SS U U A A L I SSSS UUUUU A A LLLLL vv Y M M TTTTT TTTTT H H Y 000 000 000 TTTT TTTT H H Y Y M M 000 0 0 T T H H Y Y M M 0 0 000 T T H H Y M M 0 0

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***** DETAILED OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
Output filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a868c-21131358d8ea\748e494f-b883-473a-9f82-bb9dcdfd0c73\scen
Summary filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a-868c-21131358d8ea\748e494f-b883-473a-9f82-bb9dcdfd0c73\scen

DATE: 09/09/2024 TIME: 04:18:22

USER:

COMMENTS: _

CHICAGO STORM | Ptotal= 78.32 mm |

IDF curve parameters: A= 766.038 B= 1.898 C= 0.668

used in: INTENSITY = A / (t + B) ^C

Duration of storm = 4.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME	RAIN		TIME	RAIN	1.	TIME	RAIN	TIME	RAIN
hrs	mm/hr		hrs	mm/hr	1'	hrs	mm/hr	hrs	mm/hr
0.00	7.35	1	1.00	35.40	1	2.00	14.38	3.00	8.44
0.17	8.19		1.17	146.50		2.17	12.71	3.17	7.96
0.33	9.32	1	1.33	43.93	1	2.33	11.45	3.33	7.55
0.50	10.95	L	1.50	26.91	1	2.50	10.46	3.50	7.18
0.67	13.53		1.67	20.36		2.67	9.66	3.67	6.85
0.83	18 53	1	1 83	16 73	1	2 83	9 00 1	3 83	6 56

CALIB

| STANDHYD (0002)| |ID= 1 DT= 5.0 min | (ha)= 0 34 Total Imp(%) = 95.00 Dir. Conn.(%) = 95.00

		IMPERVIOUS	PERVIOUS	(i)
Surface Area	(ha)=	0.32	0.02	
Dep. Storage	(mm) =	1.00	7.20	
Average Slope	(%)=	1.00	2.00	
Length	(m) =	47.40	40.00	
Manninga	_	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

	T	RANSFORMED HYETOG	RAPH	
TIME	RAIN TIME	RAIN TIME	RAIN TIME	RAIN
hrs	mm/hr hrs	mm/hr ' hrs	mm/hr hrs	mm/hr
0.083	7.35 1.083	35.40 2.083	14.38 3.08	8.44
0.167	7.35 1.167	35.40 2.167	14.38 3.17	8.44
0.250	8.19 1.250	146.50 2.250	12.71 3.25	7.96
0.333	8.19 1.333	146.50 2.333	12.71 3.33	7.96
0.417	9.32 1.417	43.93 2.417	11.45 3.42	7.55
0.500	9.32 1.500	43.93 2.500	11.45 3.50	7.55
0.583	10.95 1.583	26.91 2.583	10.46 3.58	7.18
0.667	10.95 1.667	26.91 2.667	10.46 3.67	7.18
0.750	13.53 1.750	20.36 2.750	9.66 3.75	6.85
0.833	13.53 1.833	20.36 2.833	9.66 3.83	6.85
0.917	18.53 1.917	16.73 2.917	9.00 3.92	6.56
1.000	18.53 2.000	16.73 3.000	9.00 4.00	6.56
Max.Eff.Inten.(m	m/hr)= 146.5	0 51.45		
over	(min) 5.0	0 5.00		

Max.Eff.Inten.(mm/hr)=	146.50	51.45	
over (min)	5.00	5.00	
Storage Coeff. (min) =	1.40 (ii)	3.27 (ii)	
Unit Hyd. Tpeak (min) =	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.27	
			TOTALS
PEAK FLOW (cms)=	0.13	0.00	0.133 (iii)
TIME TO PEAK (hrs)=	1.33	1.33	1.33
RUNOFF VOLUME (mm) =	77.32	31.54	75.03
TOTAL RAINFALL (mm) =	78.32	78.32	78.32
RUNOFF COEFFICIENT =	0.99	0.40	0.96

***** WARNING. STORAGE COEFF IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

 ${\rm CN^{\star}}=74.0$ Ia = Dep. Storage (Above (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| CHAMBER(0003)| OUTFLOW: ON, UNDERDRAIN: OFF, INFIL: OFF | INH= 2--> OUT= 3 | CHAMBER: | DT= 5.0 min | MAX STO VOL (cu.m.)= 139.45 Bottom Area(m2) = 220.71 DEPTH STORAGE (mm) (cu.m.) (mm) (cu.m.) 0.00 0 00 89.57 559 00 25.00 92.98 51.00 8.83 610.00 96.28 13.21 17.58 635.00 660.00 76.00 99.46 102.00 102.49 127.00 21.92 26.24 686.00 105.33 152.00 711.00 737.00 30.52 34.78 39.00 178.00 110.25 203.00 762.00 787.00 813.00 254.00 43.19 117.03 47.34 51.45 838.00 864.00 119.27 121.51 279.00 330.00 55.52 889.00 123.75 59.54 63.51 67.42 914.00 940.00 965.00 356.00 381.00 126.00 128.24 406.00 130.48 432.00 457.00 1016.00 75.09 134.96 483.00 78.83 1041.00 137.20 533.00 86.08 0.00 0.00 DISCHARGE (cms) (m) (m) (cms) 0.000 0.005 0 000 0.610 0.024 0.203 0.009 0.813 0.036 0.009 0.011 0.013 0.015 0.305 0.914 0.041 0.508 1.067 0.046 AREA QPEAK (hrs) 1.33 1.50 (ha) 0.34 (cms) 0.133 (mm) 75.03 INFLOW:ID= 2
OUTFLOW:ID= 1 0.34 0.035 OVERFLOW: ID= 3 0.00 0.000 0.00 Volume Reduction Rate[(RVin-RVout)/RVin](%)= 0.00 Volume Reduction Rate[[Rvin-Rvout]/Rvin][8]=
Time to reach Max storage
Volume of water for drawdown in LID (cu.m.)=
Volume of maximum water storage
***** After simulation, water volume is not zero. 1.50 104.86

| Junction Command(0005) |

			AREA	QPEAK	TPEAK	R.V.
			(ha)	(cms)	(hrs)	(mm)
INFLOW :	ID= 3	(0003)	0.00	0.00	0.00	0.00
OUTFLOW:	ID= 2	(0005)	0.00	0.00	0.00	0.00

| CALIB

STANDHYD (0001) Total Imp(%) = 77.00 Dir. Conn.(%) = 60.00 |ID= 1 DT= 5.0 min |

		IMPERVIOUS	PERVIOUS	(
Surface Area	(ha) =	0.12	0.04	
Dep. Storage	(mm) =	9.00	7.20	
Average Slope	(%) =	1.00	2.00	
Length	(m) =	32.04	40.00	
Mannings n	=	0.013	0.250	

NOTE: BAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

		_	TR	ANSFORME	:D	HYETOGE	RAPH		
TIME	RAIN			RAIN			RAIN	TIME	RAIN
hrs	mm/hr	ĺ	hrs	mm/hr	į,	hrs	mm/hr	hrs	mm/hr
0.083	7.35	1	1.083	35.40	ı	2.083	14.38	3.08	8.44
0.167	7.35	1	1.167	35.40	ı	2.167	14.38	3.17	8.44
0.250	8.19		1.250	146.50		2.250	12.71	3.25	7.96
0.333	8.19		1.333	146.50		2.333	12.71	3.33	7.96
0.417	9.32		1.417	43.93		2.417	11.45	3.42	7.55
0.500	9.32		1.500	43.93		2.500	11.45	3.50	7.55
0.583							10.46		7.18
							10.46		
0.750	13.53		1.750	20.36		2.750	9.66	3.75	6.85
0.833	13.53		1.833	20.36		2.833	9.66	3.83	6.85
0.917	18.53		1.917	16.73		2.917	9.00	3.92	6.56
1.000	18.53		2.000	16.73	I	3.000	9.00	4.00	6.56
Max.Eff.Inten.(n	nm/hr)=		146.50	1	37	7.45			
over	(min)				10	0.00			
Storage Coeff.	(min) =		1.11	(ii)	5	5.24 (i:	L)		
Unit Hyd. Tpeak	(min) =		5.00		10	0.00			
Unit Hyd. peak	(cms) =		0.34		(16			
							TOTA	LS	
PEAK FLOW	(cms) =		0.04		(0.01	0.0	47 (iii)	
TIME TO PEAK	(hrs) =		1.33		1	1.42	1.	33	
RUNOFF VOLUME	(mm) =		69.32		43	3.85	59.	12	
TOTAL PAINEALL	(mm) =		78 32		75	3 32	7.8	32	

78.32

78.32

**** WARNING. STORAGE CORFF IS SMALLER THAN TIME STEP!

(mm) =

TOTAL RAINFALL

RUNOFF COEFFICIENT =

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

78.32

- CN* = 74.0 Ia = Dep. Storage (Above (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| Junction Command(0004) |

QPEAK (cms) 0.04 R.V. (mm) 75.03 AREA TPEAK (hrs) 1.50 1.50 (ha) 0.34 INFLOW: ID= 1(0003) OUTFLOW: ID= 2(0004) 0.34

| CALIB

| CALIB | STANDHYD (0006)| |ID= 1 DT= 5.0 min | Area (ha)= 0.03
Total Imp(%)= 34.00 Dir. Conn.(%)= 34.00

IMPERVIOUS PERVIOUS (i) Surface Area (ha) =
Dep. Storage (mm) =
Average Slope (%) =
Length (m) =
Mannings n = PERVIOUS 0.02 7.20 2.00 40.00 0.250 0.01 1.00 1.00 13.90 0.013

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

			IR	MNO I CRM	שנ	HILIUGK	APR		
TIME	RAIN	1	TIME	RAIN	1	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	1	hrs	mm/hr	1	' hrs	mm/hr	hrs	mm/hr
0.083	7.35	1	1.083	35.40	1	2.083	14.38	3.08	8.44
0.167	7.35	1	1.167	35.40	1	2.167	14.38	3.17	8.44
0.250	8.19	1	1.250	146.50	1	2.250	12.71	3.25	7.96
0.333	8.19	1	1.333	146.50	1	2.333	12.71	3.33	7.96
0.417	9.32	1	1.417	43.93	1	2.417	11.45	3.42	7.55
0.500	9.32	1	1.500	43.93	1	2.500	11.45	3.50	7.55
0.583	10.95	1	1.583	26.91	1	2.583	10.46	3.58	7.18
0.667	10.95	1	1.667	26.91	1	2.667	10.46	3.67	7.18
0.750	13.53	1	1.750	20.36	1	2.750	9.66	3.75	6.85
0.833	13.53	1	1.833	20.36	1	2.833	9.66	3.83	6.85
0.917	18.53	1	1.917	16.73	1	2.917	9.00	3.92	6.56
1.000	18.53	1	2.000	16.73	1	3.000	9.00	4.00	6.56
ten.(mm/	hr)=		146.50		5	1.45			

Max.Eff.Inten.(m	m/hr)=	146.50	51.45		
over	(min)	5.00	10.00		
Storage Coeff.	(min) =	0.67	(ii) 9.88	(ii)	
Unit Hyd. Tpeak	(min) =	5.00	10.00		
Unit Hyd. peak	(cms) =	0.34	0.11		
				*TOTALS	*
PEAK FLOW	(cms) =	0.00	0.00	0.005	(iii)
TIME TO PEAK	(hrs) =	1.33	1.42	1.33	
RUNOFF VOLUME	(mm) =	77.32	31.54	46.91	
TOTAL RAINFALL	(mm) =	78.32	78.32	78.32	
RUNOFF COEFFICIE	ENT =	0.99	0.40	0.60	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

 CN* = 74.0 Ia = Dep. Storage (Above)

 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

 THAN THE STORAGE COEFFICIENT.

 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| ADD HYD (0007) | | 1 + 2 = 3 | | ID1= 1 (0004): | + ID2= 2 (0006): R.V. QPEAK AREA TPEAK (hrs) 1.50 1.33 (ha) 0.34 (cms) 0.035 (mm) 75.03 ID = 3 (0007): 0.37 0.038 1.50 72.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

18-057 BARREL RESTAURANT ADDITION

VISUAL OTTHYMO MODEL

100-YEAR STORM

SSSSS U U A L (v 6.2.2017) I SS U U A A L
I SS U U AAAAA L
I SS U U AAAAA L I SS U U A A L
I SSSS UUUUU A A LLLLL VV OOO TTTTT TTTTT H H Y Y M M 000 000 TTTT TTTT H H Y Y M M 00 0 0 T T H H Y Y M M 0 0 000 T T H H Y M M 00 Developed and Distributed by Smart City Water Inc Copyright 2007 - 2022 Smart City Water Inc All rights reserved. ***** DETAILED OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
Output filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a868c-21131358d8ea\f5cbc21e-dbec-4b4a-bc3e-192397f4765b\scen
Summary filename: C:\Users\Natalie\AppData\Local\civica\VH5\4fe0d901-c408-4e3a-

868c-21131358d8ea\f5cbc21e-dbec-4b4a-bc3e-192397f4765b\scen

DATE: 09/09/2024 TIME: 04:18:22

USER:

COMMENTS: __

CHICAGO	STORM
Ptotal=	87.09 mm

IDF curve parameters: A= 801.041 B= 1.501 C= 0.657

used in: INTENSITY = A / (t + B) ^C

Duration of storm = 4.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME	RAIN	1	TIME	RAIN	1.	TIME	RAIN	TIME	RAIN
hrs	mm/hr		hrs	mm/hr	1'	hrs	mm/hr	hrs	mm/hr
0.00	8.40	1	1.00	38.70	1	2.00	16.17	3.00	9.61
0.17	9.34	1	1.17	160.97		2.17	14.33	3.17	9.08
0.33	10.59	1	1.33	47.72	1	2.33	12.95	3.33	8.61
0.50	12.39	1	1.50	29.71	1	2.50	11.86	3.50	8.20
0.67	15.24	1	1.67	22.67	1	2.67	10.97	3.67	7.84
0.83	20.69	1	1.83	18.74	1	2.83	10.24 I	3.83	7.51

CALIB

| STANDHYD (0002) | Area (ha) = 0.34 | ID= 1 DT= 5.0 min | Total Imp(%) = 95.00 Dir. Conn.(%) = 95.00

		IMPERVIOUS	PERVIOUS	(i
Surface Area	(ha) =	0.32	0.02	
Dep. Storage	(mm) =	1.00	7.20	
Average Slope	(%)=	1.00	2.00	
Length	(m) =	47.40	40.00	
Mannings n	=	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

			 TRANSFORM 	IED H	YETOGRA	APH		
TI	ME RAIN	TI	ME RAIN	1 '	TIME	RAIN	TIME	RAIN
h	rs mm/hr	h	rs mm/hr	1.	hrs	mm/hr	hrs	mm/hr
0.0	83 8.40	1.0	183 38.70	1 2	.083	16.17	3.08	9.61
0.1	67 8.40	1.1	.67 38.70) 2	.167	16.17	3.17	9.61
0.2	50 9.34	1.2	50 160.97	2	.250	14.33	3.25	9.08
0.3	33 9.34	1.3	33 160.97	1 2	.333	14.33	3.33	9.08
0.4	17 10.59	1.4	17 47.72	1 2	.417	12.95	3.42	8.61
0.5	00 10.59	1.5	00 47.72	2	.500	12.95	3.50	8.61
0.5	83 12.39	1.5	83 29.71	. 2	.583	11.86	3.58	8.20
0.6	67 12.39	1.6	67 29.71	. 2	.667	11.86	3.67	8.20
0.7	50 15.24	1.7	50 22.67	1 2	.750	10.97	3.75	7.84
0.8	33 15.24	1.8	33 22.67	2	.833	10.97	3.83	7.84
0.9	17 20.69	1.9	18.74	2	.917	10.24	3.92	7.51
1.0	00 20.69	2.0	000 18.74	3	.000	10.24	4.00	7.51

				,				-
Max.Eff.Inten.(m	nm/hr)=	160.97		62.14				
over	(min)	5.00		5.00				
Storage Coeff.	(min) =	1.35	(ii)	3.15	(ii)			
Unit Hyd. Tpeak	(min) =	5.00		5.00				
Unit Hyd. peak	(cms) =	0.33		0.27				
						TOTALS		
PEAK FLOW	(cms) =	0.14		0.00		0.146	(iii)	
TIME TO PEAK	(hrs) =	1.33		1.33		1.33		
RUNOFF VOLUME	(mm) =	86.09		37.74		83.67		
TOTAL RAINFALL	(mm) =	87.09		87.09		87.09		
RUNOFF COEFFICIE	ENT =	0.99		0.43		0.96		

**** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 74.0 Ia = Dep. Storage (Above
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

	DEPTH	STORAGE		DEPTH	STORAGE
	(mm)	(cu.m.)	1	(mm)	(cu.m.)
	0.00	0.00		559.00	89.57
	25.00	4.42	1	584.00	92.98
	51.00	8.83	1	610.00	96.28
	76.00	13.21	- 1	635.00	99.46
	102.00	17.58	1	660.00	102.49
	127.00	21.92	i	686.00	105.33
	152.00	26.24	i	711.00	107.85
	178.00	30.52	1	737.00	110.25
	203.00	34.78	1	762.00	112.54
	229.00	39.00	i	787.00	114.79
	254.00	43.19	1	813.00	117.03
	279.00	47.34	i	838.00	119.27
	305.00	51.45	1	864.00	121.51
	330.00	55.52	- 1	889.00	123.75
	356.00	59.54	1	914.00	126.00
	381.00	63.51	1	940.00	128.24
	406.00	67.42	- 1	965.00	130.48
	432.00	71.28	1	991.00	132.72
	457.00	75.09	1	1016.00	134.96
	483.00	78.83	i	1041.00	137.20
	508.00	82.50	1	1067.00	139.45
	533.00	86.08	į	0.00	0.00
	DEPTH	DISCHARGE	1	DEPTH	DISCHARGE
	(m)	(cms)	i	(m)	(cms)
	0.000	0.000	1	0.610	0.024
	0.102	0.005	i	0.711	0.031
	0.203	0.009	1	0.813	0.036
	0.305	0.011	1	0.914	0.041
	0.406	0.013	i	1.016	0.045
	0.508	0.015	- 1	1.067	0.046
	AREA	OPEAK		TPEAK	R.V.
	(ha)	(cms)		(hrs)	(mm)
INFLOW: ID= 2	0.34	0.146		1.33	83.67
OUTFLOW: ID= 1	0.34	0.041		1.50	83.67
OVERFLOW: ID= 3	0.00	0.000		0.00	0.00
Volu	me Reduction	Rate[(RVin-RVo	ut)/RV	/inl(%)=	0.00
		x storage		(Hr)=	1.50
		for drawdown in			47.47
		m water storage			
		lation, water v			

Volume of maximum water storage (cu.m.)= ***** After simulation, water volume is not zero.

| Junction Command(0005) |

				AREA	QPEAK	TPEAK	R.V.
				(ha)	(cms)	(hrs)	(mm)
INFLOW :	ID=	3 (0003)	0.00	0.00	0.00	0.00
OUTFLOW:	ID=	2 (0005)	0.00	0.00	0.00	0.00

| CALIB | STANDHYD (0001)| |ID= 1 DT= 5.0 min | Area (ha)= 0.15 Total Imp(%)= 77.00 Dir. Conn.(%)= 60.00

		IMPERVIOUS	PERVIOUS	(i
Surface Area	(ha) =	0.12	0.04	
Dep. Storage	(mm) =	9.00	7.20	
Average Slope	(%) =	1.00	2.00	
Length	(m) =	32.04	40.00	
Mannings n	_	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

TRANSFORMED HYETOGRAPH										
TIME	RAIN		TIME	RAIN	1	' TIME	RAIN	TIME	RAIN	
hrs	mm/hr		hrs	mm/hr		' hrs	mm/hr	hrs	mm/hr	
0.083	8.40		1.083	38.70	1	2.083	16.17	3.08	9.61	
0.167	8.40	Ī	1.167	38.70	1	2.167	16.17	3.17	9.61	
0.250	9.34		1.250	160.97	1	2.250	14.33	3.25	9.08	
0.333	9.34		1.333	160.97		2.333	14.33	3.33	9.08	
0.417	10.59		1.417	47.72	1	2.417	12.95	3.42	8.61	
0.500	10.59	Ī	1.500	47.72	1	2.500	12.95	3.50	8.61	
0.583	12.39		1.583	29.71	1	2.583	11.86	3.58	8.20	
0.667	12.39	Ī	1.667	29.71	1	2.667	11.86	3.67	8.20	
0.750	15.24	ı	1.750	22.67	1	2.750	10.97	3.75	7.84	
0.833	15.24		1.833	22.67	1	2.833	10.97	3.83	7.84	
0.917	20.69	Ī	1.917	18.74	1	2.917	10.24	3.92	7.51	
1.000	20.69	ı	2.000	18.74	1	3.000	10.24	4.00	7.51	

Max.Eff.Inten.(r	nm/hr) = (min)	160.97 5.00	160.87		
Storage Coeff. Unit Hyd. Tpeak	(min) =	1.07		l (ii)	
Unit Hyd. peak		0.34	0.16	5	
				*TOTALS:	k
PEAK FLOW	(cms) =	0.04	0.01	0.053	(iii)
TIME TO PEAK	(hrs) =	1.33	1.42	1.33	
RUNOFF VOLUME	(mm) =	78.09	51.25	67.34	
TOTAL RAINFALL	(mm) =	87.09	87.09	87.09	
RUNOFF COEFFICIE	ENT =	0.90	0.59	0.77	

**** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- CN* = 74.0 Ia = Dep. Storage (Above (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| Junction Command(0004) |

				AREA	QPEAK	TPEAK	R.V.
				(ha)	(cms)	(hrs)	(mm)
INFLOW :	ID=	1 (0003)	0.34	0.04	1.50	83.67
OUTELOW.	TD=	21	00041	0.34	0 04	1 50	83 67

Area (ha)= 0.03 Total Imp(%)= 34.00 Dir. Conn.(%)= 34.00 | STANDHYD (0006)| |ID= 1 DT= 5.0 min |

(1)

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

			TR.	ANSFORME	D	HYETOGR.	APH			
TIME	RAIN	1	TIME	RAIN	1	TIME	RAIN	TIME	RA	IN
hrs	mm/hr	1	hrs	mm/hr	1	hrs	mm/hr	hrs	mm/	hr
0.083	8.40	1	1.083	38.70	L	2.083	16.17	3.08	9.6	1
0.167	8.40	1	1.167	38.70		2.167	16.17	3.17	9.6	1
0.250	9.34	1	1.250	160.97	L	2.250	14.33	3.25	9.0	8
0.333	9.34	1	1.333	160.97	L	2.333	14.33	3.33	9.0	8
0.417	10.59	1	1.417	47.72	ı	2.417	12.95	3.42	8.6	1
0.500	10.59	1	1.500	47.72	L	2.500	12.95	3.50	8.6	1
0.583	12.39	1	1.583	29.71	L	2.583	11.86	3.58	8.2	0
0.667	12.39	1	1.667	29.71	ı	2.667	11.86	3.67	8.2	0
0.750	15.24	1	1.750	22.67	L	2.750	10.97	3.75	7.8	4
0.833	15.24	1	1.833	22.67	ı	2.833	10.97	3.83	7.8	4
0.917	20.69	1	1.917	18.74	ı	2.917	10.24	3.92	7.5	1
1.000	20.69	1	2.000	18.74	ı	3.000	10.24	4.00	7.5	1

Max.Eff.Inten.(mm/hr)=	160.97	62.14	
over (min)	5.00	10.00	
Storage Coeff. (min) =	0.65 (ii)	9.18 (ii)	
Unit Hyd. Tpeak (min) =	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.12	
			TOTALS
PEAK FLOW (cms)=	0.00	0.00	0.006 (iii)
TIME TO PEAK (hrs) =	1.33	1.42	1.33
RUNOFF VOLUME (mm) =	86.09	37.74	53.98
TOTAL RAINFALL (mm) =	87.09	87.09	87.09
RUNOFF COEFFICIENT =	0.99	0.43	0.62

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

 CN* = 74.0 Ia = Dep. Storage (Above)

 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

 THAN THE STORAGE COEFFICIENT.

 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0007)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0004):	0.34	0.041	1.50	83.67
+ ID2= 2 (0006):	0.03	0.006	1.33	53.98
=======================================				
ID = 3 (0007):	0.37	0.045	1.33	81.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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TIME	RAIN	TIME	RAIN mm/hr	Norfolk	mm/hr hr	E RAIN
TIME hrs 0.00 0.17 0.33 0.50	RAIN mm/hr 0.00 1.90 8 2.16 9 2.51 7 3.03	TIME hrs 1.17 1.33 1.50 1.67	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67	RAIN mm/hr 0.00 1.90 1 3 2.16 3 2.51 7 3.03 3 3.90 3 3.90 3	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.67 2.83 3.00 3.17	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23	E RAIN
TIME hrs 0.00 0.17 0.33 0.55 0.67 0.83	RAIN mm/hr 0.000 1.900	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.67 2.83 3.00 3.17	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83	RAIN mm/hr 0.000 1.900	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.67 2.83 3.00 3.17	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00	E RAIN mm/hr 0 0.00 1 1.90 1 2.51 3 3.03 3 3.90 0 5.69	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.67 2.83 3.00 3.17	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00	RAIN mm/hr 0.00 1.90 8 2.16 2.51 3.03 8 3.90 5.69	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB C	RAIN mm/hr 0.00 1.90 8 2.16 2.51 3.03 8 3.90 5.69	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB C	RAIN mm/hr 0 0.00 7 1.90 8 2.16 0 2.51 7 3.03 8 3.90 0 5.69	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.67 2.83 3.00 3.17 3.33	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB C	RAIN mm/hr 0 0.00 7 1.90 8 2.16 0 2.51 7 3.03 8 3.90 5.69 Area Total Im	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Vorfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB C	RAIN mm/hr 0 0.00 1 1.00	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33 Dir. Conn RAVIOUS (i: 0.02 7.20 2.20	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB STANDHYD (0002) ID= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length	RAIN mm/hr 0 0.00 7 1.90 8 2.16 0 2.51 7 3.03 8 3.90 5.69 Area Total Im	TIME hrs 1.17 1.33 1.50 1.63 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.55 0.67 0.67 0.83 1.00 CALIB STANDHYD (0002) ID= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length Mannings n	RAIN mm/hr 0 0.00 1 1.90 3 2.16 1 2.51 3 3.03 3 3.90 5 6.69	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33 Dir. Conn RVIOUS (i) 0.02 7.20 2.00 10.00 1.250	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB STANDHYD (0002) ID= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length	RAIN mm/hr 0 0.00 1 1.90 3 2.16 1 2.51 3 3.03 3 3.90 5 6.69	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33 Dir. Conn RVIOUS (i) 0.02 7.20 2.00 10.00 1.250	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB STANDHYD (0002) ID= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length Mannings n NOTE: RAINE	Area Total Im (ha) = (mm) = (mm) = (mm) = (%)	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 1.2.67 2.83 3.00 3.17 3.33 3.00 3.17 3.333 Dir. Conn RVIOUS (i) 0.02 2.00 0.00 0.00 0.00 0.00 0.00 0.0	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.23 2.09 	E RAIN s mm/hr 1.96 1.85 1.75 1.67
CALIB STANDHYD (0002) Surface Area Dep. Storage Average Average Length Mannings n NOTE: RAINF	Area Total Im (ha)= (mm)= (m)= (M)= (M)= (M)= (M)= (M)= (M)= (M)= (M	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17 (ha) = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33 Dir. Conn RVIOUS (i) 0.02 7.20 2.00 10.00 0.250 D HYETOGRR' TIME	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN s mm/hr 1.96 1.85 1.75 1.67
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB STANDHYD (0002) ID= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length Mannings n NOTE: RAINE	Area Total Im (ha) = (mm) = (mm) = (mm) = (Rain mm/hr	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33 Dir. Conn RVIOUS (i) 0.02 2.00 10.00 2.00 10.00 0.10 0.00 10.00 0.01 0.00 10.00 0.00 10.00 0.00 10	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN s mm/hr 1.96 1.85 1.75 1.67
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.63 1.00 CALIB	Area Total Im (ha)= (mm)= (%)= (Mm)= (M	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17 (ha) = 0 p(%) = 95 MPERVIOLE 0.32 1.00 1.00 47.40 0.013 ANSFORMED hrs 1.166 hrs 1.167	RAIN mm/hr 12.56 51.29 16.17 8.96 6.38 5.03 4.19 0.34 .00 I SFORMEI RAIN mm/hr 5.69 12.56	Norfolk ' TIME ' hrs ' 2.33 2.33 2.50 2.67 2.83 3.00 3.17 3.33 Dir. Conn RVIOUS (i) 0.02 7.20 2.00 10.00 10.250 5.0 MIN. ' ' TIME ' hrs 12.250 2.333	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN s mm/hr 1.96 1.85 1.75 1.67
TIME hrs 0.00 0.17 0.33 0.50 0.67 0.83 1.00 CALIB STANDHYD (0002) ID= 1 DT= 5.0 min Surface Area Dep. Storage Average Slope Length Mannings n NOTE: RAINE TIME hrs 0.083 0.167 0.250	Area Total Im (ha) = (mm/hr 7	TIME hrs 1.17 1.33 1.50 1.67 1.83 2.00 2.17	RAIN mm/hr 12.56 6.38 5.03 4.19	Norfolk ' TIME ' hrs 2.33 2.50 2.67 2.83 3.00 3.17 3.33 Dir. Conn RVIOUS (i) 0.02 2.00 0.00 0.250 0 HYETOGRA ' TIME ' hrs 2.250 2.333 2.417	mm/hr hr 3.61 3.50 3.19 3.67 2.87 3.83 2.61 4.00 2.41 2.23 2.09	E RAIN s mm/hr 1.96 1.85 1.75 1.67

		TRAN	NSFORME	HYETOGRAI	PH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00 1	1.167	5.69	2.250	4.19	3.33	2.23
0.167	0.00 1	1.250	12.56	2.333	4.19	3.42	2.09
0.250	1.90 1	1.333	12.56	2.417	3.61	3.50	2.09
0.333			51.29	2.500	3.61	3.58	1.96
0.417				2.583		3.67	1.96
0.500						3.75	1.85
0.583				2.750		3.83	1.85
0.667				2.833		3.92	1.75
0.750				2.917		4.00	1.75
0.833					2.61		1.67
	3.89 2					4.17	1.67
	3.90 2						
1.083	5.69 2	2.167	5.03	3.250	2.23		
Max.Eff.Inten.(n	nm/hr)=	51.29		3.57			
	(min)			5.00			
Storage Coeff.							
Unit Hyd. Tpeak	(min) =	5.00		5.00			
Unit Hyd. peak				0.22			
					TOTAL	s	
PEAK FLOW	(cms) =	0.05		0.00	0.04	5 (iii)	
TIME TO PEAK		1.50		1.50	1.5	0	
	(mm) =			2.96	22.9		
TOTAL RAINFALL		25.00		25.00	25.0		
RUNOFF COEFFICIE	ENT =	0.96		0.12	0.9	12	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

 CN* = 74.0 Ia = Dep. Storage (Above)

 (ii) TIME STEP (DT) SHOULD BE SWALLER OR EQUAL

 THAN THE STORAGE COEFFICIENT.

 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CHAMBER(0003) IN= 2> OUT= 3	OUTFLOW: ON,	, UNDERDRAI	IN: OFF,	INFIL: OFF	
DT= 5.0 min	MAX STO VOL	(cu.m.) = 13	39.45 Boʻ	ttom Area(m2	220.71
	DEPTH (mm)	STORAGE	1	DEPTH (mm) 559.00 584.00 610.00 635.00 660.00 711.00 737.00 813.00 838.00 864.00 914.00	STORAGE
	(mm)	STORAGE (cu.m.) 0.00	1	(mm)	(cu.m.)
	0.00 25.00	4.42		559.00	89.57 92.98
	51.00		i	610.00	96.28
	76.00	13.21	i	635.00	99.46
	102.00	13.21 17.58 21.92	1	660.00	102.49
	127.00 152.00	21.92		686.00	105.33 107.85
	178.00	30.52	i	737.00	110.25
	203.00	34.78	1	762.00	112.54
	229.00	39.00	1	787.00	114.79
	254.00 279.00	43.19 47.34		813.00	117.03 119.27
	305.00	51 / 5	i	864.00	121.51
	330.00	55.52 59.54	1	889.00	123.75
	356.00	59.54		914.00	126.00 128.24
	381.00 406.00	63.51 67.42		914.00 940.00 965.00 991.00	128.24
	432.00	71.28	i	991.00	132.72
	457.00	75 09	1	1016.00	134.96
	483.00 508.00	78.83	- !	1041.00	137.20 139.45
	533.00	78.83 82.50 86.08		940.00 965.00 991.00 1016.00 1041.00 1067.00 0.00	0.00
	DEPTH (m)	DISCHARGE		4 1	DISCHARGE (cms)
	0.000	(cms)	i	0.610	0.024
	0.102	0.005	-	0.711	0.031
	0.203	0.009		0.813	0.036 0.041
	0.406			1.016	0.041
	0.508	0.013 0.015	i	(m) 0.610 0.711 0.813 0.914 1.016 1.067	0.046
	AREA	QPEAK		TPEAK	R.V.
INFLOW:ID= 2	(ha) 0.34	(cms) 0.045		(hrs) 1.50	(mm) 22.95
OUTFLOW:ID= 1	0.34	0.009		1.67	22.95
OVERFLOW: ID= 3	0.00	0.000		1.67	0.00
Volum	me Reduction	Rate[(RVin-F	RVout)/RV	in](%)=	0.00
	to reach Max	. , , ,		(Hr) =	1.67 7.96
Volu	me of water f	tor drawdown	in LID (cu.m.)=	7.96 35.95
****	* After simul	lation, water	r volume :	is not zero.	33.93
Junction Comman	d(0005)				
INFLOW : ID= 3(OUTFLOW: ID= 2(AREA	QPEAK	TPEAK	R.V.	
TMETOW . TD- 3/	(ha)	(cms)	(hrs)	(mm) 0.00	
OUTFLOW: ID= 2(0005) 0.00	0.00	0.00	0.00	
	-				
CALIB	1 3 200	(ha) = 0.1E			
STANDHYD (0001) ID= 1 DT= 5.0 min	Area Total Tmr	(na) = 0.15 o(%) = 77.00	Dir. Co	onn.(%)= 60	.00
	-				
Curfoss 7ms-	(ha) =	MPERVIOUS	PERVIOUS	(i)	
Dep. Storage	(mm) =	9.00	7.20		
Average Slope	(%)=	1.00	2.00		
Surface Area Dep. Storage Average Slope Length	(m) =	32.04	40.00		
Mannings n	=	0.013	0.250		
NOTE: RAI	NFALL WAS TRA	ANSFORMED TO	5.0 MI	N. TIME STEP	

		TRA	NSFORME	ED HYETOGRA	PH	
TIME	RAIN				RAIN TIME	RAIN
hrs					mm/hr hrs	
0.083	0.00	1.167	5.69	1 2.250	4.19 3.33	2.23
					4.19 3.42	
					3.61 3.50	
0.333	1.90	1.417	51.29	2.500	3.61 3.58	1.96
0.41	2.16	1.500	51.29	2.583	3.19 3.67	1.96
0.500	2.16	1.583	16.17	2.667	3.19 3.75	1.85
0.583	2.51	1.667	16.17	2.750	2.87 3.83	1.85
					2.87 3.92	
0.750	3.03	1.833	8.96	2.917	2.61 4.00	1.75
0.833	3.03	1.917	6.38	3.000	2.61 4.08	1.67
0.917	3.89	2.000	6.38	3.083	2.41 4.17	1.67
1.000	3.90	2.083	5.03	3.167	2.41	
				3.250		
Max.Eff.Inten.(r	nm/hr)=	51.29		12.45		
over	(min)	5.00		20.00		
Storage Coeff.				17.93 (ii)		
Unit Hyd. Tpeak				20.00		
Unit Hyd. peak	(cms) =	0.32		0.06		
					TOTALS	
PEAK FLOW					0.013 (ii	i)
TIME TO PEAK					1.50	
RUNOFF VOLUME					11.95	
TOTAL RAINFALL	. ,					
RUNOFF COEFFICIE	ENT =	0.64		0.24	0.48	
**** WARNING. STORAG	E COEFF I	IS SMAT.T.F	R THAN	TIME STEP!		

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

| Junction Command(0004) |

			AREA	QPEAK	TPEAK	R.V.
			(ha)	(cms)	(hrs)	(mm)
INFLOW :	ID= 1(0003)	0.34	0.01	1.67	22.95
OUTFLOW:	ID= 2(0004)	0.34	0.01	1.67	22.95

| CALIB

| CALIB | STANDHYD (0006)| |ID= 1 DT= 5.0 min | Area (ha)= 0.03
Total Imp(%)= 34.00 Dir. Conn.(%)= 34.00

IMPERVIOUS PERVIOUS (i) Surface Area (ha) =
Dep. Storage (mm) =
Average Slope (%) =
Length (m) =
Mannings n = PERVIOUS 0.02 7.20 2.00 40.00 0.250 0.01 1.00 1.00 13.90 0.013

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

			TRA	NSFORM	ΞD	HYETOGRA	PH		
TIME	RAIN	1	TIME	RAIN	1	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	1	hrs	mm/hr	1	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	1	1.167	5.69	1	2.250	4.19	3.33	2.23
0.167	0.00	1	1.250	12.56	1	2.333	4.19	3.42	2.09
0.250	1.90	1	1.333	12.56	1	2.417	3.61	3.50	2.09
0.333	1.90	1	1.417	51.29	1	2.500	3.61	3.58	1.96
0.417	2.16	1	1.500	51.29	1	2.583	3.19	3.67	1.96
0.500	2.16	1	1.583	16.17	1	2.667	3.19	3.75	1.85
0.583	2.51	1	1.667	16.17	1	2.750	2.87	3.83	1.85
0.667	2.51	1	1.750	8.96	1	2.833	2.87	3.92	1.75
0.750	3.03	1	1.833	8.96	1	2.917	2.61	4.00	1.75
0.833	3.03	1	1.917	6.38	1	3.000	2.61	4.08	1.67
0.917	3.89	1	2.000	6.38	1	3.083	2.41	4.17	1.67
1.000	3.90	1	2.083	5.03	1	3.167	2.41		
1.083	5.69	1	2.167	5.03	1	3.250	2.23		
	m/hr)=		51.29			2.29			
	(min)		5.00			5.00			
	(min) =		1.02	(ii)	3	2.98 (ii)			
Tpeak	(min) =		5.00		3	5.00			

Max.Eff.In Storage Co Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) = 35.00 0.03 0.00 2.25 2.96 25.00 0.34 PEAK FLOW (cms) =
TIME TO PEAK (hrs) =
RUNOFF VOLUME (mm) =
TOTAL RAINFALL (mm) =
RUNOFF COEFFICIENT = 0.00 0.001 (iii) 1.50 9.08 1.50 25.00

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

- (i) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.

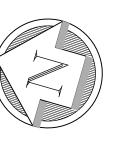
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

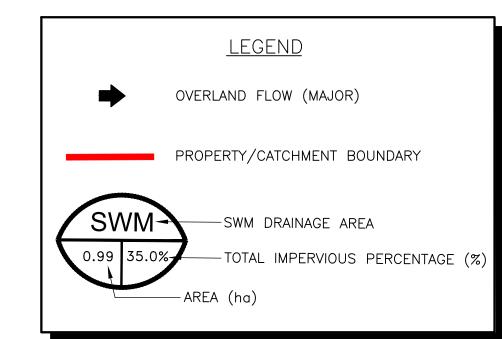
ADD HYD (0007)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0004):	0.34	0.009	1.67	22.95
+ ID2= 2 (0006):	0.03	0.001	1.50	9.08
ID = 3 (0007):	0.37	0.010	1.50	21.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

APPENDIX E

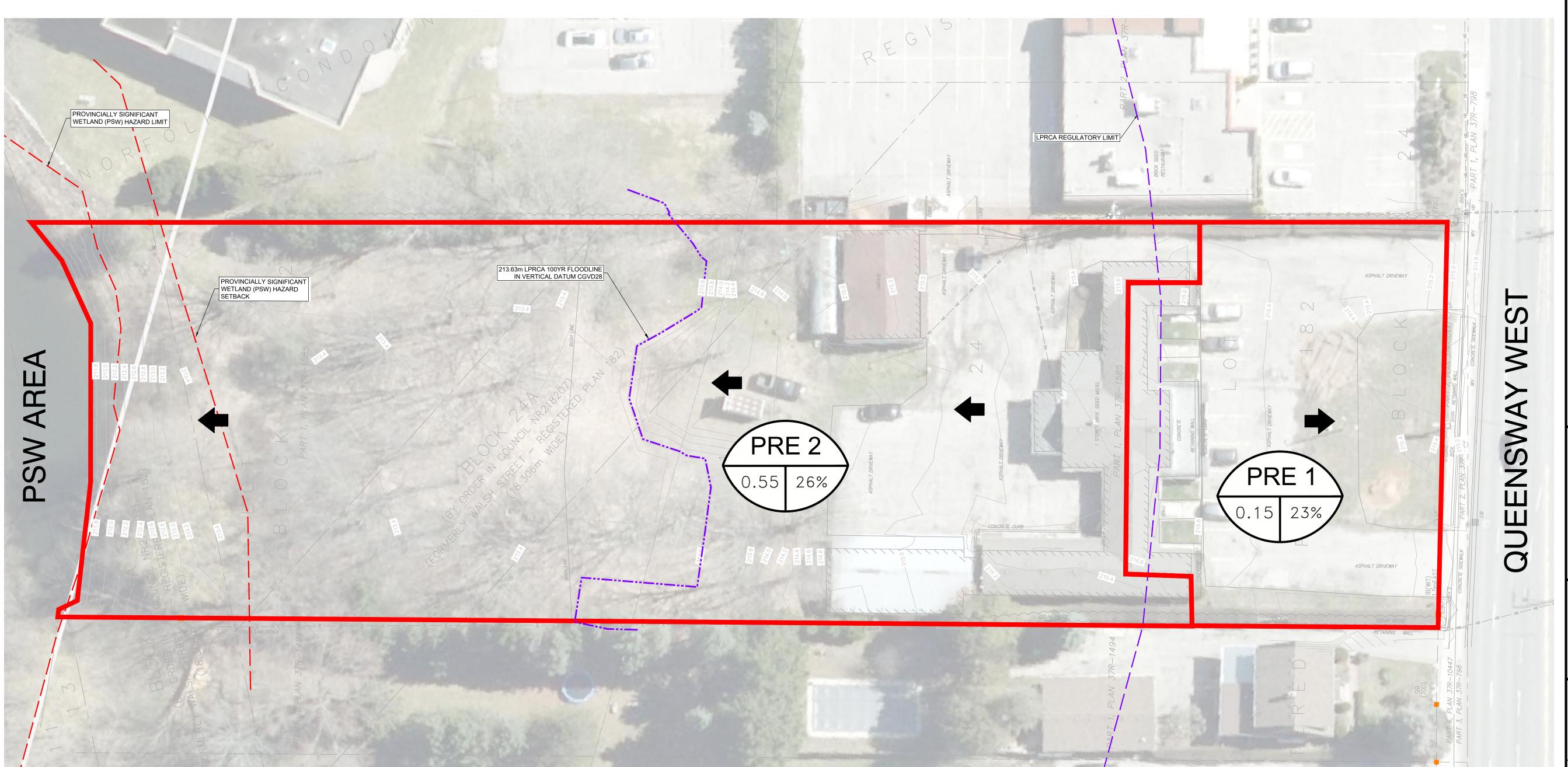
DWG PRE – Pre-Development Drainage Areas DWG POST – Post-Development Drainage Areas

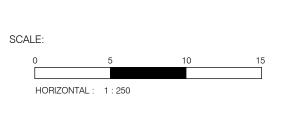




REV. No.	DATE	REVISION

NOTE:
THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G. DOUGLAS VALLEE LTD. CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.







G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

Stamp

Project Title

BARREL RESTAURANT

131 QUEENSWAY WEST
SIMCOE

NORFOLK COUNTY

PRE-DEVELOPMENT DRAINAGE AREAS

Designed by:

NBN

Checked by:

Drawn By:

NBN

NBN

Date Started:

June 25, 2024

Drawing Scale:

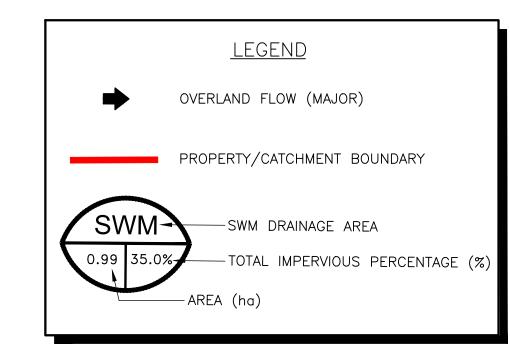
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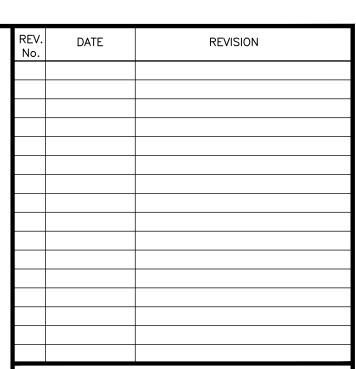
Project No.

18-057

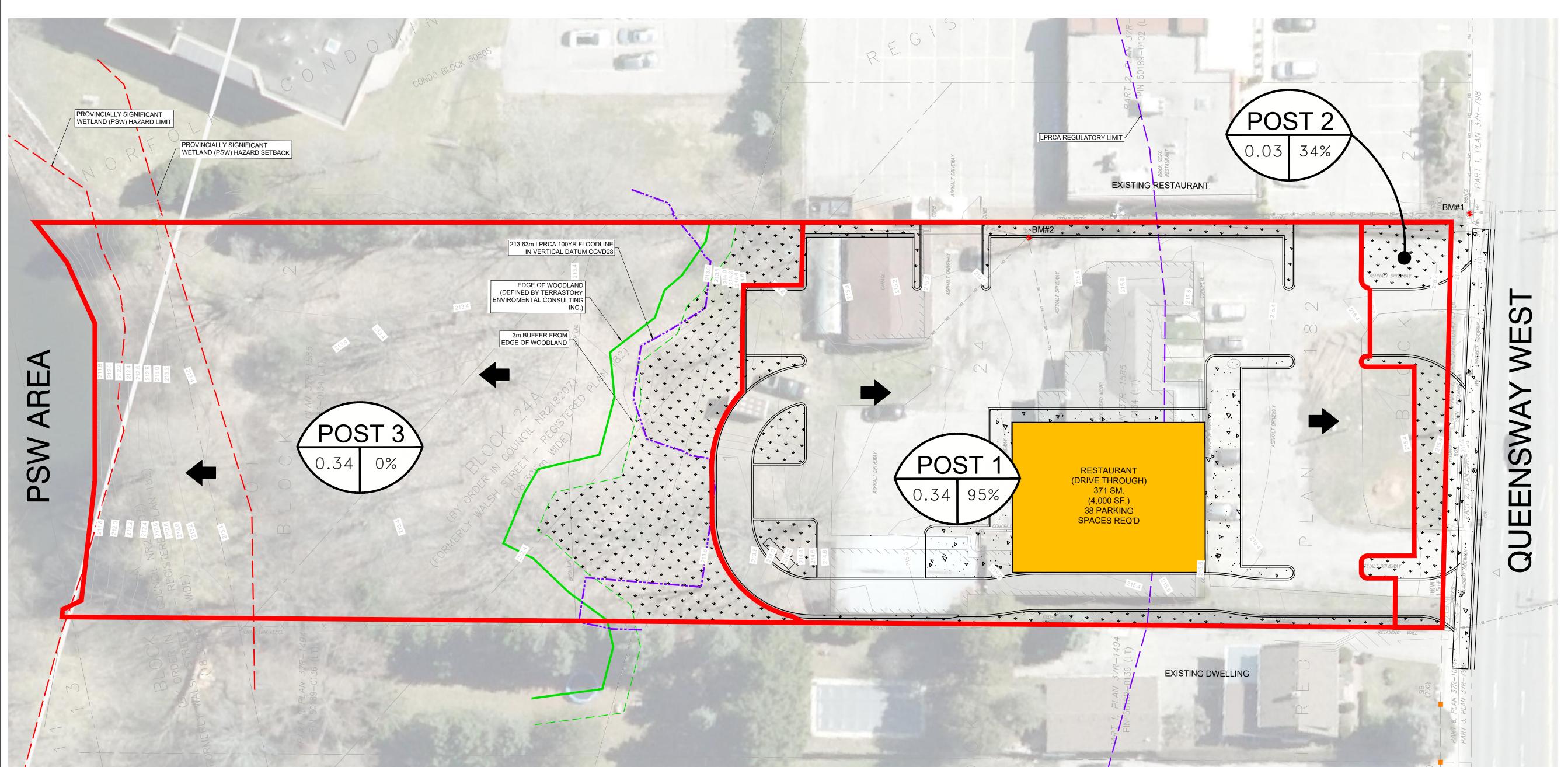
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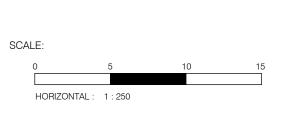






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G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

,

Project Title

BARREL RESTAURANT
131 QUEENSWAY WEST

SIMCOE NORFOLK COUNTY

POST-DEVELOPMENT DRAINAGE AREAS

Designed by :

NBN

Checked by :

Drawn By :

NBN

Date Started :

9/10/24

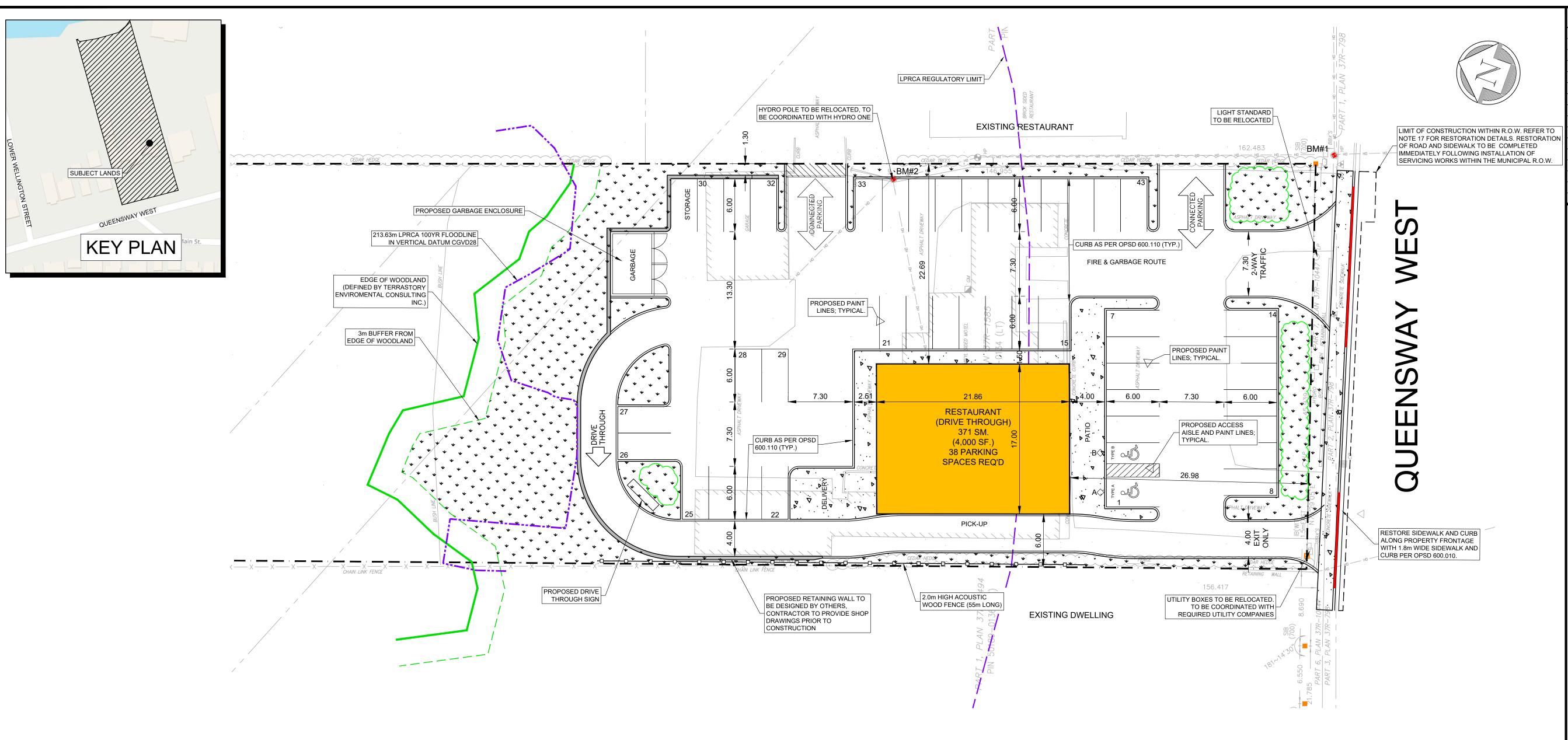
Drawing Scale:

AS SHOWN

Project No.

18-057

POST



	PROPOSED PARKING TABLE						
BUILDING	USAGE	AREA (sq. m)	REQUIRED PARKING	Total Spaces			
ROPOSED	RESTAURANT, FAST FOOD WITH DRIVE-THRU	371	1 SPACE / 10 sq. m OF USABLE FLOOR AREA (NORFOLK BY-LAW 4.9)	38			
	TOTAL PROPOSED PARKING	SPACES PROVI	DED	43			
REQUIRED ACCESSIBLE SPACES (NORFOLK BY-LAW 4.3.3)							

ZONING TABLE 6.3 SERVICE COMMERCIAL ZONE (CS) - THE ZONING BY-LAW OF NORFOLK COUNTY						
		qq) RESTAURANT				
6.3.1	PERMITTED USES	rr) RESTAURANT,	FAST-FOOD			
		ss) RESTAURANT,	TAKE-OUT			
6.3.2 a) ii)	MINIMUM LOT AREA: INTERIOR LOT	450 sq. m	6995.43 sq. m	EXISTING CONDITION		
6.3.2 b) ii)	MINIMUM LOT FRONTAGE: INTERIOR LOT	15.0 m	45.96m	EXISTING CONDITION; ALONG QUEENSWAY WEST		
6.3.2 c)	MINIMUM FRONT YARD	3 m	30.48 m			
6.3.2 d)	MINIMUM EXTERIOR SIDE YARD	3 m	N/A			
6.3.2 e)	MINIMUM INTERIOR SIDE YARD	3 m	6.0 m			
6.3.2 f)	MINIMUM REAR YARD	9 m	100.46m			
6.3.2 g)	MINIMUM USABLE FLOOR AREA: FOR A DWELLING UNIT IN A NON-RESIDENTIAL UNIT	40 sq. m	N/A	NO PROPOSED DWELLING UNITS.		
6.3.2 h)	MAXIMUM BUILDING HEIGHT	11 m	TBC	BUILDINGS STILL BEING DESIGNED; TO BE CONFIRMED		
6.3.2 i)	MAXIMUM LOT COVERAGE	35%	371.60 sq. m (5.3%)			
6.3.2 j)	MAXIMUM USABLE FLOOR AREA: OF A FRUIT OR VEGETABLE OUTLET	200 sq. m	N/A	NO PROPOSED FRUIT AND VEGETABLE OUTLETS		
6.3.2 k)	OUTDOOR STORAGE	SEE NOTE 1	N/A	NO OUTDOOR STORAGE PROPOSED		
NOTE 1:	PROHIBITED IN A FRONT YARD AND WITHIN 3 METR	ES OF ANY LOT LINE	ADJOINING A RES	IDENTIAL ZONE.		

SITE PLAN LEGEND	
	PROPOSED ENTRANCE / EXIT
4 . 44	PROPOSED CONCRETE 125mm CLASS C-2 CONCRETE 150mm GRANULAR 'A'
* *	PROPOSED LANDSCAPED AREA 100mm TOPSOIL & SOD
G	PTD. WHEELCHAIR SIGN ON ASPHALT
	PROPOSED RETAINING WALL
	PROPOSED DROPPED CURB AS PER OPSD 600.110
	PROPOSED BARRIER CURB AS PER OPSD 600.110
	PROPOSED BUILDING
A	Rb-93 SIGNAGE WITH "VAN ACCESSIBLE" TAB BELOW AND SEPARATE
B	Rb-93 SIGNAGE
	LPRCA REGULATION LIMIT
	LPRCA 213.63m 100YR FLOODLINE
	EDGE OF WOODLAND
	3m SETBACK FROM EDGE OF WOODLAND
	PROPERTY LINE
	PROPOSED SNOW STORAGE LOCATION

	REV. No.	DATE	REVISION
	0	03/18/2024	ISSUED FOR CLIENT REVIEW
	1	06/28/2024	SPA SUBMISSION 1
	2	08/14/24	ISSUED FOR CLIENT REVIEW
	3	09/11/2024	SPA SUBMISSON 2
J			
	NC	OTE:	

THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G DOUGLAS VALLEE LTD. CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.

LEGAL DESCRIPTION

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY 10TH, 2023

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS

BM #1: SPIKE IN FACE OF HYDRO POLE	
ELEV	215.
BM #2: SPIKE IN FACE OF HYDRO POLE	_
FI FV	215

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C100 SITE PLAN 18-057-C101 SERVICING PLAN 18-057-C102 GRADING PLAN

18-057-C103 EROSION AND SEDIMENT CONTROL PLAN 18-057-C104 REMOVALS PLAN

18-057-C105 OVERALL SITE PLAN 18-057-GN GENERAL NOTES

20-128-STM STORM DRAINAGE AREAS PLAN

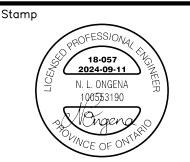
PREGIMINARY

NOT TO BE USED FOR CONSTRUCTION



G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4

(519) 426-6270 2024-09-11



Designed by :

BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

SITE PLAN Drawn By :

Checked by :

rawing Scale : AS SHOWN

18-057

NOTES:

PARKING AND AISLE PAVEMENT TO ADHERE TO PAVEMENT DESIGNS CONTAINED WITHIN THE NORFOLK COUNTY DESIGN CRITERIA:

300mm GRANULAR B 100% CRUSHED LIMESTONE

GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE SITE WITH THE COUNTY AND OBTAIN ALL NECESSARY PERMITS AND

GENERAL CONTRACTOR TO EXECUTE WORK TO CONSTRUCTION SITE ACCESS UNDER SUPERVISION OF THE ENGINEER. REFER TO ENTRANCE PERMIT REQUIREMENTS WHERE APPLICABLE. DRIVEWAY ENTRANCE TO BE MODIFIED OR INSTALLATION OF NEW ENTRANCE AS PER NORFOLK

. CONCRETE ISLAND / SIDEWALK WORK TO BE COORDINATED WITH OPSD 310.010, 310.020, 310.030, 310.031, 310.033, 310.040, 310.050, 552.010.

RESTORATION OF CONCRETE SIDEWALK TO MATCH EXISTING CONDITIONS. PATCH AND REPAIR ALL DISTURBED CONCRETE SIDEWALK /

LIGHTING MUST BE DIRECTED ON SITE AND MUST NOT SPILL OVER TO ADJACENT PROPERTIES OR STREETS. PROVIDE "HOUSE SHIELD"

TRAFFIC CONTROL SHALL BE IMPLEMENTED BY THE CONTRACTOR IN ACCORDANCE WITH OTM TEMPORARY CONDITIONS BOOK 7. APPROVAL FOR THE TRAFFIC CONTROL WILL BE SOUGHT FROM THE MUNICIPALITY BY THE CONTRACTOR.

12. THE OWNER'S CONTRACTOR WILL BE REQUIRED TO OBTAIN ROAD CUT PERMITS.

13. FULL PUBLIC SERVICES ARE TO BE CONSTRUCTED, OR REPLACED IF DAMAGED (SIDEWALKS, BOULEVARDS, DRIVEWAY APPROACHES, ETC.). 14. CONTRACTOR TO LOCATE AND ABANDON ANY SURPLUS SANITARY AND PRIVATE STORM DRAINS. SANITARY AND PRIVATE STORM DRAINS TO BE CAPPED IN CONCRETE AT THE PROPERTY LINE. ANY SURPLUS WATER SERVICES ARE TO BE ABANDONED AT THE MAIN AS PER MUNICIPALITY STANDARDS.

15. CONTRACTOR TO OBTAIN A SANITARY LATERAL CONNECTION PERMIT FOR PROPOSED SANITARY SERVICE.

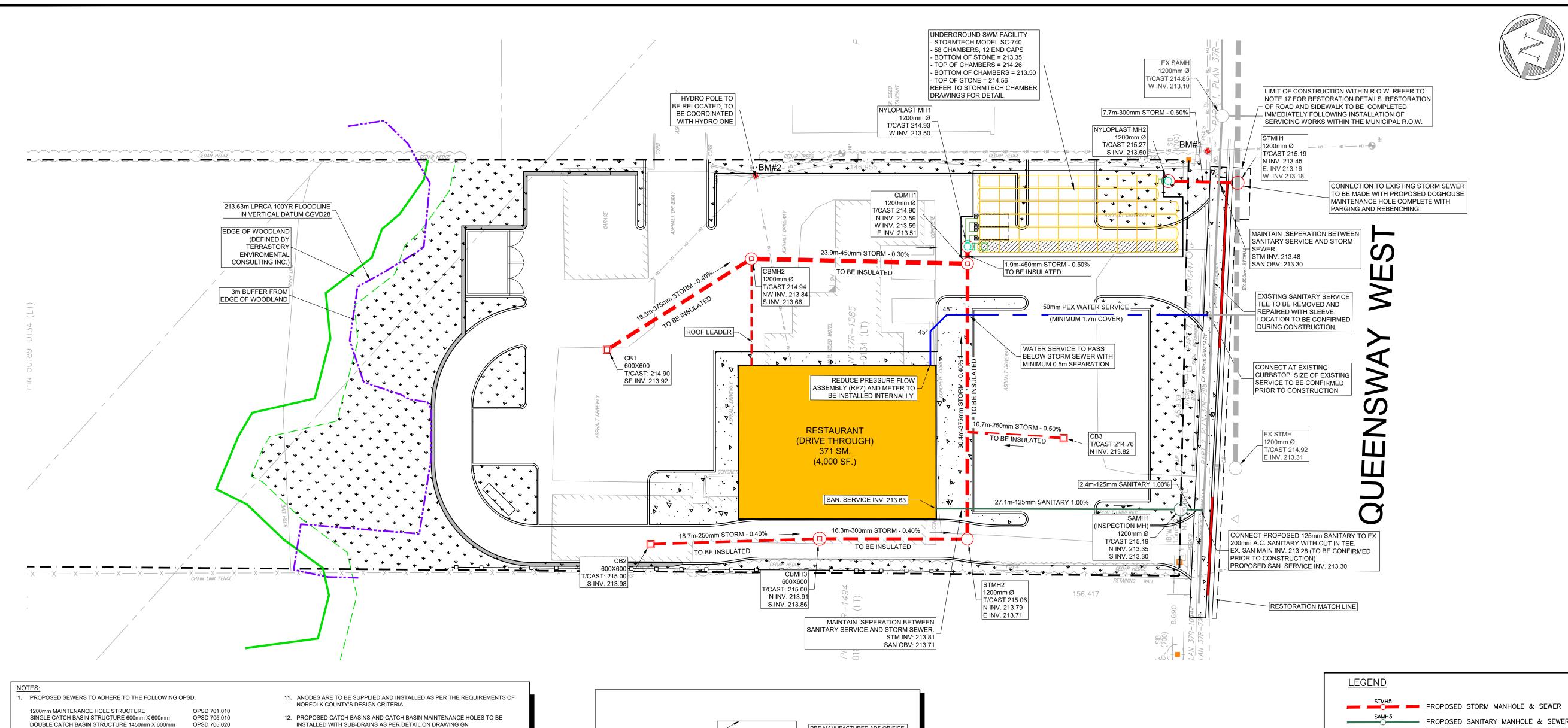
16. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT FOR ANY PROPOSED WORK IN THE MUNICIPALLY OWNED ROAD.

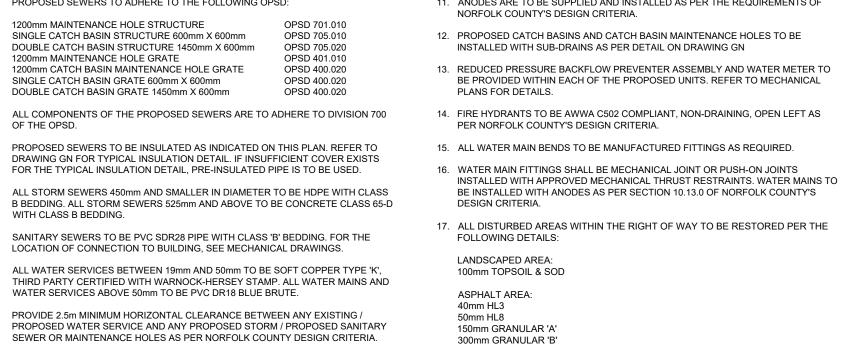
17. CONCRETE SPLASH PADS TO BE PROVIDED WHERE ROOF WATER LEADERS DISCHARGE TO GRADE.

18. OWNER TO OBTAIN SITE ALTERATION PERMIT PRIOR TO <u>ANY</u> WORK BEING PERFORMED.

19. ALL PROPOSED CONCRETE CURBS WITHIN THE SUBJECT LANDS TO CONFORM TO OPSD 600.110 UNLESS OTHERWISE NOTED.

150mm GRANULAR A 100% CRUSHED LIMESTONE GARBAGE AND RECYCLING STORAGE FENCING AS PER DETAILS ON DRAWINGS C108. APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER NORFOLK COUNTY REQUIREMENTS. 1 TYPE A ACCESSIBLE SPACES PROPOSED 1 TYPE B PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCHMARKS, ELEVATIONS, DIMENSIONS AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER. B. AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES. WHERE NEEDED TO COMPLETELY ELIMINATE GLARE TO ADJACENT PROPERTIES. ALL EXTERIOR LIGHTING TO BE DARK SKY COMPLIANT. 10. COORDINATE WITH SITE GRADING PLAN FOR PROPOSED FINAL FINISH GRADE ELEVATIONS AND DRAINAGE SLOPES.





WHERE A WATER SERVICE CROSSES ABOVE OR BELOW A STORM OR SANITARY SEWER, A MINIMUM VERTICAL CLEARANCE OF 0.5m SHALL BE PROVIDED.

WHERE A STORM OR SANITARY SEWER CROSSES ANOTHER STORM OR SANITARY

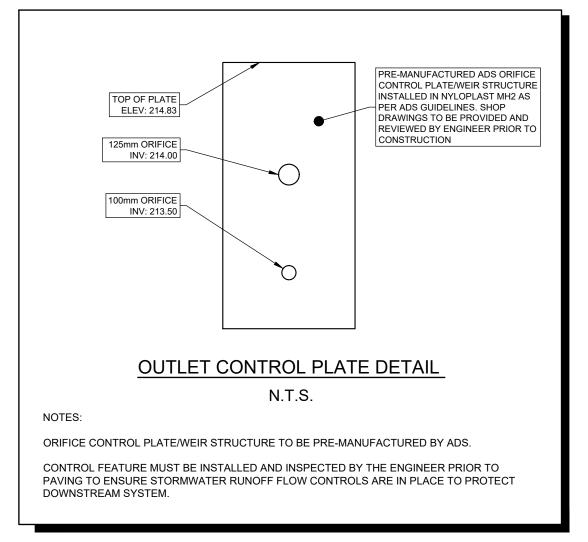
0. VALVES ARE TO BE INSTALLED 1.0m FROM THE PROPOSED BUILDING FOUNDATION

FOR EACH PROPOSED WATER SERVICE. VALVES AND VALVE BOXES ARE TO BE

SEWER, A MINIMUM VERTICAL CLEARANCE OF 0.15m SHALL BE PROVIDED.

WATER SERVICES SHALL MAINTAIN A MINIMUM COVER OF 1.7m.

SIZED TO MATCH THE WATER SERVICE SIZE.



REV. No.	DATE	REVISION
0	03/18/2024	ISSUED FOR CLIENT REVIEW
1	06/28/2024	SPA SUBMISSION 1
2	08/16/2024	ISSUED FOR CLIENT REVIEW
2	09/11/2024	SPA SUBMISSION 2
NC	NTC.	

THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G DOUGLAS VALLEE LTD. CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.

LEGAL DESCRIPTION PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE

TOWN OF SIMCOE IN NORFOLK COUNTY. TOPOGRAPHIC INFORMATION

SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS BM #1: SPIKE IN FACE OF HYDRO POLE BM #2: SPIKE IN FACE OF HYDRO POLE

DRAWING LIST

PROPOSED SANITARY SERVICE

PROPOSED RETAINING WALL

PROPOSED CONCRETE

PROPOSED BUILDING

PROPOSED WATERMAIN

PROPERTY LINE

G. DOUGLAS VALLEE LIMITED DRAWINGS 18-057-C100 SITE PLAN

18-057-C101 SERVICING PLAN 18-057-C102 GRADING PLAN 18-057-C103 EROSION AND SEDIMENT CONTROL PLAN 18-057-C104 REMOVALS PLAN 18-057-C105 OVERALL SITE PLAN

18-057-GN GENERAL NOTES 18-057-STM STORM DRAINAGE AREAS PLAN

PRINTING

NOT TO BE USED FOR CONSTRUCTION

SCALE: HORIZONTAL: 1:250



G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4 (519) 426-6270

Stamp 2024-09-11 100553190

Project No.

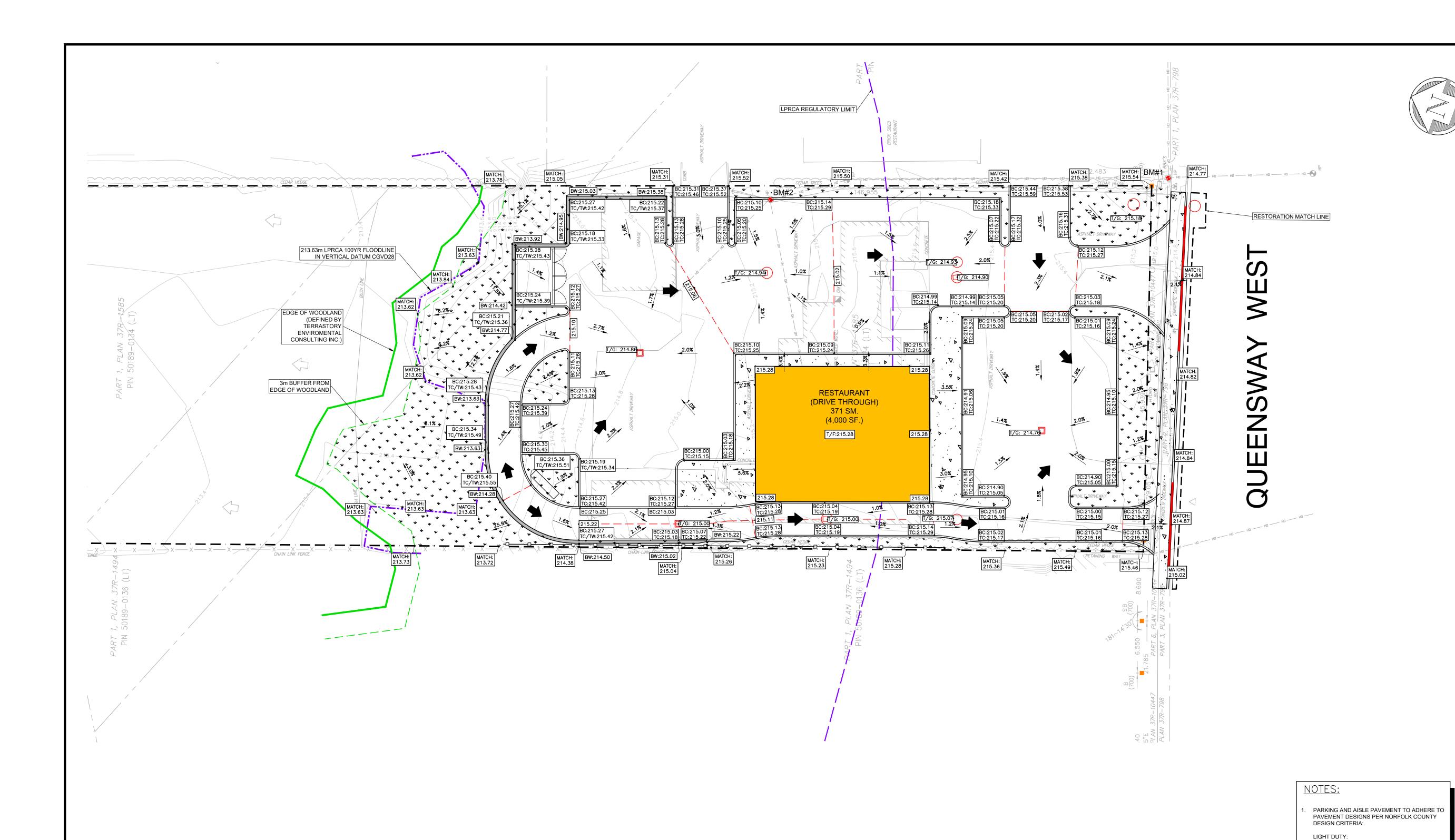
BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

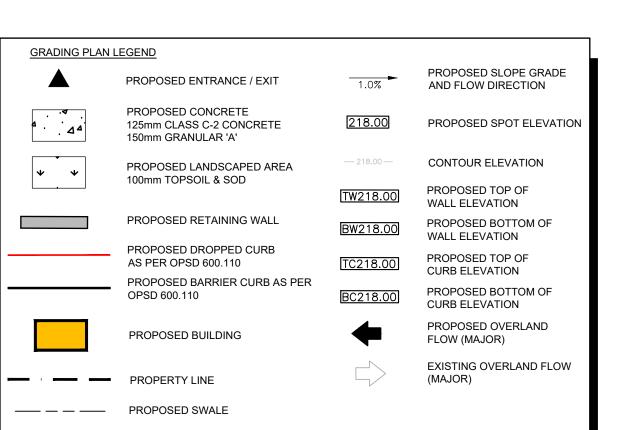
Drawing Title SERVICING PLAN

Designed by : Drawn By : NLO/NBN Checked by : Oate Started : 9/11/2

rawing Scale AS SHOWN

18-057





--- PROPOSED GRADE BREAK

ISSUED FOR CLIENT REVIEW 08/16/2024 09/11/2024 SPA SUBMISSION 2

REVISION

ISSUED FOR CLIENT REVIEW

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DOUGLAS VALLEE LTD. CAN NOT ACCEPT RESPONSIBILITY FOR
DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.

LEGAL DESCRIPTION PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE

03/18/2024

TOWN OF SIMCOE IN NORFOLK COUNTY. TOPOGRAPHIC INFORMATION

SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY 10TH, 2023 USING THE CAN-NET NETWORK, UTM ZONE 17 NAD83 HTv2.0 (2010) CGVD28.

APPLICANT INFORMATION

ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BM #1: SPIKE IN FACE OF HYDRO POLE

..215.38m BM #2: SPIKE IN FACE OF HYDRO POLE ..215.88m

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C101 SERVICING PLAN

18-057-C102 GRADING PLAN 18-057-C103 EROSION AND SEDIMENT CONTROL PLAN

18-057-C104 REMOVALS PLAN

18-057-C105 OVERALL SITE PLAN

18-057-GN GENERAL NOTES 20-128-STM STORM DRAINAGE AREAS PLAN

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

HORIZONTAL: 1:250



G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH

Architects & Planners

SIMCOE, ONTARIO N3Y 3W4 (519) 426-6270



40mm HL3

50mm HL8

150mm GRANULAR A

300mm GRANULAR B

REQUIREMENTS.

GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE SITE WITH THE COUNTY AND OBTAIN ALL NECESSARY PERMITS AND

GENERAL CONTRACTOR TO EXECUTE WORK TO

SUPERVISION OF THE ENGINEER. REFER TO

ENTRANCE PERMIT REQUIREMENTS WHERE

APPLICABLE. DRIVEWAY ENTRANCE TO BE MODIFIED OR INSTALLATION OF NEW

ENTRANCE CURBS TO MATCH EXISTING AS

ELEVATIONS, DIMENSIONS AND GRADES MUST

BE CHECKED BY THE CONTRACTOR AND ANY

DISCREPANCIES REPORTED TO THE ENGINEER.

AT LEAST TWO DIFFERENT BENCHMARKS MUST

COORDINATE WITH SITE GRADING PLAN FOR

PROPOSED FINAL FINISH GRADE ELEVATIONS

TRAFFIC CONTROL SHALL BE IMPLEMENTED BY

FOR THE TRAFFIC CONTROL WILL BE SOUGHT

THE CONTRACTOR IN ACCORDANCE WITH OTM TEMPORARY CONDITIONS BOOK 7. APPROVAL

APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER NORFOLK COUNTY

CONSTRUCTION SITE ACCESS UNDER

ENTRANCE AS PER NORFOLK COUNTY

REQUIREMENTS. PROVIDE NEW CONC.

PRIOR TO THE COMMENCEMENT OF

CONSTRUCTION, ALL BENCHMARKS,

BE REFERRED TO AT ALL TIMES.

FROM THE MUNICIPALITY BY THE

AND DRAINAGE SLOPES.

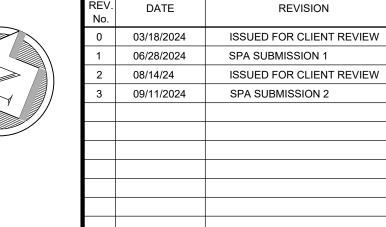
CONTRACTOR.

BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

GRADING PLAN

Designed by :		Drawn By :	
	NLO/NBN		NE
Checked by:		Date Started :	
	NLO/JTI		9/26/2
Drawing Scale	:	Drawing No.	





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LEGAL DESCRIPTION

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY 10TH, 2023

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS BM #1: SPIKE IN FACE OF HYDRO POLE

BM #2: SPIKE IN FACE OF HYDRO POLE

.....215.38m

..215.88m

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS 18-057-C100 SITE PLAN

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18-057-GN GENERAL NOTES 20-128-STM STORM DRAINAGE AREAS PLAN

PREGININARY

NOT TO BE USED

FOR CONSTRUCTION

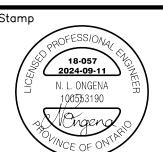
SCALE:

G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH

Consulting Engineers,

Architects & Planners

SIMCOE, ONTARIO N3Y 3W4 (519) 426-6270



BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

Drawing Title **EROSION AND SEDIMENT CONTROL PLAN**

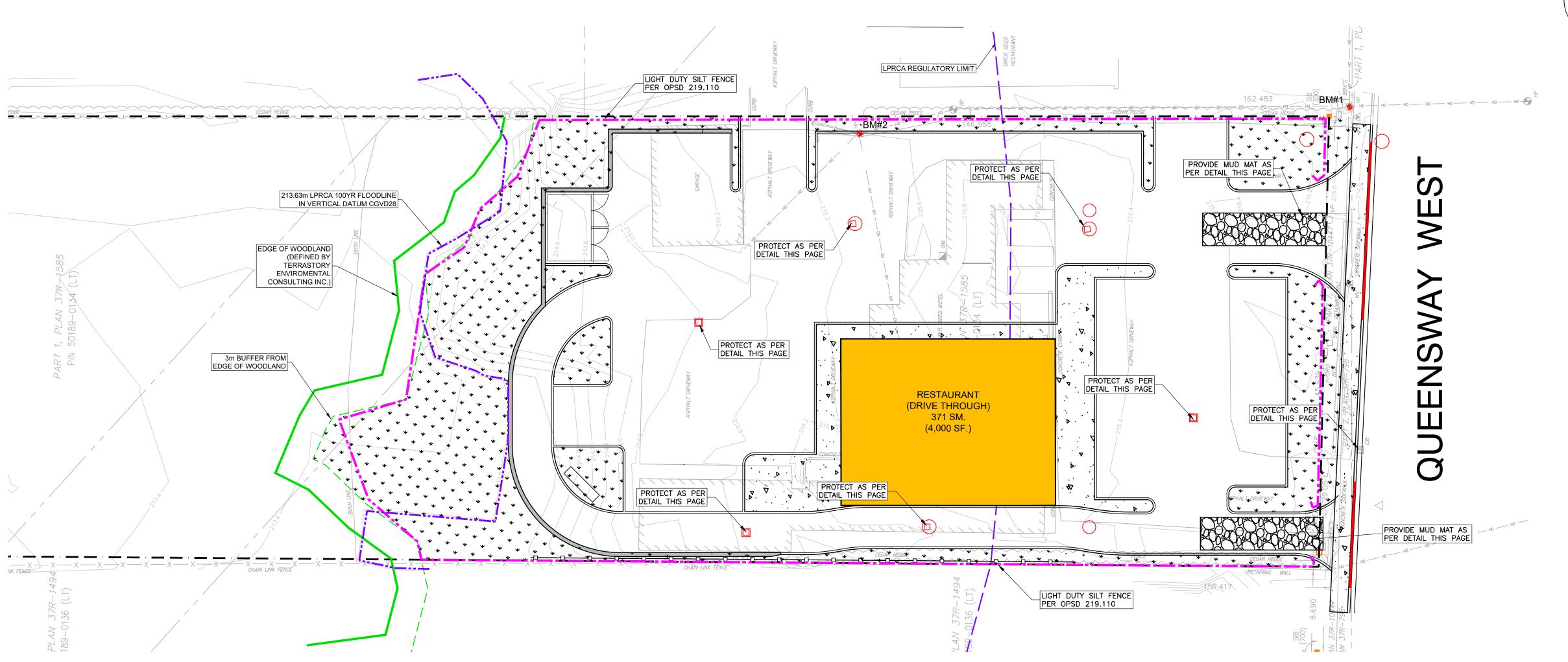
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Project No.

AS SHOWN 18-057

9/11/2



EROSION CONTROL NOTES THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DESIGN AND PROVISION OF ALL SEDIMENT CONTROL MEASURES AS MAY 5. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED BE REQUIRED TO PROTECT THE WORK SITE OR THE ADJACENT LANDS, REGARDLESS OF THE SOURCE OR ORIGIN OF EROSION OR SEDIMENTS. IF THE ENGINEER IS NOT SATISFIED WITH THE EXTENT OF THE MEASURES TAKEN, THE ENGINEER MAY DIRECT

THAT ADDITIONAL CONTROLS BE PUT IN PLACE. THE ENGINEER'S REQUIREMENTS FOR SEDIMENT AND EROSION CONTROL SHALL BE CONSIDERED ABSOLUTE MINIMUMS. THE ULTIMATE RESPONSIBILITY TO ENSURE THAT THE MEASURES ARE ADEQUATE SHALL LIE SOLELY ON THE CONTRACTOR. ANY DAMAGE RESULTING FROM FAILURE OF THESE MEASURES SHALL

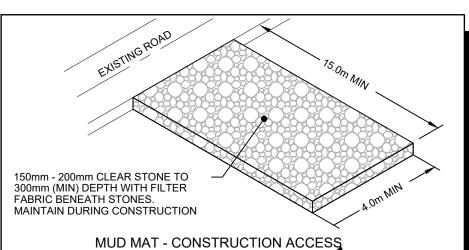
BE REPAIRED AT THE CONTRACTOR'S EXPENSE. PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION.

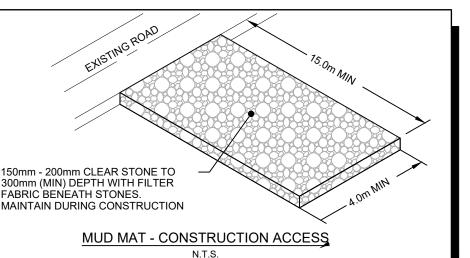
RESTORATION IS COMPLETE. MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION.

ALL EROSION CONTROL MEASURES TO BE IN PLACE UNTIL

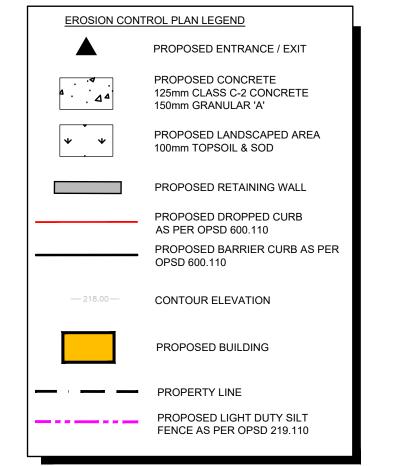
FLOWING STATE (TERRAFIX 270R OR APPROVED EQUIVALENT).

- 6. MINIMIZE AREA DISTURBED DURING CONSTRUCTION. 7. ALL DEWATERING TO BE DISPOSED OF IN AN APPROVED
- SEDIMENTATION BASIN. 8. PROTECT ALL CATCH BASINS, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE AND MAINTAIN IN FREE
- REFER TO DETAIL THIS PAGE. 9. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION INCLUDING OIL GRIT SEPARATOR.
- 10. PREVENT WIND-BLOWN DUST.
- 11. CONTRACTOR TO PROVIDE MUD MAT AT ALL CONSTRUCTION ENTRANCES.





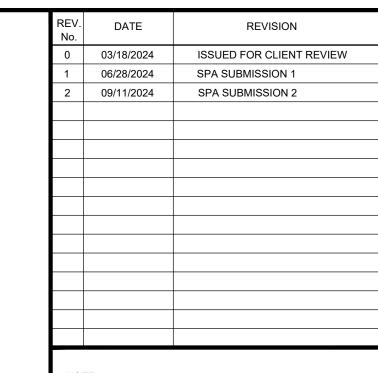
GRATE TO BE DOUBLE -WRAPPED WITH WOVEN FRAME AND GEOTEXTILE NOTES: FILTER CLOTH WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE. WOVEN GEOTEXTILE TO HAVE A MINIMUM EQUIVALENT OPENING SIZE OF 0.15mm AND A MAXIMUM EQUIVALENT OPENING SIZE OF WOVEN GEOTEXTILE TO BE REPLACED PERIODICALLY WHEN ACCUMULATED SEDIMENTS INTERFERES WITH DRAINAGE. CLEAR STONE TO BE PLACED ON TOP OF WRAPPED CATCHBASIN TO PROTECT GEOTEXTILE FROM LARGE OBJECTS.



CATCHBASIN SEDIMENT PROTECTION DETAIL

N.T.S.





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LEGAL DESCRIPTION

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY

APPLICANT INFORMATION
APPLICANT: TOM DAICOS

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS

BM #1: SPIKE IN FACE OF HYDRO POLE

.....215.38m BM #2: SPIKE IN FACE OF HYDRO POLE ..215.88m

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS 18-057-C100 SITE PLAN

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PREDIMINARY

NOT TO BE USED



Architects & Planners G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4

(519) 426-6270 1005)53190



BARREL RESTAURANT

131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

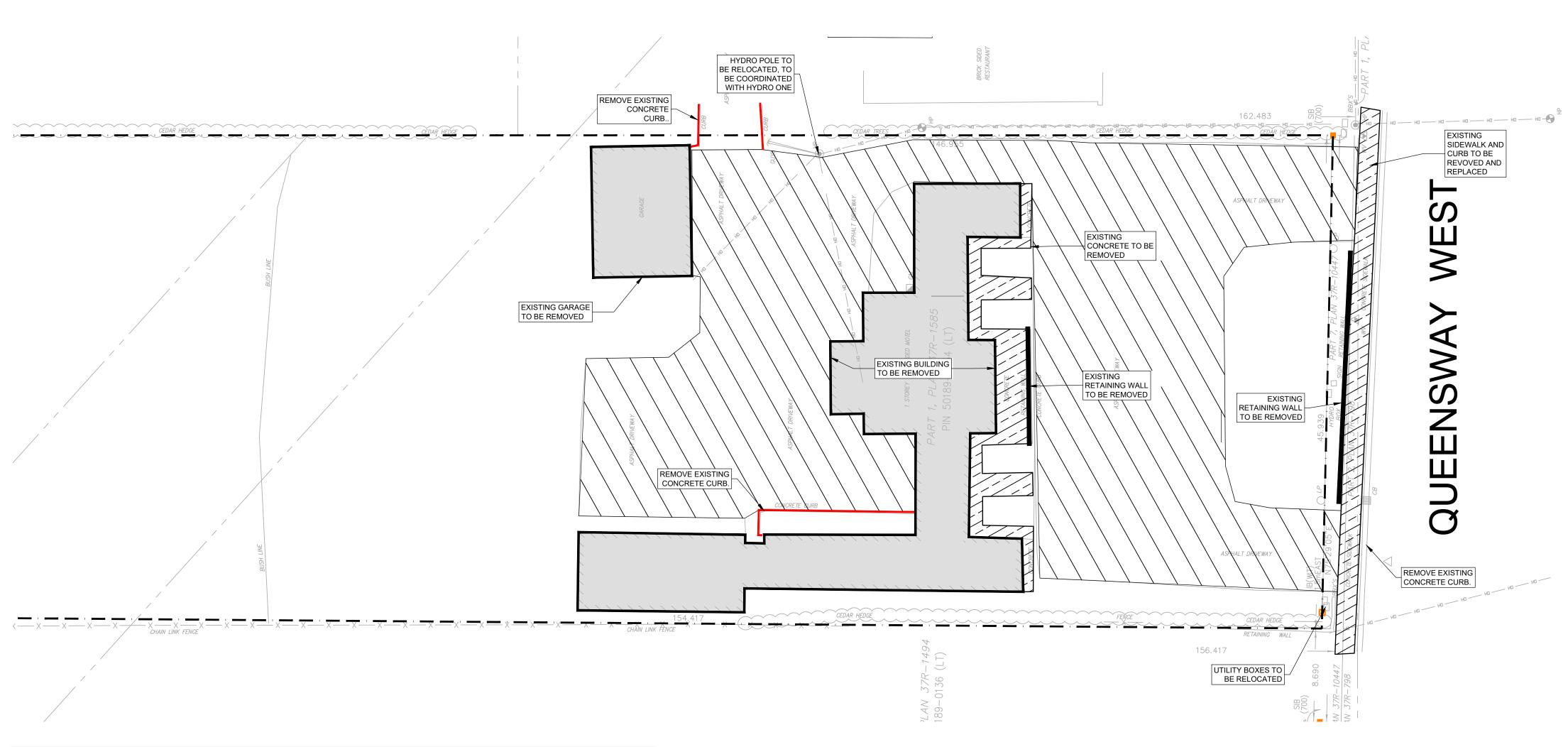
Drawing Title REMOVALS PLAN

18-057

Designed by : Drawn By : NLO/NBN Checked by:

9/11/24 Orawing Scale :

AS SHOWN



REMOVE ALL ITEMS THAT ARE IN CONFLICT WITH THE PROPOSED WORKS, OR AS DIRECTED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR REMOVALS THAT ARE NOT SPECIFICALLY NOTED ON THESE DRAWINGS.

PRIOR TO ANY TREE REMOVALS NORFOLK COUNTY FORESTRY STAFF MUST BE CONTACTED.

IF THE EXCESS SOIL IS TO BE REMOVED FROM THE SITE FOR OFF SITE RE-USE, THE FOLLOWING CONDITIONS MUST BE

- THE RECEIVING SITE FOR EC AND/OR SAR IMPACTED SOIL MUST BE A HIGHWAY SITE;
- THE WORK MUST BE COMPLETED IN ACCORDANCE WITH LOCAL BY-LAWS GOVERNING SOIL MOVEMENT AND/OR PLACEMENT AT OTHER SITES;
- ALL ANALYTICAL RESULTS AND ENVIRONMENTAL ASSESSMENT REPORTS MUST BE FULLY DISCLOSED TO THE RECEIVING SITE OWNERS/AUTHORITIES AND THEY HAVE AGREED TO RECEIVE THE MATERIAL;
- THE APPLICABLE SCSS FOR THE RECEIVING SITE HAVE BEEN DETERMINED, AS CONFIRMED BY THE ENVIRONMENTAL CONSULTANT AND THE SCSS ARE CONSISTENT WITH THE CHEMICAL QUALITY OF THE SOIL ORIGINATING AT THE SOURCE SITE; • TRANSPORTATION AND PLACEMENT OF THE EXCESS SOIL IS MONITORED BY THE ENVIRONMENTAL CONSULTANT TO CHECK THE MATERIAL IS APPROPRIATELY
- PLACED AT THE PRE-APPROVED SITE; • THE RECEIVING SITE MUST BE ARRANGED AND/OR APPROVED WELL IN ADVANCE OF EXCAVATION IN ORDER TO AVOID DELAYS DURING CONSTRUCTION. AS WELL,
- IT IS NOTED THE CHEMICAL TESTING REQUIREMENTS FOR VARIOUS RECEIVING SITES IS SITE-SPECIFIC AND ADDITIONAL TESTING MAY BE REQUIRED. THE EXCAVATION WORK SHOULD BE CONDUCTED IN ACCORDANCE WITH A WRITTEN SOIL MANAGEMENT PLAN PREPARED BY A QUALIFIED PROFESSIONAL TO ENSURE THAT ALL EXCESS EXCAVATED MATERIAL IS TESTED AND MANAGED APPROPRIATELY, AND THAT IMPORTED FILL MATERIAL IS OF SUITABLE QUALITY AND

MEETS THE SCSS APPLICABLE TO THE SITE. RE-USE OF EXCESS EXCAVATED SOIL ON SITE IS ALSO SUBJECT TO ACCEPTANCE FOR RE-USE BY THE GEOTECHNICAL

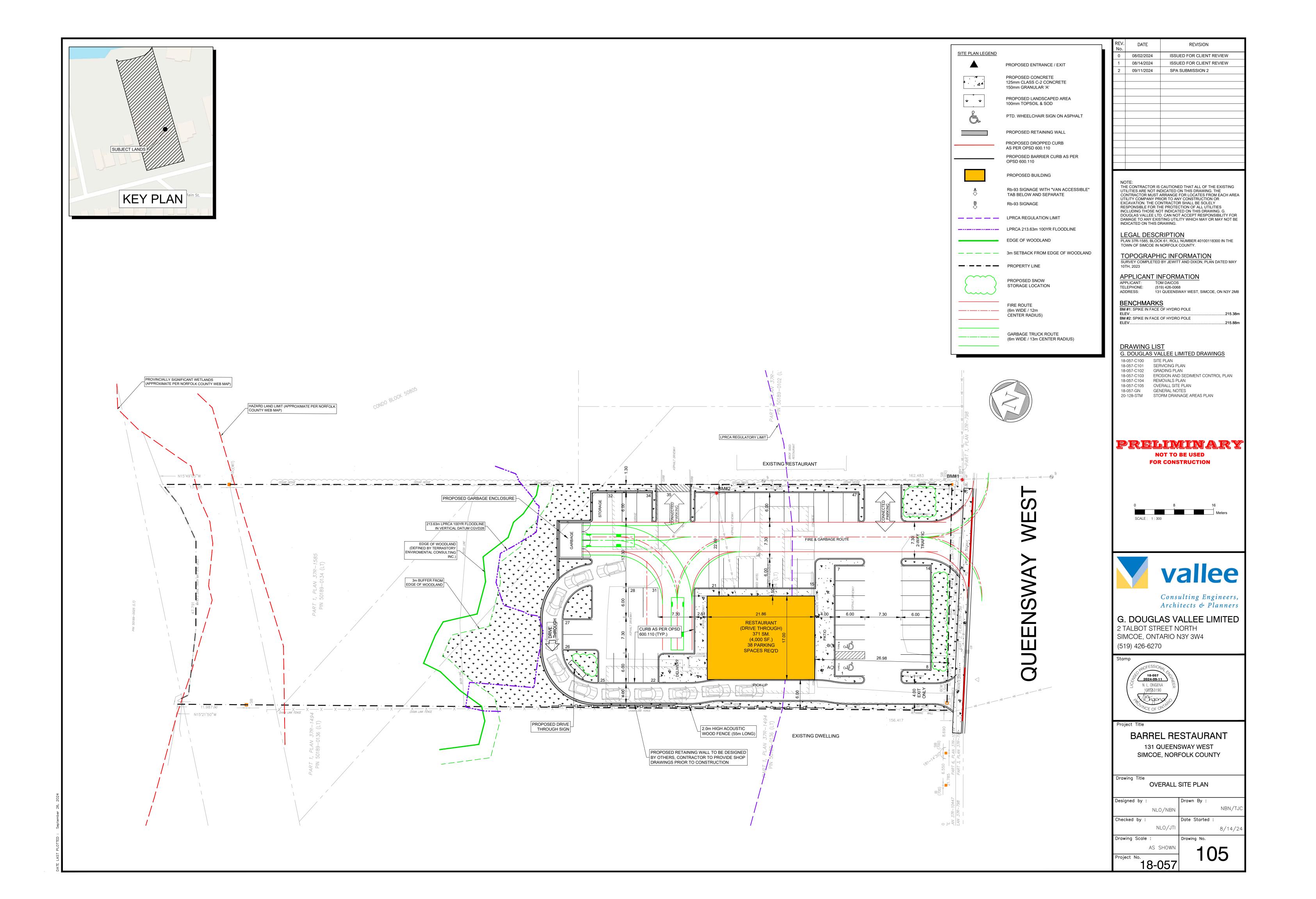
CONSULTANT AT THE TIME OF CONSTRUCTION BASED ON GEOTECHNICAL CONSIDERATIONS. IT IS RECOMMENDED THAT TRANSPORTATION OF FILL MATERIAL FROM THE SOURCE SITE(S) TO THE RECEIVING SITE(S) BE CARRIED OUT IN ACCORDANCE WITH THE MECP DOCUMENT MANAGEMENT OF EXCESS SOIL - A GUIDE FOR BEST MANAGEMENT PRACTICES DATED JANUARY 2014.

REMOVALS LEGEND

REMOVE EXISTING PAVEMENT STRUCTURE COMPLETE REMOVE EXISTING CONCRETE AND BASE COMPLETE

REMOVE CONCRETE CURB AND BASE

COMPLETE



GENERAL NOTES

OF THE ENGINEER.

- 1. PRIOR TO CLOSING ANY STREET, THE CONTRACTOR SHALL OBTAIN CLEARANCE BY FILLING OUT THE COUNTY'S NOTICE OF ROAD CLOSURE FORM AND NOTIFY SCHOOL BUS OPERATORS OF STREETS USED FOR DETOUR AND THE DURATION OF THE DETOUR. THE CONTRACTOR MUST SUPPLY AND MAINTAIN ADEQUATE LOCAL DETOUR SIGNS AND LIGHTS. THE CONTRACTOR MUST MAINTAIN MAXIMUM ACCESS TO ALL PROPERTIES AS DIRECTED
- 2. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY MEASURES TO CONTROL SILT ENTERING THE STORM DRAINAGE SYSTEM TO THE SPECIFICATIONS OUTLINED IN THE GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES PREPARED BY THE MINISTRY OF NATURAL RESOURCES. THESE MEASURES ARE TO BE INSTALLED PRIOR TO COMMENCING ANY CONSTRUCTION FOR THIS STREET AND ARE TO REMAIN IN PLACE UNTIL CONSTRUCTION HAS BEEN COMPLETED TO THE SPECIFICATIONS OF THE ENGINEER.
- 3. THE CONTRACTOR IS TO MEET ALL THE REQUIREMENTS OF THE OWNERS OF THE UTILITIES ON THIS PLAN, AND MUST MAKE SATISFACTORY ARRANGEMENTS WITH THE UTILITY COMPANIES FOR CROSSING THEIR INSTALLATIONS AND FOR PROVIDING ADEQUATE PROTECTION DURING CONSTRUCTION.
- 4. PRIOR TO COMMENCING ANY CONSTRUCTION, ALL EXISTING UNDERGROUND UTILITIES SHALL BE LOCATED AND MARKED. ANY UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTORS EXPENSE.
- 5. ALL ORGANIC, SUITABLE OR UNSUITABLE MATERIALS BENEATH THE ROAD ALLOWANCES MUST BE REMOVED AND THESE AREAS BACKFILLED WITH AN APPROVED FILL MATERIAL, ALL TO THE SATISFACTION
- 6. PRIOR TO COMMENCING ANY CONSTRUCTION, ALL EXISTING SEWER OUTLET INFORMATION, BENCHMARKS, DIMENSIONS, ELEVATIONS AND GRADES MUST BE CHECKED AND VERIFIED AND ANY DISCREPANCIES REPORTED TO THE ENGINEER IMMEDIATELY.
- 7. ALL CATCH BASIN LEADS FOR SINGLE CATCH BASINS SHALL BE 250mm Ø PVC SDR35 WITH CLASS 'B' BEDDING. ALL CATCH BASIN LEADS FOR TWIN INLET CATCH BASINS SHALL BE 300mm Ø PVC SDR35 WITH CLASS 'B' BEDDING.
- 8. ALL PVC WATERMAIN SHALL HAVE TWU 10 COPPER TRACING WIRE LAID ALONG ENTIRE LENGTH. WATERMAIN SHALL HAVE 1.7m TO 1.9m COVER WITH CLASS 'B' BEDDING.
- 9. ALL 50mm WATER SERVICE TO BE BLUE904 SDR9 PEX AND ALL 150mm WATERMAIN TO BE
- PVC DR18 BLUE BRUTE WITH MANUFACTURED FITTINGS.
- 10. WATERMAIN FITTINGS SHALL BE MECHANICAL JOINT OR PUSH—ON JOINT INSTALLED WITH APPROVED MECHANICAL THRUST RESTRAINTS.
- 11. ALL MECHANICAL THRUST RESTRAINTS SHALL CONFORM TO CONTRACT DOCUMENT SPECIFICATIONS. 12. WHERE A WATERMAIN OR WATER SERVICE CROSSES ABOVE A STORM OR SANITARY SEWER, A MINIMUM VERTICAL CLEARANCE OF 0.15m SHALL BE PROVIDED. WHERE THE WATERMAIN OR WATER SERVICE IS UNABLE TO CROSS ABOVE THE SEWER, IT SHALL CROSS UNDERNEATH WHILE PROVIDING A MINIMUM SEPARATION OF 0.5m BETWEEN THE SEWER INVERT AND THE CROWN OF

THE WATERMAIN OR WATER SERVICE. WHERE A STORM OR SANITARY SEWER CROSSES ANOTHER

- STORM OR SANITARY SEWER, A MINIMUM VERTICAL CLEARANCE BETWEEN PIPE BARRELS OF 0.15m SHALL BE PROVIDED. 13. PROPOSED SEWERS TO ADHERE TO THE FOLLOWING OPSD:
 - MAINTENANCE HOLE STRUCTURES
 - OPSD 701.021 SINGLE CATCH BASIN STRUCTURE 600mm X 600mm OPSD 705.010 1200mm MAINTENANCE HOLE GRATE OPSD 401.010 1200mm CATCH BASIN MAINTENANCE HOLE GRATE OPSD 400.020 SINGLE CATCH BASIN GRATE 600mm X 600mm OPSD 400.020
- ALL COMPONENTS OF THE PROPOSED SEWERS ARE TO ADHERE TO DIVISION 700 OF THE OPSD.
- 14. ALL STORM SEWERS TO BE PVC DR35 WITH CLASS B BEDDING.
- 15. PROPOSED SANITARY TO BE PVC DR28 WITH CLASS 'B' BEDDING.
- 16. FIRE HYDRANTS TO BE AWWA G509 COMPLIANT, NON-DRAINING, OPEN LEFT.
- 17. MUNICIPALITY WATERMAIN PROCEDURES TO BE ADHERED TO FOR INSTALLATION OF WATERMAINS OR SERVICES.
- 18. WATERMAINS AND WATER SERVICES SHALL MAINTAIN A MINIMUM COVER OF 1.7m.
- 19. PROVIDE 2.5m MINIMUM HORIZONTAL CLEARANCE BETWEEN THE PROPOSED WATERMAIN AND ANY STORM OR SANITARY SEWERS OR MAINTENANCE HOLES.

EX. STORM SEWER		PROPOSED WATERMAIN
PROPOSED STORM SEWER		EX. WATERMAIN
EX. SANITARY SEWER		PROPOSED 3-WAY FIRE HYDRANT
PROPOSED SANITARY SEWER	-	C/W STORZ CONNECTION
PROPOSED STORM MANHOLE		EX. FIRE HYDRANT
PROPOSED SANITARY MANHOLE	<u> </u>	PROPOSED WATERVALVE
EX. MANHOLE		EX. WATERVALVE
PROPOSED CATCHBASIN	G	EX. BURIED GAS LINE
PROPOSED TWIN INLET CATCHBASIN	В ———	EX. BURIED BELL LINE
PROPOSED CATCHBASIN MANHOLE	CATV	EX. BURIED CABLE LINE
EX. CATCHBASIN	——————————————————————————————————————	EX. UNDERGROUND HYDRO LINE

GENERAL

- SEDIMENT CONTROL MEASURES
- 1. PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION
- 2. ALL EROSION CONTROL MEASURES TO BE IN PLACE BEFORE STARTING CONSTRUCTION AND REMAIN IN PLACE UNTIL
- 3. MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
- 4. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED
- 5. MINIMIZE AREA DISTURBED DURING CONSTRUCTION 6. ALL DEWATERING TO BE DISPOSED OF IN AN APPROVED
- SEDIMENTATION BASIN
- 7. PROTECT ALL CATCHBASINS, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUIVALENT)
- 8. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION
- 9. PREVENT WIND-BLOWN DUST

RESTORATION IS COMPLETE

10. STRAW BALES TO BE USED IN LOCALIZED AREAS AS SHOWN AND AND AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION

ROAD & BOULEVARD RESTORATION

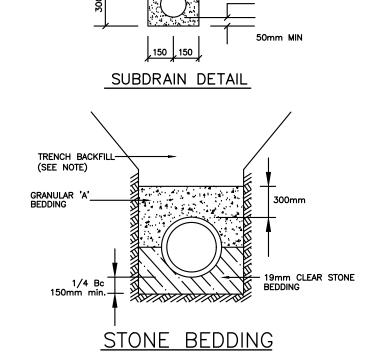
- ALL DISTURBED AREAS SHALL BE RESTORED AS FOLLOWS: i. ALL ROAD CUTS SHALL BE RESTORED WITH

 -40mm HL3 SURFACE ASPHALT (97% MARSHALL)

 -50mm HL8 BASE ASPHALT (97% MARSHALL)

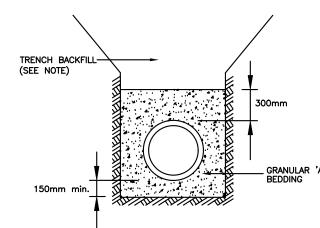
 -150mm GRANULAR "A" BASE (100% SPMDD)

 -300mm GRANULAR "B" TYPE 2 SUBBASE (100% SPMDD) GRANULAR "B" TO BE EXTENDED 0.3m BEHIND EDGE OF THE PAVEMENT
- ii. BOULEVARDS SHALL BE RESTORED WITH SOD OVER 100mm TOPSOIL (min) UNLESS OTHERWISE NOTED iii. ASPHALT DRIVEWAYS SHALL BE RESTORED WITH 150mm OF GRANULAR "A" (100% SPMDD) WITH 50mm OF HL3A ASPHALT (97% MARSHALL)
- iv. GRAVEL DRIVEWAYS SHALL BE RESTORED WITH 150mm OF GRANULAR "A" (100% SPMDD)
- v. CONCRETE DRIVEWAYS SHALL BE RESTORED WITH 150mm OF GRANULAR "A" (100% SPMDD) AND 150mm OF CONCRETE FOR RESIDENTIAL DRIVEWAYS AND 200mm OF CONCRETE FOR COMMERCIAL DRIVEWAYS (OPSS MIX. 30MPa MINIMUM)



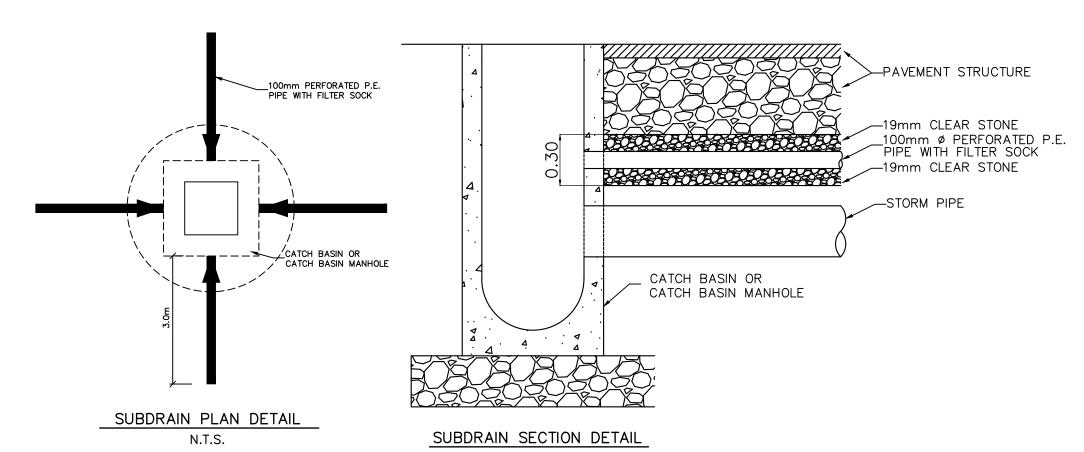
100mm PERFORATED P.E. PIPE WITH FILTER SOCK

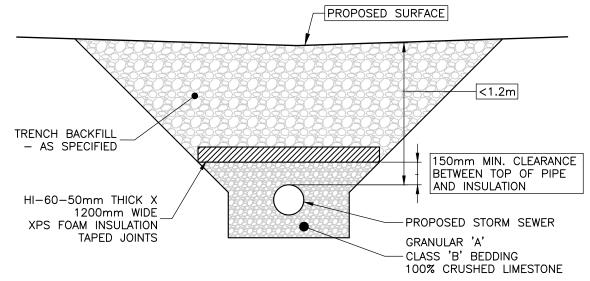
1. 19mm CLEAR STONE STONE BEDDING SHALL BE USED IN PLACE OF THE STANDARD BEDDING WHERE HIGH HYDRAULIC GRADIENT CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION.



CLASS B BEDDING

- PIPE BEDDING AS SPECIFIED ON PLAN AND PROFILE DRAWINGS COMPACTED TO 95% SPMDD IN LAYERS NOT EXCEEDING 150mm, TO 300mm ABOVE TOP OF PIPE.
- TRENCH BACKFILL FROM TOP OF PIPE BEDDING TO UNDERSIDE OF GRANULAR "B" SUBBASE SHALL CONSIST OF APPROVED NATIVE MATERIALS COMPACTED TO 95% SPMDD IN LAYERS NOT EXCEEDING 300mm.
- 3. PRIOR TO PLACING THE GRANULAR SUBBASE MATERIAL, ALL TOPSOIL, SOFT OR OTHERWISE COMPRESSIBLE MATERIAL MUST BE REMOVED FROM THE SUBGRADE AREA, AND THE SUBGRADE SHALL BE PROOF-ROLLED TO COMPACT ANY LOOSE SURFACE ZONES. ALL EXCAVATED AREAS MUST BE BACKFILLED WITH APPROVED ON-SITE NATIVE MATERIALS OR IMPORTED





TYPICAL STORM INSULATION FOR STORM WITH < 1.2m COVER

REV. No.	DATE	REVISION
0	03/18/2024	ISSUED FOR CLIENT REVIEW
1	06/28/2024	SPA SUBMISSION 1
2	09/11/2024	SPA SUBMISSON 2

THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G DOUGLAS VALLEE LTD. CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE

LEGAL DESCRIPTION PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8 ADDRESS:

BENCHMARKS BM #1: SPIKE IN FACE OF HYDRO POLE

....215.38m BM #2: SPIKE IN FACE OF HYDRO POLE ...215.88m

DRAWING LIST G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C101 SERVICING PLAN GRADING PLAN 18-057-C102 EROSION AND SEDIMENT CONTROL PLAN 18-057-C103

REMOVALS PLAN 18-057-C104 18-057-C105 OVERALL SITE PLAN **GENERAL NOTES**

20-128-STM STORM DRAINAGE AREAS PLAN

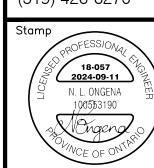
PREGIMINARY

NOT TO BE USED FOR CONSTRUCTION



Consulting Engineers, Architects & Planners

G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4 (519) 426-6270

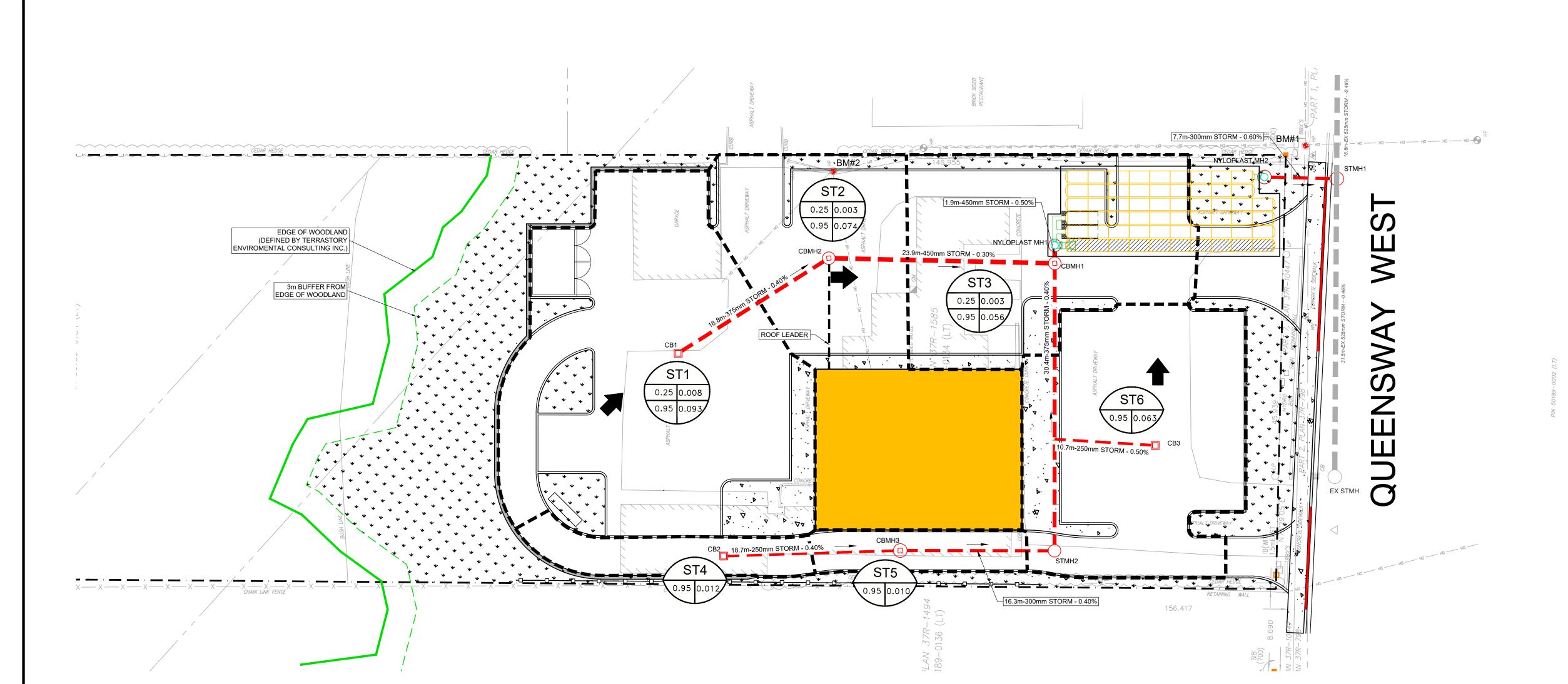


BARREL RESTAURANT 131 QUEENSWAY WEST SIMCOE, NORFOLK COUNTY

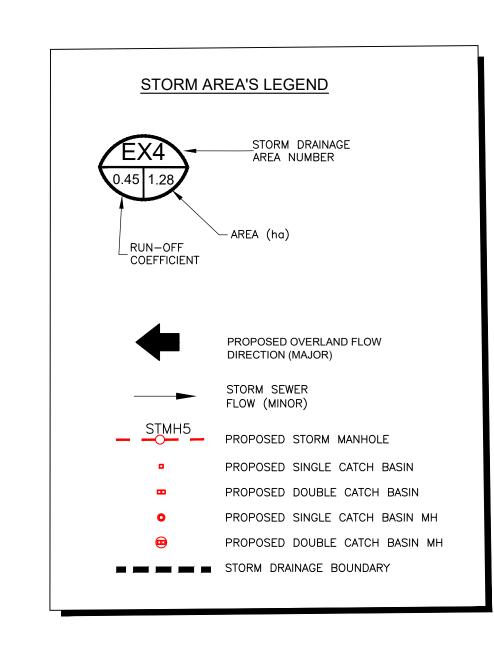
GENERAL NOTES & DETAILS

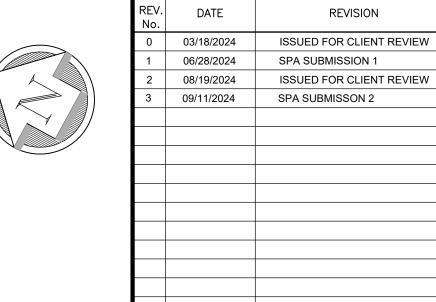
Designed by : NLO/NBN Date Started : Checked by : NLO/JTI 8/19/24

18-057



	STORM SEWER DESIGN SHEET																		
	Project:	9/10/2024 18-057 Barrel Restau Simcoe/Norfolk Cour		ion		Return: A B C	100-year 801.041 1.501 0.657			Pipe Material: n Inlet Time Ca Multiplier	0.013 5	min)		Ch	igned by: ecked by: 1	NLO	1	
	Location			Area (Ha)		Individual	Cumulative	Individual	Cumulative	Time of	Rainfall	Flow			Sewe	r Design			
Area	From	То		1.25 * C =		Area	Area	C*A	C*A	Concentration	mm/hr	2.78*I*A*C	Size	Slope	Capacity (Full)		Length		Ca
7 11 GG	110111		0.31	0.56	1.00	На	Ha			min		L/s	mm	%	L/s	m/s	m	min	9/
ST1	CB1	CBMH2	0.080		0.093	0.17	0.17	0.12	0.12	5.00	234.17	76.8	375	0.40%	110.9	1.00	18.8	0.31	4 69
ST2	CBMH2	CBMH1	0.003		0.074	0.08	0.25	0.07	0.19	5.31	227.06	121.8	450	0.30%	156.2	0.98	23.9	0.41	v 78
ST4	CB2	CBMH3			0.012	0.01	0.01	0.01	0.01	5.00	234.17	7.8	250	0.40%	37.6	0.77	18.7	0.41	v 21
ST5	CBMH3	STMH2			0.010	0.01	0.02	0.01	0.02	5.41	225.01	13.8	300	0.40%	61.2	0.87	16.3	0.31	2 3
ST6	STMH2	CBMH1			0.063	0.06	0.09	0.06	0.09	5.72	218.54	51.6	375	0.40%	110.9	1.00	30.4	0.50	√ 47
ST3	CBMH1	NYLOPLAST MH1	0.003		0.056	0.06	0.39	0.06	0.33	6.23	209.05	194.6	450	0.50%	201.6	1.27	1.9	0.02	9 97
	NYLOPLAST MH2	STMH1										41.0	300	0.60%	74.9	1.06	7.7	0.12	√ 55





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LEGAL DESCRIPTION

PLAN 37R-1585, BLOCK 61, ROLL NUMBER 40100118300 IN THE TOWN OF SIMCOE IN NORFOLK COUNTY.

TOPOGRAPHIC INFORMATION
SURVEY COMPLETED BY JEWITT AND DIXON, PLAN DATED MAY
10TH, 2023

APPLICANT INFORMATION

TELEPHONE: (519) 426-0068 ADDRESS: 131 QUEENSWAY WEST, SIMCOE, ON N3Y 2M8

BENCHMARKS
BM #1: SPIKE IN FACE OF HYDRO POLE

DRAWING LIST

G. DOUGLAS VALLEE LIMITED DRAWINGS

18-057-C100 SITE PLAN
18-057-C101 SERVICING PLAN
18-057-C102 GRADING PLAN
18-057-C103 EROSION AND SEDIMENT CONTROL PLAN
18-057-C104 REMOVALS PLAN

18-057-C105 OVERALL SITE PLAN
18-057-GN GENERAL NOTES
20-128-STM STORM DRAINAGE AREAS PLAN

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

SCALE:

0 5 10 15

HORIZONTAL: 1:250



G. DOUGLAS VALLEE LIMITED 2 TALBOT STREET NORTH SIMCOE, ONTARIO N3Y 3W4

Architects & Planners

(519) 426-6270 Stamp



Project Title

BARREL RESTAURANT

131 QUEENSWAY WEST
SIMCOE, NORFOLK COUNTY

Drawing Title
STORM DRAINAGE AREAS

Designed by :

NLO/NBN

Checked by :

NLO/JTI

Drawn By :

NBN

NBN

NBN

9/11/24

Drawing Scale :

AS SHOWN

18-057

Project No.

STM

BARREL RESTAURANT ADDITION

SIMCOE - NORFOLK COUNTY ESTIMATED COSTS AND SECURITIES

Rev0 - 2024-06-27

	1 - 2024-09-10						ject #18-057
TEN	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	AMOUNT	SECURITY %	SECURITY AMOUNT
	A. SANITARY SEWERS						
	Connect new 125mm sanitary service to existing sanitary sewer on Queensway West.	L.S.	1	\$3,000	\$3,000	100%	\$3,000
	sanitary sewer on Queensway west.	L.S.	' _	\$3,000	\$3,000	100%	\$3,000
?	Supply and install 125mm dia. sanitary service including all fittings from building to property line.	m	27.1 _	\$200	\$5,420	10%	\$542
}	Supply and install 125mm dia. sanitary service including all fittings from property line to existing sanitary sewer on		0.4	Ф000	\$400	4000/	# 400
	Queensway West.	m	2.4 _	\$200	\$480	100%	\$480
	Supply and install 1200mm diameter precast concrete inspection maintenance holes complete with benching						
	on property line.	L.S.	1 _	\$7,000	\$7,000	100%	\$7,000
;	Flush and CCTV Video Sanitary System.	L.S.	1 _	\$500	\$500	10%	\$50
	TOTAL SANITARY SEWERS				\$16,400		\$11,072
	B. WATERMAINS						
	Connect new 50mm water service to existing curb stop			#5.000	\$5.000	4000/	45.000
	on property line.	L.S.	1 _	\$5,000	\$5,000	100%	\$5,000
	Supply and install 50mm PEX water services including connection to existing curb stop at property line, all						
	fittings and anodes.	metre	38.8	\$100.00	\$3,880	10%	\$388
	TOTAL WATERMAIN				\$8,880		\$5,388

ITEM	DESCRIPTION	UNIT	APPROX.	UNIT PRICE	AMOUNT	SECURITY %	SECURITY
	C. STORM SEWERS		QUANTITY	PRICE		%	AMOUNT
	C. STORINI SEWERS						
1	Supply and install 250mm dia. storm sewers.						
	a) CB2 to CBMH4	metre	18.7	\$100.00	\$1,870	10%	\$187
	b) CB3 to storm connection	metre	10.7	\$100.00	\$1,070	10%	\$107
•	Cumply and install 200 man dis stamps accord						
2	Supply and install 300mm dia. storm sewers. a) STMH1 to NLYOPLAST MH2	metre	7.7	\$150.00	\$1,155	100%	\$1,155
	b) CBMH3 to STMH2	metre	16.3	\$150.00	\$2,445	10%	\$245
	b) OBINITIO to OTIVITIZ	mono	10.0	Ψ100.00	Ψ2,440	1070	Ψ2-10
3	Supply and install 375mm dia. storm sewers.						
	a) CBMH1 to STMH2	metre	30.4	\$200.00	\$6,080	10%	\$608
	b) CBMH2 to CB1	metre	18.8	\$200.00	\$3,760	10%	\$376
	0 1 1 1 1 1 1 1 1 1						
4	Supply and install 450mm dia. storm sewers. a) NYLOPLAST MH1 to CBMH1	metre	1.9	\$250.00	\$475	10%	¢10
	b) CBMH1 TO CBMH2	metre	23.9	\$250.00	\$5,975	10%	<u>\$48</u> \$598
	D) CDIVILLI TO CDIVILLE	mene	20.0	Ψ230.00	ψ5,915	1070	Ψυθυ
5	Supply and install 150mm dia. rain water leader.	metre	11.1	\$100.00	\$1,110	10%	\$111
_	0 1 11 11 1000						
6	Supply and install 1200mm dia. precast concrete maintenance holes complete with benching.						
	a) STMH1 - Doghouse manhole	L.S.	1	\$7,000	\$7,000	100%	\$7,000
	b) STMH2	L.S.	1	\$7,000	\$7,000	10%	\$700
	c) CBMH1	L.S.	1	\$7,000	\$7,000	10%	\$700
	d) CBMH2	L.S.	1	\$7,000	\$7,000	10%	\$700
	e) CBMH3	L.S.	1	\$7,000	\$7,000	10%	\$700
_							
7	Supply and install 600x600 precast concrete catch						
	basins complete with grate, connections, and subdrains.	each	3	\$2,500	\$7,500	10%	\$750
		еасп	3	φ2,500	φ7,500	1070	<u> </u>
8	Supply and install proposed StormTech stormwater						
-	management chamber facility including inlet and outlet						
	Nyloplast structures, and orifice control plate.	L.S.	1	\$105,000.00	\$105,000	10%	\$10,500
•	FI I LOOTY II I		4	#4.500	#4.500	4007	0450
9	Flush and CCTV video storm system	L.S.	1	\$1,500	\$1,500	10%	\$150
	TOTAL STORM SEWER				\$170,000		\$24,340
					, ,		Ţ= :,- ·•

ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	AMOUNT	SECURITY %	SECURITY AMOUNT
	D. ROAD CONSTRUCTION						
1	Sub-excavation to below finish grade for proposed asphalt areas.	L.S.	1 .	\$20,000	\$20,000	10%_	\$2,000
2	Supply, place and compact 300mm Granular 'B' Type 2 100% crushed limestone for asphalt area.	tonne	2170	\$15.00	\$32,550	10%_	\$3,255
3	Supply, place and compact 150mm Granular 'A' 100% crushed limestone for asphalt area.	tonne	1000	\$20.00	\$20,000	10%	\$2,000
4	Supply, place and compact 50mm of HL8 base asphalt pavement for asphalt area.	tonne	350	\$100.00	\$35,000	10%	\$3,500
5	Supply, place and compact 40mm of HL3 top asphalt pavement for asphalt area.	tonne	280	\$110.00	\$30,800	10%	\$3,080
6	Construct concrete sidewalk within development site.	sqm	235	\$50.00	\$11,750	10%	\$1,175
7	Construct concrete sidewalk within County ROW.	sqm	90	\$50.00	\$4,500	100%	\$4,500
8	Construct curb and gutter per OPSD 600.110 within development site.	m	550	\$40.00	\$22,000	10%	\$2,200
9	Construct curb and gutter per OPSD 600.010 within County ROW.	m	50	\$40.00	\$2,000	100%	\$2,000
10	Construct retaining wall.	m	85	\$100.00	\$8,500	100%	\$8,500
11	Supply and install 2.0m high acoustic wood fence.	m	55	\$150.00	\$8,250	100%	\$8,250
	TOTAL ROAD CONSTRUCTION				\$195,350		\$40,460
1	E. LANDSCAPING Landscaping Allowance	L.S.	1 .	\$10,000.00	\$10,000	100%	\$10,000
	TOTAL LANDSCAPING				\$10,000		\$10,000
1	F. RECORD DRAWINGS Complete record drawings for development site and work within county ROW.	L.S.	1	\$4,000.00	\$4,000	10%_	\$400
	TOTAL RECORD DRAWINGS				\$4,000	_	\$400

ITEM	DESCRIPTION	UNIT	APPROX.	UNIT	AMOUNT	SECURITY	SECURITY
			QUANTITY	PRICE		%	AMOUNT
	SECURITY SUMMARY						
A.	SANITARY SEWERS						\$11,072
В.	WATERMAIN						\$5,388
C.	STORM SEWERS						\$24,340
D.	ROAD CONSTRUCTION						\$40,460
E.	LANDSCAPING						\$10,000
F.	RECORD DRAWINGS						\$400
				GRAND TO	TAL		\$91,660