Planning Department Development Application Form

Complete Application

A complete development application consists of the following:

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

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

Pre-Submission Consultation "Pre-consultation":

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

Development Application Process

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

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

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

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

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

Notification Sign Requirements

For the purpose of public notification and in order for staff to locate your lands for appropriate applications (zoning, subdivision, condominium or official plan) you will be given a sign to indicate the intent and purpose of your development application. It is your responsibility to:

1. Post one sign per frontage in a conspicuous location on the subject lands;
2. Ensure one sign is posted at the front of the subject lands at least three feet above ground level, not on a tree;
3. Notify the Planner when the sign is in place in order to avoid processing delays; and
4. Maintain the sign until the development application is finalized and thereafter removed.

Contact Us

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

For Office Use Only:

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

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

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

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

_____
_____
_____
_____
_____
_____
_____

Property Assessment Roll Number: _____

A. Applicant Information

Name of Owner _____

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

Address _____

Town and Postal Code _____

Phone Number _____

Cell Number _____

Email _____

Name of Applicant _____

Address _____

Town and Postal Code _____

Phone Number _____

Cell Number _____

Email _____

Name of Agent _____

Address _____

Town and Postal Code _____

Phone Number _____

Cell Number _____

Email _____

Please specify to whom all communications should be sent. Unless otherwise directed, all correspondence and notices in respect of this application will be forwarded to both owner and agent noted above.

☐ Owner ☐ Agent ☐ Applicant

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

_____

_____

B. Location, Legal Description and Property Information

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

   _____

   _____

   Municipal Civic Address: _____

   Present Official Plan Designation(s): _____

   Present Zoning: _____

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

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

   _____

3. Present use of the subject lands:

   _____

   _____

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

   _____

   _____

   _____

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

   _____

   _____

   _____

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

   _____

   _____

   _____

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

   If yes, identify and provide details of the building:

   _____

   _____

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

   _____

9. Existing use of abutting properties:

   _____

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

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

    _____

C. Purpose of Development Application

Note: Please complete all that apply.

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

   _____

   _____

   _____

   _____

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

   _____

   _____

   _____

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

   _____

   _____

   _____

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

   _____

   _____

   _____

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

   _____

   _____

   _____

6. Description of land intended to be severed in metric units:
   Frontage: _____
   Depth: _____
   Width: _____
   Lot Area: _____
   Present Use: _____
   Proposed Use: _____
   Proposed final lot size (if boundary adjustment): _____
   If a boundary adjustment, identify the assessment roll number and property owner of the lands to which the parcel will be added: _____

   _____

   Description of land intended to be retained in metric units:
   Frontage: _____
   Depth: _____
   Width: _____
   Lot Area: _____
   Present Use: _____
   Proposed Use: _____
   Buildings on retained land: _____
7. Description of proposed right-of-way/easement:
   Frontage: _____
   Depth: _____
   Width: _____
   Area: _____
   Proposed use: _____
8. Name of person(s), if known, to whom lands or interest in lands to be transferred, leased or charged (if known):

   _____

9. **Site Information**	**Zoning**	**Proposed**
Please indicate unit of measurement, for example: m, m^2 or %		
Lot frontage	_____	_____
Lot depth	_____	_____
Lot width	_____	_____
Lot area	_____	_____
Lot coverage	_____	_____
Front yard	_____	_____
Rear yard	_____	_____
Left Interior side yard	_____	_____
Right Interior side yard	_____	_____
Exterior side yard (corner lot)	_____	_____
Landscaped open space	_____	_____
Entrance access width	_____	_____
Exit access width	_____	_____
Size of fencing or screening	_____	_____
Type of fencing	_____	_____

10. Building Size

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

11. Off Street Parking and Loading Facilities

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

12. Residential (if applicable)

Number of buildings existing: _____

Number of buildings proposed: _____

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

If yes, describe: _____

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

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

13. Commercial/Industrial Uses (if applicable)

Number of buildings existing: _____

Number of buildings proposed: _____

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

If yes, describe:

_____

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

_____

_____

_____

Seating Capacity (for assembly halls or similar): _____

Total number of fixed seats: _____

Describe the type of business(es) proposed: _____

Total number of staff proposed initially: _____

Total number of staff proposed in five years: _____

Maximum number of staff on the largest shift: _____

Is open storage required: ☐ Yes ☐ No

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

☐ Yes ☐ No If yes please describe:

_____

_____

14. Institutional (if applicable)

Describe the type of use proposed: _____

Seating capacity (if applicable): _____

Number of beds (if applicable): _____

Total number of staff proposed initially: _____

Total number of staff proposed in five years: _____

Maximum number of staff on the largest shift: _____

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

_____

_____

_____

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

_____

_____

_____

_____

_____

D. Previous Use of the Property

1. Has there been an industrial or commercial use on the subject lands or adjacent lands? ☐ Yes ☐ No ☐ Unknown
   If yes, specify the uses (for example: gas station or petroleum storage):

   _____

   _____
2. Is there reason to believe the subject lands may have been contaminated by former uses on the site or adjacent sites?☐ Yes ☐ No ☐ Unknown
3. Provide the information you used to determine the answers to the above questions:

   _____

   _____

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

E. Provincial Policy

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

   If no, please explain:

   _____

   _____

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

   If no, please explain:

   _____

   _____

   _____

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

   If no, please explain:

   _____

   _____

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

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

   Livestock facility or stockyard (submit MDS Calculation with application)

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

   Wooded area

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

   Municipal Landfill

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

   Sewage treatment plant or waste stabilization plant

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

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

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

   Floodplain

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

   Rehabilitated mine site

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

   Non-operating mine site within one kilometre

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

   Active mine site within one kilometre

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

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

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

   Active railway line

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

   Seasonal wetness of lands

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

   Erosion

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

   Abandoned gas wells

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

F. Servicing and Access

1. Indicate what services are available or proposed:
   Water Supply
   - ☐ Municipal piped water
   - ☐ Communal wells
   - ☐ Individual wells
   - ☐ Other (describe below)

   _____

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

   _____

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

   _____

2. Existing or proposed access to subject lands:
   - ☐ Municipal road
   - ☐ Provincial highway
   - ☐ Unopened road
   - ☐ Other (describe below)

   Name of road/street: _____

G. Other Information

1. Does the application involve a local business? ☐ Yes ☐ No
   If yes, how many people are employed on the subject lands?
   _____
2. Is there any other information that you think may be useful in the review of this application? If so, explain below or attach on a separate page.
   _____
   _____
   _____
   _____

H. Supporting Material to be submitted by Applicant

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

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

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

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

☐ Zoning Deficiency Form

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

☐ Architectural Plan

☐ Buildings Elevation Plan

☐ Cut and Fill Plan

☐ Erosion and Sediment Control Plan

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

☐ Landscape Plan

☐ Photometric (Lighting) Plan

☐ Plan and Profile Drawings

☐ Site Servicing Plan

☐ Storm water Management Plan

☐ Street Sign and Traffic Plan

☐ Street Tree Planting Plan

☐ Tree Preservation Plan

☐ Archaeological Assessment

☐ Environmental Impact Study

☐ Functional Servicing Report

☐ Geotechnical Study / Hydrogeological Review

☐ Minimum Distance Separation Schedule

☐ Noise or Vibration Study

☐ Record of Site Condition

☐ Storm water Management Report

☐ Traffic Impact Study – please contact the Planner to verify the scope required

Site Plan applications will require the following supporting materials:

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

Standard condominium exemptions will require the following supporting materials:

☐ Plan of standard condominium (2 paper copies and 1 electronic copy)

☐ Draft condominium declaration

☐ Property Identification Number (PIN) printout

Your development approval might also be dependent on Ministry of Environment and Climate Change, Ministry of Transportation or other relevant federal or provincial legislation, municipal by-laws or other agency approvals.

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

I. Development Agreements

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

J. Transfers, Easements and Postponement of Interest

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

K. Permission to Enter Subject Lands

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

L. Freedom of Information

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

Owner/Applicant Signature — Date: April 7th 2022

M. Owner's Authorization

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

I/We Rajendra Patel am/are the registered owner(s) of the lands that is the subject of this application.

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

Owner — Date: April 7th 2022

Owner — Date:

N. Declaration

I, Rajendrakumar Patel of BRAMPTON, Region of Peel

solemnly declare that:

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

Declared before me at:

Mississauga

Owner/Applicant Signature

In Province of ONTARIO.

This 7th day of April

A.D., 2022

A Commissioner, etc.

Hetav Ujjval Dave
Barrister, Solicitor & Notary Public
1339 Khalsa Drive, Suite 107
Mississauga, Ontario, Canada, L5S 1W6
Tel: (905) 564-8200 Fax: (905) 564-8211

Attestation Witness only /
No Legal Advice Sought or Provided

SURVEYOR'S REAL PROPERTY REPORT

PART 1 - PLAN

PLAN OF SURVEY OF

PART OF LOT 1

CONCESSION 4

FORMERLY IN THE TOWNSHIP OF WOODHOUSE

NOW

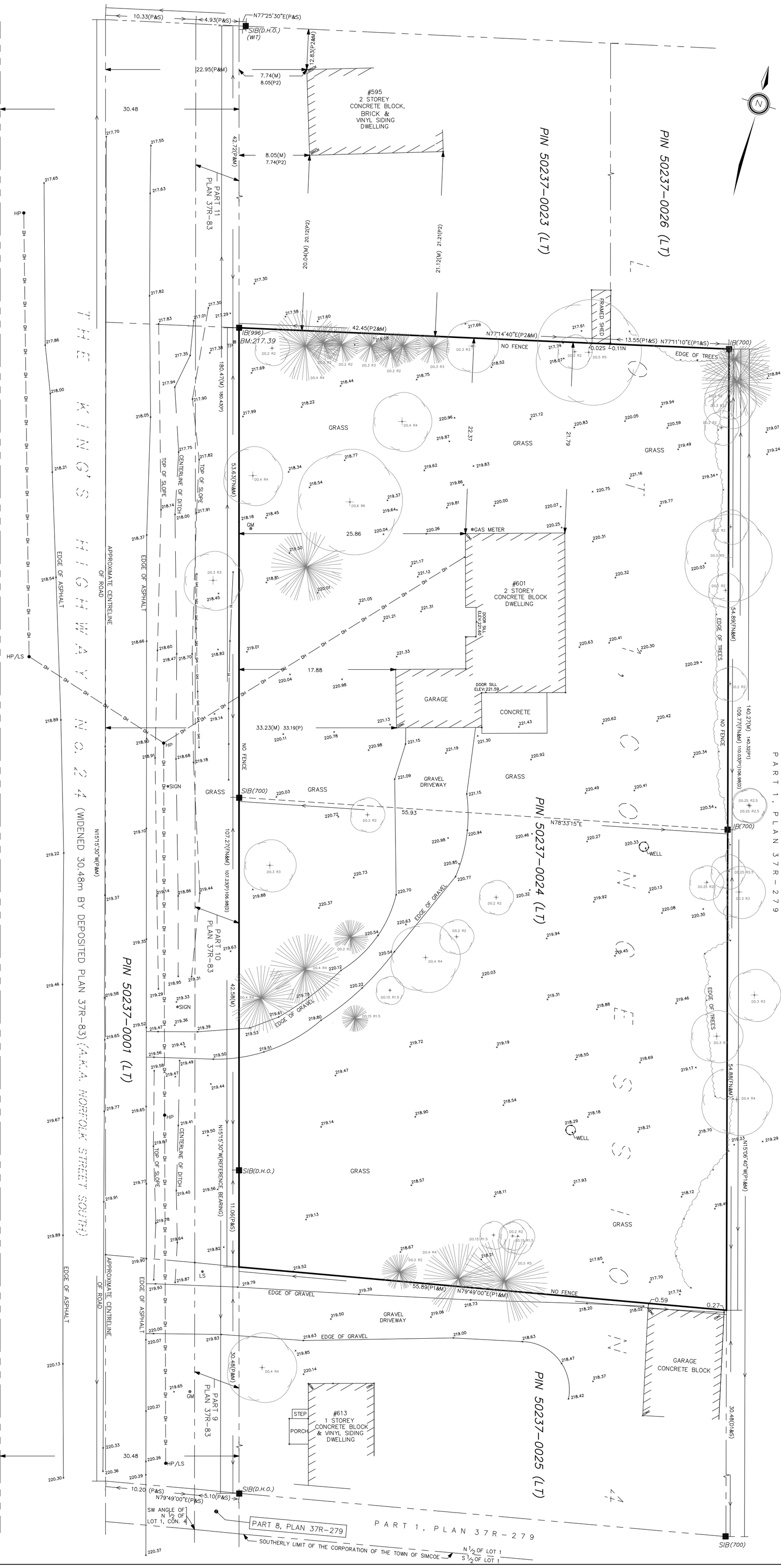
IN THE TOWN OF SIMCOE

COUNTY OF NORFOLK

FARZAD SALEHI, OLS

SCALE: 1 : 300

0 m 4 m 8 m 16 m 24 m



LEGEND

■	DENOTES – SURVEY MONUMENT FOUND
□	DENOTES – SURVEY MONUMENT PLANTED
M	DENOTES – MEASURED
S	DENOTES – SET
P	DENOTES – PLAN 37R-83
P1	DENOTES – PLAN 37R-279
P2	DENOTES – PLAN BY JEWITT & DIXON LTD., OLS, DATED JULY 16, 1987
D	DENOTES – INSTRUMENT NR261357
D1	DENOTES – INSTRUMENT NR483280
IB	DENOTES – IRON BAR
SIB	DENOTES – STANDARD IRON BAR
(D.H.O.)	DENOTES – DEPARTMENT OF HIGHWAYS ONTARIO, OLS
(700)	DENOTES – JEWITT AND DIXON LTD., OLS
(996)	DENOTES – JOHN B. DODD LTD., OLS
(WIT)	DENOTES – WITNESSED
TP	DENOTES – TELEPHONE PEDESTAL
⊕	DENOTES – DECIDUOUS TREE
✱	DENOTES – CONIFEROUS TREE
●HP/LS	DENOTES – HYDRO POLE/HYDR POLE WITH LIGHT STANDARD
LS	DENOTES – LIGHT STANDARD
GM	DENOTES – GAS METER
–OH–	DENOTES – OVER-HEAD HYDRO LINE
–H–	DENOTES – UNDERGROUND HYDRO LINE
–GAS–	DENOTES – UNDERGROUND GAS LINE
BM	DENOTES – SITE BENCH MARK

METRIC NOTE

DISTANCES & CO-ORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

BEARING NOTE

BEARINGS ARE ASTRONOMIC, AND ARE REFERRED TO THE EASTERLY LIMIT OF THE KING'S HIGHWAY NO. 24 AS SHOWN ON PLAN 37R-83, HAVING A BEARING OF N15°15'30"W.

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC, AND ARE FROM REAL TIME NETWORK GPS READINGS PROVIDED BY CAN-NET AND TOTAL STATION, AND ARE IN GEOID MODEL CGG2013.

COPYRIGHT 2022: ©

PART 2 - REPORT

REGISTERED EASEMENTS AND/OR RIGHT-OF-WAY:

NONE LISTED ON THE PARCEL REGISTER FOUND IN THE LAND REGISTRY OFFICE.

BOUNDARY FEATURES

*ALL BUILDING TIES ARE PERPENDICULAR TO PROPERTY LINES UNLESS OTHERWISE NOTED.

*NOTE THE LOCATION OF THE FRAMED SHED AT THE NORTHERLY BOUNDARY LINE.

*THERE IS NO FENCE AROUND THE SUBJECT PROPERTY.

*THIS REPORT WAS PREPARED FOR n ENGINEERING INC. AND UNDERSIGNED ACCEPTS NO RESPONSABILITY OF USE BY OTHER PARTIES.

COMPLIANCE WITH MUNICIPAL ZONING BY-LAWS

THIS PLAN DOES NOT CERTIFY ZONING COMPLIANCE.

ASSOCIATION OF ONTARIO
LAND SURVEYORS
PLAN SUBMISSION FORM

V-17632

THIS PLAN IS NOT VALID
UNLESS IT IS AN EMBOSSED
ORIGINAL COPY
ISSUED BY THE SURVEYOR

In accordance with Regulation 1026, Section 29(3).

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM;
2. THE SURVEY WAS COMPLETED ON THE 8th DAY OF FEBRUARY, 2022.

NORTH YORK, ONTARIO
FEBRUARY 14, 2022

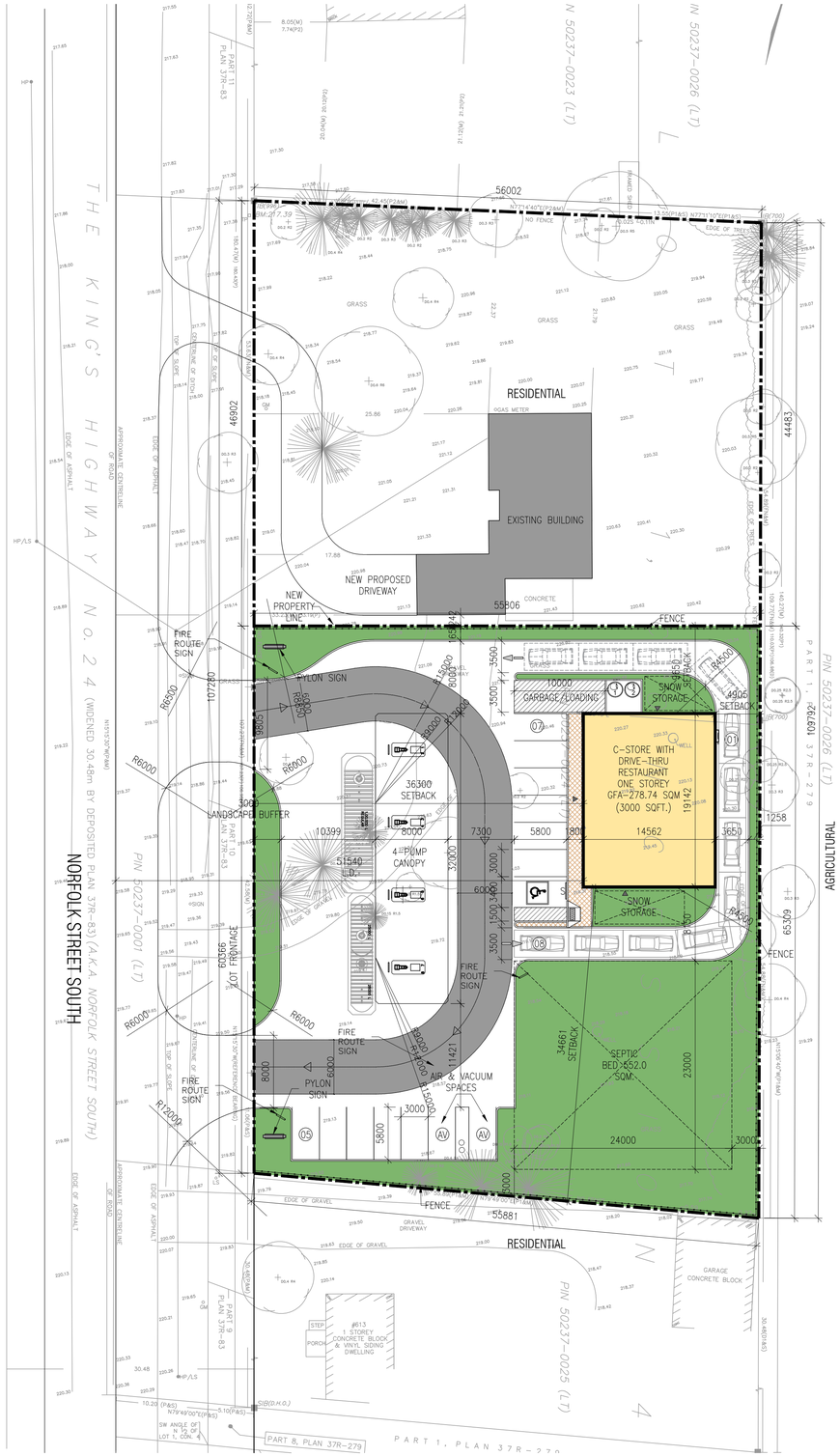
FARZAD SALEHI
ONTARIO LAND SURVEYOR

F.S. SURVEYING INC.

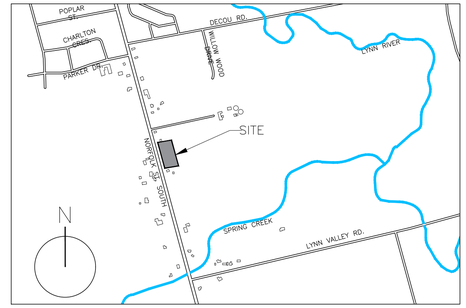
7 COLWICK DRIVE
NORTH YORK, ON M2K 2G2
416-786-8080

F. S. SURVEYING INC.

DATE	PARTY CHIEF	DRAWN BY	PROJECT No.
FEBRUARY 14, 2022	F. SALEHI	N. RABIEI	2022-005



1 **SITE PLAN**
A-1.0 SCALE 1:300



KEY PLAN
SCALE NTS

PROJECT STATISTICS

ADDRESS: 601 Norfolk Street South, Simcoe, ON
ZONING: CS

	REQUIRED	PROPOSED
LOT(SITE) AREA (m^2)	450 SQM.	3503.26 SQM. (0.86 ACRES)
LOT FRONTAGE	15 SQM.	60.36 M.
COVERAGE	35%	7.95%
TOTAL GROSS FLOOR AREA		278.74 SQ.M
MAX. USABLE FLOOR AREA	280.0 SQ.M	278.74 SQ.M
LANDSCAPED AREA		1168.89 (33.36%)
BUILDING HEIGHT (MAX)	11 M.	5.80 M.

BUILDING SETBACK

	REQUIRED	PROPOSED
REAR YARD EAST	9.0M	4.9M
FRONT YARD WEST	3.0M	36.3M
SIDE YARD SOUTH	3.0M	34.66M
SIDE YARD NORTH	3.0M	9.65M

PARKING REQUIREMENTS

	REQUIRED	PROPOSED
C-STORE – 1/30 SQM. (3.0M X 5.8M)	09	11
ACCESSIBLE PARKING – TYPE A (3.4M X 5.8M)	01	01
TOTAL PARKING	9 (INCL. 1BF)	12 (INCL. 1BF)

LEGEND

- NEW BUILDING
- ASPHALT
- LANDSCAPE
- CONC. PAVEMENT, 150MM RAISED
- HANDICAP PARKING
- MAIN ENTRANCE
- OVERHEAD DOOR
- BARRIER CURB
- BARRIER FREE RAMP

LEGAL DESCRIPTION

PART OF LOT 1 CONCESSION 4 FORMERLY IN THE TOWNSHIP OF WOODHOUSE NOW IN THE TOWN OF TOWN OF SIMCOE COUNTY OF NORFOLK

SURVEY INFORMATION TAKEN FROM:

F.S. SURVEYING INC.
7 Colwick Drive,
North York, ON. M2K 2G2
T: (416) 786-8080

APPLICANT:

n ARCHITECTURE INC.
9120 Leslie Street, Suite-208
Richmond Hill, ON. L4B 3J9
T: (416) 256-9741
E: info@narchitecture.com
www.narchitecture.com

OWNER:

Rajendra Patel
414 Panhellic Drive,
Mississauga, ON. L5W 0B7
T: (204) 228-1747
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n Architecture Inc
PRINCIPAL: NITIN MALHOTRA, ARCHITECT.
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N
(GEODETIC NORTH)
PROJECT NORTH

25th MARCH 2022
ISSUED FOR SPA
NOT FOR CONSTRUCTION

No.	Date	Version	Dwn.
1.	12 MAR. 2022	ISSUED FOR SPA	NG.

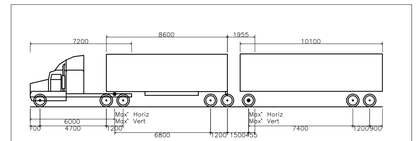
PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

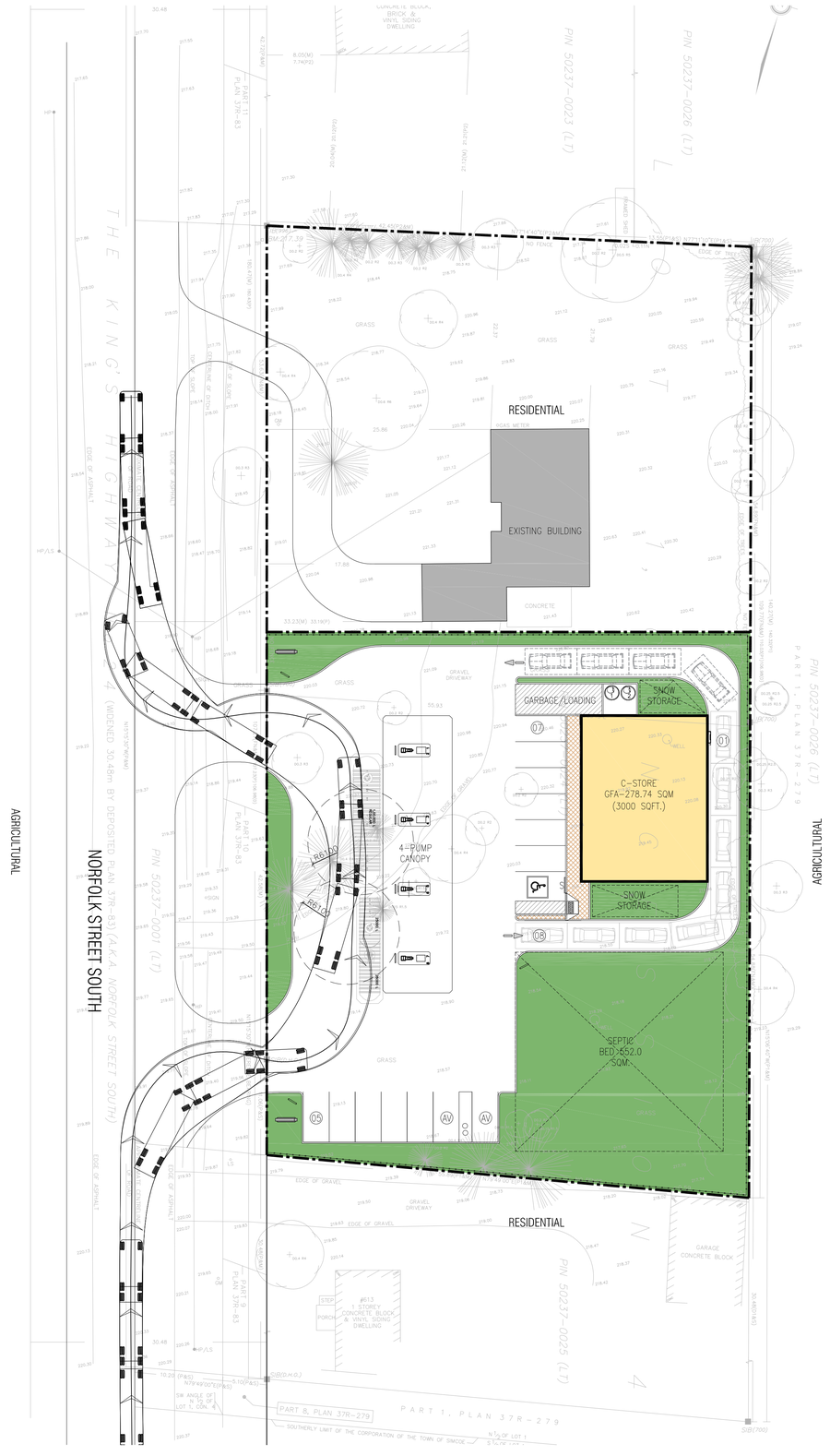
SITE PLAN

DRAWN BY: NG	DATE: 17 AUG. 2021
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.: 21-54	DRAWING NO.: A-1.0



WB-23 – Double Trailer Combination

Overall Length	25000mm
Overall Width	2600mm
Overall Body Height	3755mm
Min Body Ground Clearance	435mm
Track Width	2600mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	12200mm



1 / A-1.1 **FUEL TRUCK TURNING MOVEMENT PLAN**
SCALE 1:300

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N (DEGREE TO NORTH) 2°
PROJECT NORTH

25th MARCH 2022
ISSUED FOR SPA
NOT FOR CONSTRUCTION

No.	Date	Version	Dwn.
1.	12 MAR. 2022	ISSUED FOR SPA	NG.

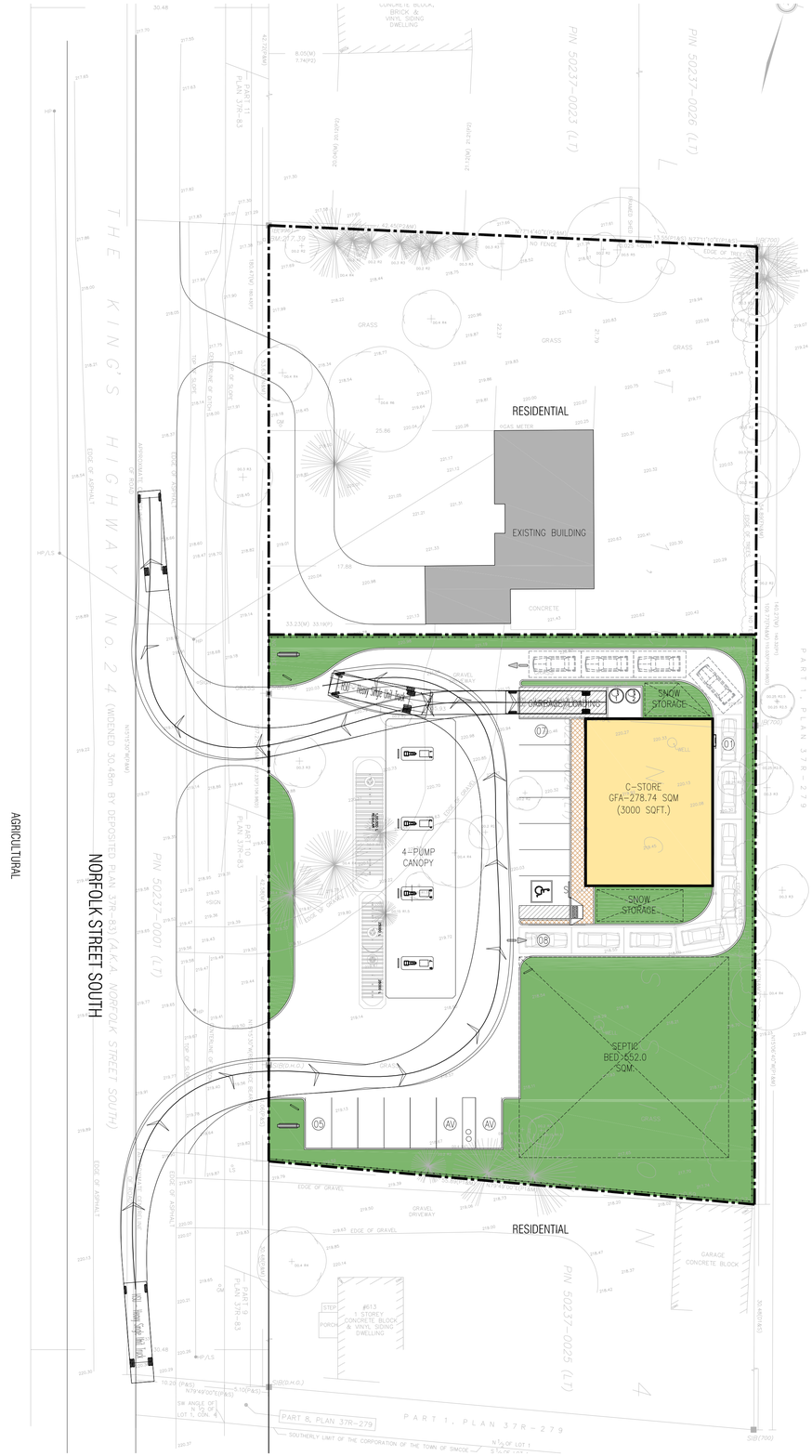
PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

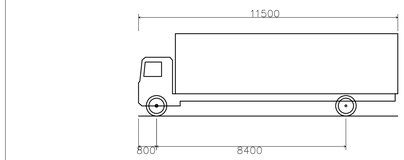
DRAWING TITLE:

FUEL TRUCK TURNING MOVEMENT PLAN

DRAWN BY: NG	DATE: 17 AUG. 2021
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.: **21-54**	DRAWING NO.: **A-1.1**



1 A-1.2 **GARBAGE TRUCK TURNING MOVEMENT PLAN**
SCALE 1:300



HSU – Heavy Single Unit Truck

Overall Length	11500mm
Overall Width	2600mm
Overall Body Height	3650mm
Min Body Ground Clearance	445mm
Track Width	2600mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	14100mm

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N (DEGREE TO NORTH) PROJECT NORTH

25th MARCH 2022
ISSUED FOR SPA
NOT FOR CONSTRUCTION

No.	Date	Version	Dwn.
1.	12 MAR. 2022	ISSUED FOR SPA	NG.

PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

GARBAGE TRUCK TURNING MOVEMENT PLAN

DRAWN BY: NG	DATE: 17 AUG. 2021
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.: **21-54**	DRAWING NO.: **A-1.2**

NAME OF PROJECT / LOCATION: BUILDING– CONVENIENCE STORE
601 NORFOLK ST. S., SIMCOE ON.

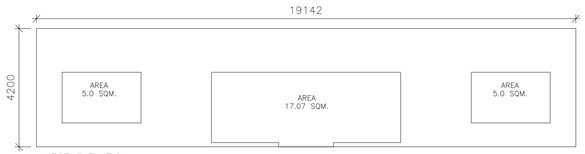
ITEM	ONTARIO BUILDING CODE DATA MATRIX			OBC REFERENCE	
				☑ PART 3	☐ PART 9
1	PROJECT DESCRIPTION:	☑ NEW ☐ ADDITION ☐ ALTERATION	☐ CHANGE OF USE	1.1.2.[A]	1.1.2.[A] 9.10.1.3.
2	MAJOR OCCUPANCY(S) GROUP E			3.1.2.1.(1)	9.10.2.
3	BUILDING AREA (m^2) EXISTING 0.0	NEW 278.74	TOTAL 278.74	1.4.1.2.[A]	1.4.1.2.[A]
4	GROSS AREA (m^2) EXISTING 0.0	NEW 278.74	TOTAL 278.74	1.4.1.2.[A]	1.4.1.2.[A]
5	NUMBER OF STOREYS ABOVE GRADE: 1	BELOW GRADE: 0		1.4.1.2.[A]&3.2.1.1.	1.4.1.2.[A]&3.2.1.1.
6	NUMBER OF STREETS/FIRE FIGHTER ACCESS: 1			3.2.2.10. & 3.2.5.	9.10.20.
7	BUILDING CLASSIFICATION E 3.2.2.61			3.2.2.20.–.83	9.10.2.
8	SPRINKLER SYSTEM PROPOSED	☐ ENTIRE BUILDING ☐ SELECTED COMPARTMENTS ☐ SELECTED FLOOR AREAS ☐ BASEMENT ☐ IN LIEU OF ROOF RATING ☑ NOT REQUIRED		3.2.2.43 3.2.1.5. 3.2.2.17. INDEX	9.10.8.2. INDEX
9	STANDPIPE REQUIRED	☐ YES	☑ NO	3.2.9.	N/A
10	FIRE ALARM REQUIRED	☐ YES	☑ NO	3.2.4.	9.10.18.
11	WATER SERVICE/SUPPLY IS ADEQUATE	☑ YES	☐ NO	3.2.5.7.	N/A
12	HIGH BUILDING	☐ YES	☑ NO	3.2.6.	N/A
13	PERMITTED CONSTRUCTION ☐ COMBUSTIBLE ☐ NON–COMBUSTIBLE ☑ BOTH ACTUAL CONSTRUCTION ☐ COMBUSTIBLE ☐ NON–COMBUSTIBLE ☑ BOTH			3.2.2.61 & 3.2.2.71	9.10.6.
14	MEZZANINE(S) AREA (M^2) N/A				
15	OCCUPANT LOAD BASED ON ☑ m^2/PERSON ☐ DESIGN OF BUILDING 1 ST. FLOOR OCCUPANCY E LOAD 15 PERSONS			3.1.17.	9.9.1.3.
16	BARRIER–FREE DESIGN	☑ YES	☐ NO (EXPLAIN) _____	3.8.	9.5.2.
17	HAZARDOUS SUBSTANCES	☐ YES	☑ NO	3.3.1.2. & 3.3.1.19.	9.10.1.3.(4)
18	REQUIRED FIRE RESISTANCE RATING (FRR)	HORIZONTAL ASSEMBLIES FRR (HOURS)	LISTED DESIGN No. OR DESCRIPTION (SG–2)	3.2.2.43	9.10.8. 9.10.9.
		FLOORS 3/4 HOUR	N/A	POURED CONC. FLOOR/ROOF/SLABS	
		ROOF 0 HOUR	N/A		
		OR			
		FRR OF SUPPORTING MEMBERS	LISTED DESIGN No. OR DESCRIPTION (SG–2)	6FR6 COL. ENCLOSURE	
		FLOORS N/A HOUR	N/A		
		ROOF N/A HOUR	N/A		
19	SPATIAL SEPARATION–CONSTRUCTION OF EXTERIOR WALLS			3.2.2.43	9.10.14.

WALL	AREA OF EBF (m^2)	L.D. (m)	L/H OR H/L	PERMITTED MAX % OF OPENINGS	PROPOSED % OF OPENINGS	FRR (HOURS)	LISTED DESIGN OR DESCRIPTION	COMB. CLADDING	NON–COMB CLADDING	COMB. CONST.	NON–COMB. CONST. 3.2.2.43
NORTH	61.16	9.65	3.46	100%	0	1		☑	☑	☑	☑
SOUTH	61.16	3.46	3.46	100%	34.66%	1		☑	☑	☑	☑
WEST	80.40	51.54	4.55	100%	33.67%	1		☑	☑	☑	☑
EAST	80.40	4.90	4.55	100%	1.57%	1		☑	☑	☑	☑

20 PLUMBING FIXTURE REQUIREMENTS

	OBC REFERENCE	
	☑ PART 3	☐ PART 9

MALE/FEMALE COUNT @ _50%/_50%_ EXCEPT AS NOTED OTHERWISE	OCCUPANT LOAD	OBC REF	WC REQUIRED	WC PROVIDED	3.7.4.8	
1 ST. FLR.: OCCUPANCY___E_____	15	3.7.4.8	1	1		

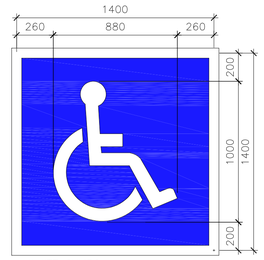


WEST ELEVATION
EBF = 80.40 SQM.
L/H = 4.55
OPENING = 27.07 SQM.
% OF OPENING = 33.67%
L.D. = 51.40M

EAST ELEVATION
EBF = 80.40 SQM.
L/H = 4.55
OPENING = 1.27 SQM.
% OF OPENING = 1.57%
L.D. = 4.9M

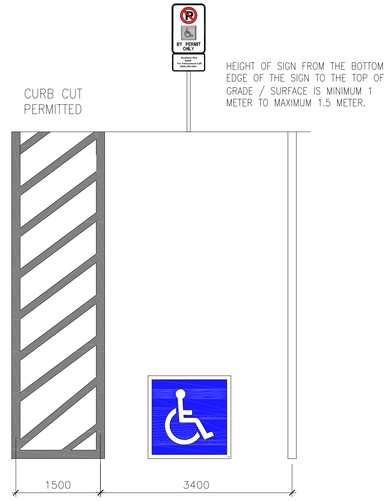
SOUTH ELEVATION
EBF = 61.16 SQM.
L/H = 3.46
OPENING = 2.34 SQM.
% OF OPENING = 3.82%
L.D. = 34.66M

NORTH ELEVATION
EBF = 61.16 SQM.
L/H = 3.46
OPENING = 0
% OF OPENING = 0
L.D. = 9.65M



WHITE SYMBOL
BLUE BACKGROUND
WHITE BORDER

1 A-1.3 PAVEMENT MARKING DETAIL AS PER REGULATION
SCALE 1:20



2 A-1.3 SIGN PLACEMENT DETAIL
SCALE 1:50

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www.narchitecture.com

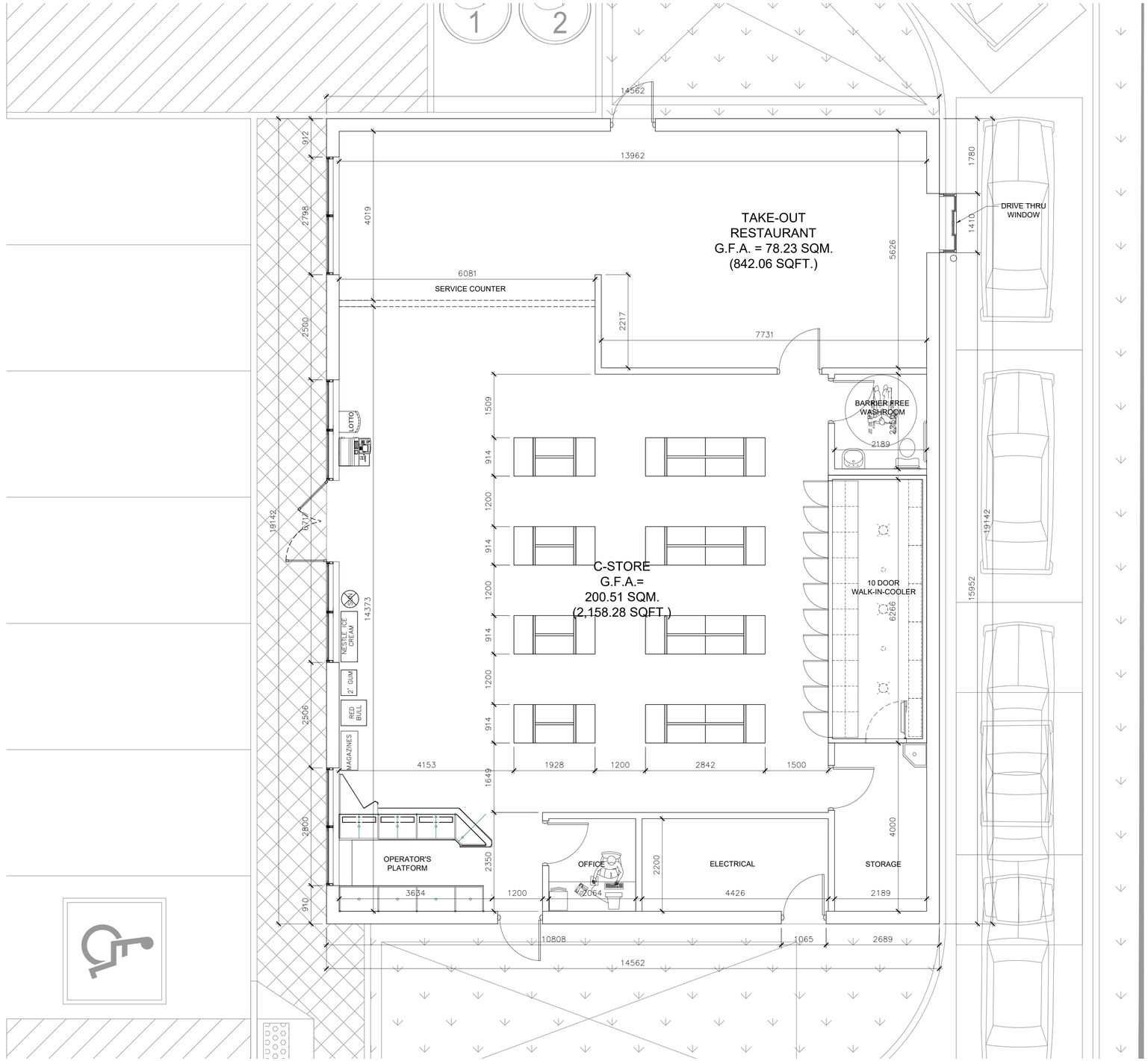
25th MARCH 2022
ISSUED FOR SPA
NOT FOR CONSTRUCTION

No.	Date	Version	Dwn.
1.	12 MAR. 2022	ISSUED FOR SPA	NG.

PROJECT:
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:
OBC MATRIX, EBF CALCULATION & DETAILS

DRAWN BY: NG	DATE: 17 AUG. 2021
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.: 21-54	DRAWING NO.: A-1.3



1 A-2.0 **FIRST FLOOR PLAN**
SCALE 1:50

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N
(GEODETIC NORTH)
PROJECT NORTH

25th MARCH 2022
ISSUED FOR SPA
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No.	Date	Version	Dwn.
1.	12 MAR. 2022	ISSUED FOR SPA	NG.

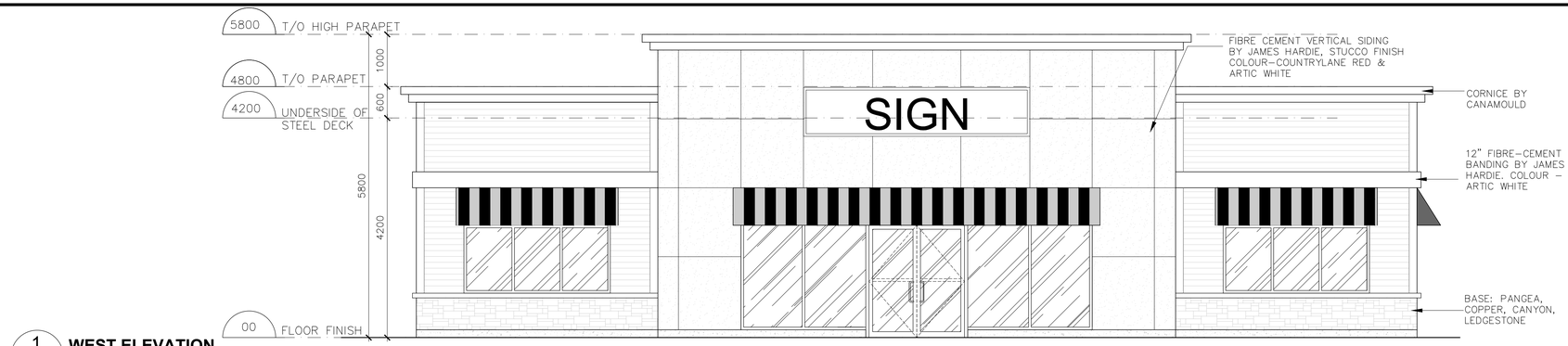
PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

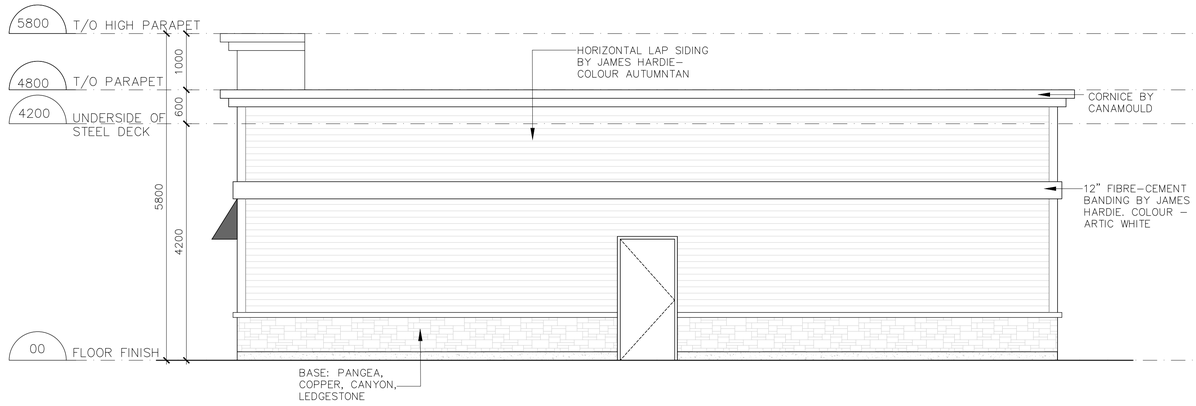
DRAWING TITLE:

FIRST FLOOR PLAN

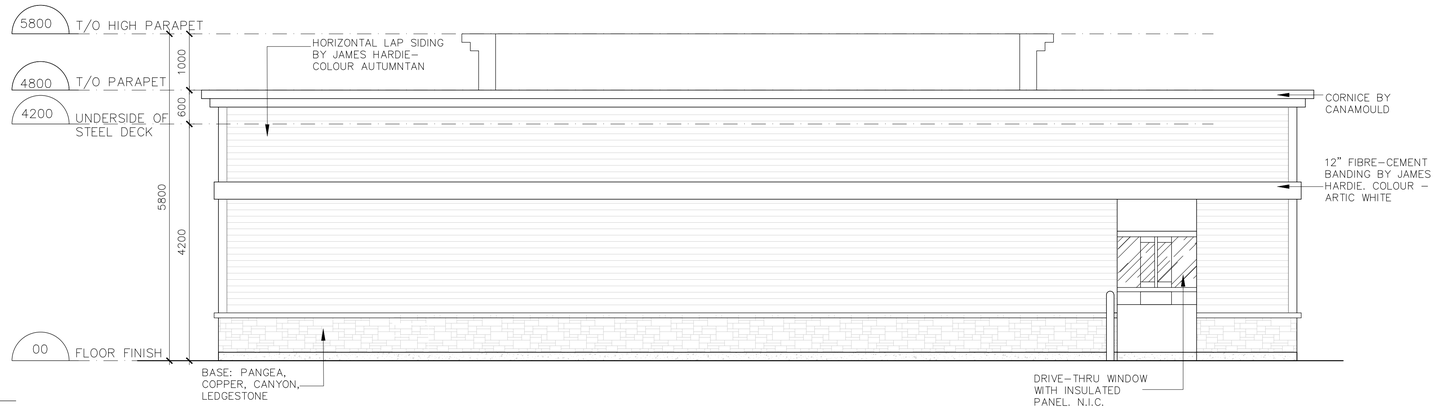
DRAWN BY: NG	DATE: 17 AUG. 2021
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.: **21-54**	DRAWING NO.: **A-2.0**



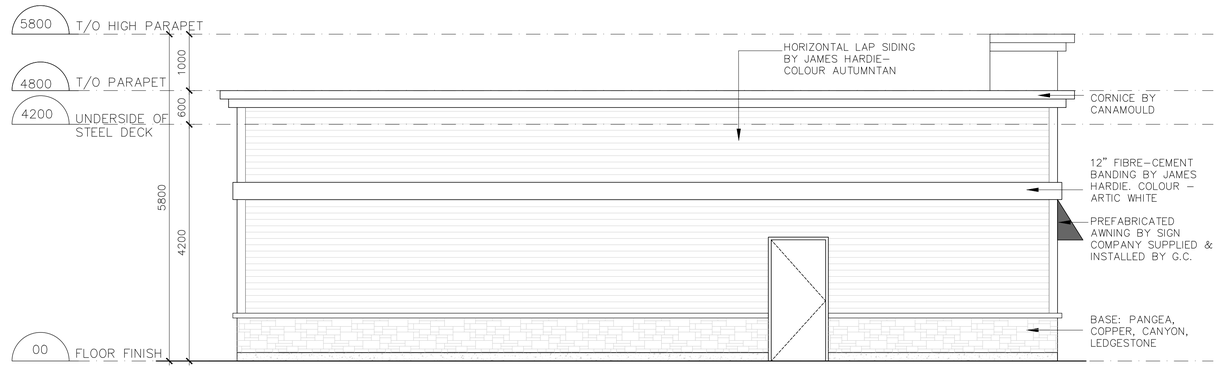
1 **WEST ELEVATION**
A-3.0 SCALE 1:50



1 **SOUTH ELEVATION**
A-3.0 SCALE 1:50



1 **EAST ELEVATION**
A-3.0 SCALE 1:50



1 **NORTH ELEVATION**
A-3.0 SCALE 1:50

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25th MARCH 2022
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No.	Date	Version	Dwn.
1.	12 MAR. 2022	ISSUED FOR SPA	NG.

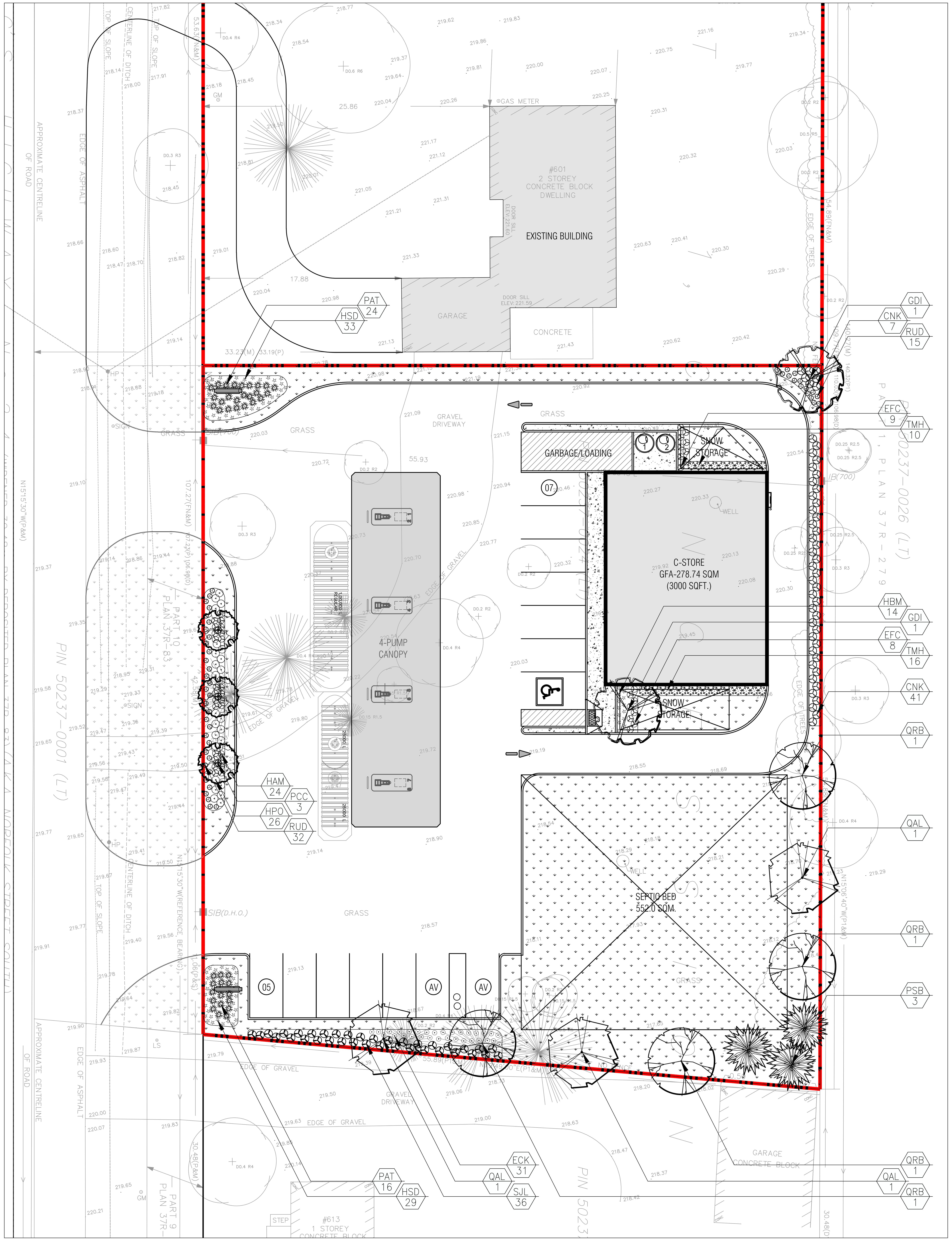
PROJECT:

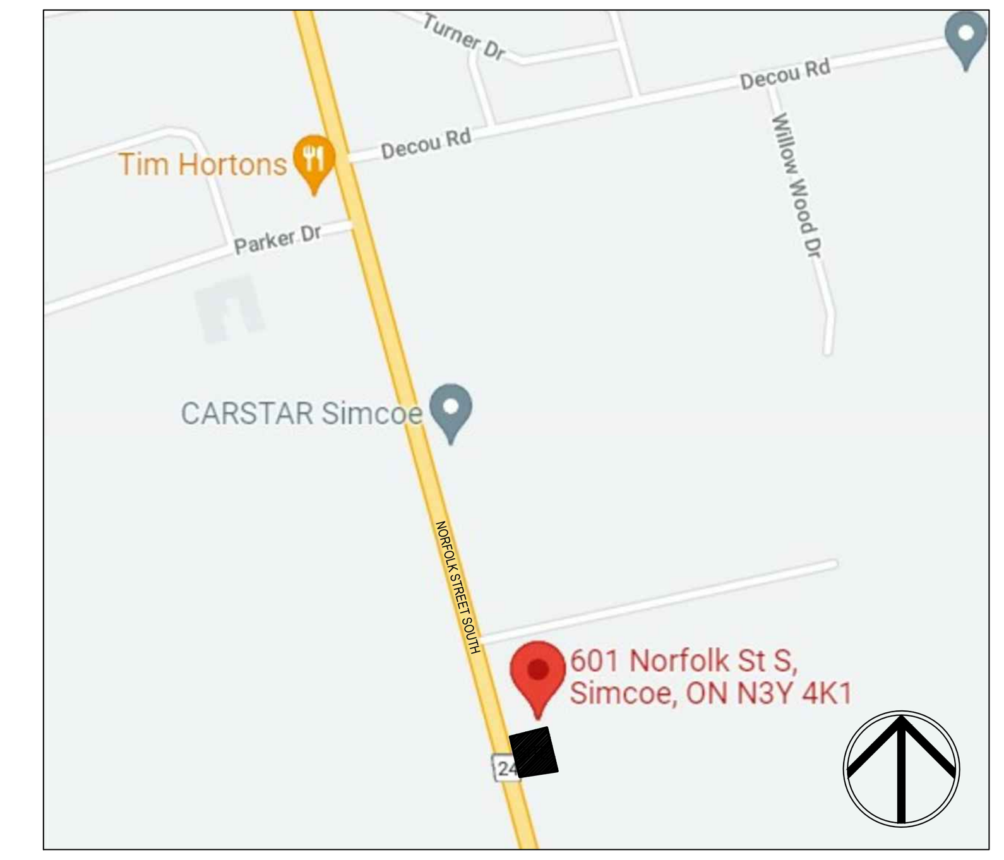
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

BUILDING ELEVATIONS

DRAWN BY: NG	DATE: 17 AUG. 2021
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.: 21-54	DRAWING NO.: A-3.0





Key Map

Legend

- Proposed Deciduous Tree
- Proposed Coniferous Tree
- Proposed Shrub/Perennial
- Property Line
- Prop. Sodded Area Typ.
- Existing. Sodded Area Typ.
- Prop. Concrete Paving Typ.
- Plant Material Reference Key
- Detail Reference Key

Proposed Plant Material List

KEY	QNTY	BOTANICAL NAME	COMMON NAME	HT/CAL	SPREAD	ROOT	DROUGHT TOLERANT	NATIVE	REMARKS
DECIDUOUS TREES									
GDI	2	Gymnocladus dioicus	Kentucky Coffee Tree	70 mm		B.&B.	Yes	Yes	Full Form
PCC	3	Pyrus calleryana 'Chantecleer'	Chanticleer Pear	70 mm		B.&B.	Yes	No	Full Form
QAL	3	Quercus alba	White Oak	70 mm		B.&B.	Yes	Yes	Full Form
QRB	4	Quercus rubra	Red Oak	70 mm		B.&B.	Yes	Yes	Full Form
CONIFEROUS TREES									
PSB	3	Pinus strobus	White Pine	200 cm		B.&B.	High	Yes	Full Form
DECIDUOUS SHRUBS									
CNK	48	Cornus sericea 'Kelseyi'	Kelsey Red Osier Dogwood	60 cm		C.G.	Yes	Yes	Full Form
EFC	17	Euonymus fortunei 'Coloratus'	Coloratus Euonymus		40 cm	C.G.	High	Yes	Full Form
HPO	26	Hydrangea quercifolia 'Oak leaf'	Oak leaf Hydrangea	60 cm		C.G.	No	No	Full Form
SJL	36	Spirea japonica 'Little Princess'	Dwarf Red Spirea	60 cm		C.G.	Yes	Yes	Full Form
CONIFEROUS SHRUBS									
TMH	26	Taxus media 'Hicksii'	Hick's Yew	80 cm		C.G.	Yes	No	Full Form
PERENNIALS									
ECK	31	Echinacea purpurea 'Kim's Knee High'	Dwarf Purple Cone Flower			2 Gal.	Yes	No	Full Form
HAM	24	Hosta fortunie aurea-marginiata	Yellow Edge Varigated Hosta		shade	2 Gal.	High	Yes	Large Leaf
HBM	14	Hemerocallis 'Barbara Mitchell'	Dwarf (peachy-pink) Daylilies			2 Gal.	High	Yes	Full Form
HSD	62	Hemerocallis 'Stella D'oro'	Stella D'oro (Yellow) Daylilies			2 Gal.	Yes	No	Full Form
PAT	40	Perovskia atriplicifolia	Russian Sage			2 Gal.	High	Yes	Full Form (PPOY Winner)
RUD	47	Rudbeckia fulgida var. sullivantii 'Goldsturm'	Black Eyed Susan			2 Gal.	Yes	Yes	Full Form

msla
MARTON SMITH LANDSCAPE ARCHITECTS
170 The Donway W Suite 206.
Toronto, Ontario, Canada. M3C 2G3
tel. 416.492.9966 | email. info@msla.ca

Architect:
n Architecture Inc

Client/Owner:

Municipality: County of Simcoe

Notes:

No.	Revision	Date
01	Issued for Review	04/13/22

North:

Stamp: Ontario Association of Landscape Architects — OALA Member

Project:
Proposed Landscape and Site Upgrades
601 Norfolk St South,
Simcoe, Ontario

Scale: 1:200 Date: Mar 2022
Drawn By: J.B. Checked By: L.M.

Drawing Title:
Landscape Plan

Project No. **22125**
Sheet No. **L1-01**

DO NOT SCALE DRAWINGS • PRELIMINARY NOT FOR CONSTRUCTION • THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNTIL COUNTERSIGNED BY L. ARCHITECT •

LANDSCAPE SPECIFICATIONS

LANDSCAPE SPECIFICATIONS

CONTRACTOR MUST CONTACT ALL UTILITY COMPANIES FOR STAKE OUTS PRIOR TO ANY EXCAVATION OR PLANTING.

ROUGH GRADING

ROUGH GRADE AND FILL AREAS TO ESTABLISH SUBGRADE AS REQUIRED. PROVIDE DRAINAGE PATTERN AS INDICATED ON DRAWINGS. ROUND SMOOTHLY ALL TOPS AND TOES OF SLOPES. COMPACT ALL AREAS TO 95% STANDARD PROCTOR DENSITY UNLESS SPECIFIED OTHERWISE. EXISTING TREES TO REMAIN ON SITE ARE TO BE PROTECTED AS DETAILED.

FINE GRADING

FINE GRADE ALL AREAS TO FINISHED GRADES AS SHOWN ON LAYOUT OR GRADING PLAN OR ARCHITECT'S SITE PLAN. PROVIDE UNIFORM SLOPES AWAY FROM THE BUILDING, UNLESS SPECIFIED OTHERWISE. SLOPES MAY NOT EXCEED 33 1/3% (3:1).

SPREADING OF TOPSOIL

SCARIFY THE SUBSOIL PRIOR TO THE SPREADING THE TOPSOIL. REMOVE ALL DEBRIS AND LEAVE A FINE-TEXTURED EVEN SURFACE. ALL TOPSOIL TO BE IMPORTED UNLESS PREVIOUSLY APPROVED BY LANDSCAPE ARCHITECT. OBTAIN APPROVAL FOR THE QUALITY OF ANY IMPORTED TOPSOIL BEFORE DELIVERY TO THE SITE. TOPSOIL IS TO BE COMPACTED TO CREATE A FIRM AND EVEN SURFACE.

SOD

USE NO. 1 GRADE TURFGRASS NURSERY SOD WHICH CONFORMS WITH THE SPECIFICATIONS OF THE NURSERY SOD GROWERS ASSOCIATION OF ONTARIO. ALL LAWN AREAS SHALL RECEIVE A MINIMUM OF 100MM (4") OF COMPACTED TOPSOIL, AND SHALL BE SODDED WITH #1 KENTUCKY BLUEGRASS - FESCUE. NO SOD SLOPES ARE TO EXCEED 3:1. SLOPE IN EXCESS OF 4:1 TO BE PEGGED.

MINERAL FERTILIZER

APPLY THE FOLLOWING MINERAL FERTILIZER UNLESS SOILS TESTS SHOW OTHER REQUIREMENTS:

1. SODDED AREAS - 11% NITROGEN, 8% PHOSPHORUS AND 4% POTASH (11-8-4) AT THE RATE OF 4.5 KG OVER M2 (10 LBS OVER 1000 SQ. FT.).

2. PLANTING BEDS - 7% NITROGEN, 7% PHOSPHORUS AND 7% POTASH (7-7-7) AT THE RATE OF 40 GRAMS (4 OZ.) FOR EVERY BUSHEL OF TOPSOIL.

PREPARATION OF PLANTING BEDS

ALL PLANT BEDS TO BE CONTINUOUS. EXCAVATE ALL PLANTING BEDS TO THE DEPTH AS INDICATED ON THE DRAWINGS AND DETAILS, MIN 450mm(18"). BACKFILL ALL PLANTING BEDS WITH A SOIL MIXTURE CONSISTING OF SIX (6) PARTS OF SAND LOAM, ONE (1) PART OF FINELY PULVERIZED PEAT MOSS, TWO (2) PARTS OF WELL-ROTTED MANURE AND THE MINERAL FERTILIZER AS SPECIFIED ABOVE. ALSO ADD .58 KILOS BONEMEAL/CUBIC METER OF PLANTING SOIL (1 LB./CUBIC YARD). PREPARE THE PLANTING BEDS FOR PLANTING BEFORE THE DELIVERY OF THE PLANT MATERIAL TO THE JOB SITE.

NOTE: IF THE EXISTING SOIL CONDITIONS ARE CLAY OR WET IN NATURE, CONTACT THE LANDSCAPE ARCHITECT FOR INSTRUCTIONS OF A SUITABLE SOIL MIXTURE. FAILURE TO DO THIS MAY RESULT IN DELAY OF APPROVAL AND ACCEPTANCE.

PLANT MATERIALS

ALL PLANT MATERIAL SHALL CONFORM TO THE STANDARDS OF THE CANADIAN NURSERY TRADES ASSOCIATION FOR SIZE AND SPECIES.

ALL SHRUB AND TREE MATERIAL SHALL BE CONTAINER GROWN, POTTED, S/B OR B/B, UNLESS OTHERWISE NOTED. BARE ROOT PLANTING SHALL BE ACCEPTABLE FOR CERTAIN SPECIES DURING EARLY SPRING OR LATE FALL PLANTING SEASON. CONTRACTOR SHALL MAKE REQUESTS FOR ROOT CONDITION SUBSTITUTION IN WRITING TO THE LANDSCAPE ARCHITECT PRIOR TO COMMENCEMENT OF PLANTING OPERATIONS. ALL PLANT MATERIAL TO BE CLAY GROWN STOCK UNLESS OTHERWISE NOTED.

REFER TO PLAN FOR LOCATION

LANDSCAPE SPECIFICATIONS — 1 — LD-01

SCALE: N.T.S. DATE:

PLANT MATERIAL INSTALLATION

PLANT MATERIAL INSTALLATION

ALL TREES, SHRUBS AND GROUNDCOVERS SHALL BE PLANTED AS DETAILED & AS SHOWN ON THE PLANTING PLAN. ALL BEDS TO RECEIVE A COVER OF CLEAN MULCH TO A DEPTH OF 75mm(3"). FOR GUYING AND STAKING TREES, REFER TO PLANTING DETAILS. WRAP ALL DECIDUOUS TREES UNDER EXPERIENCED SUPERVISION ONLY TO THE SPECIFICATIONS OF THE ONTARIO LANDSCAPE CONTRACTORS ASSOCIATION.

PLANT MATERIAL SIZES AND CONDITIONS ARE TO BE AS INDICATED ON THE LANDSCAPE DRAWING.

THE INDIVIDUAL PLANT GROUPING TOTAL AS ILLUSTRATED ON THE PLANTING PLAN SUPERSEDES THE ESTIMATED QUANTITY ON THE MASTER PLANT LIST. CONTRACTOR MUST REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT IN WRITING BEFORE COMMENCING ANY WORK. CONTRACTOR WILL ASSUME FULL RESPONSIBILITY IF LANDSCAPE ARCHITECT IS NOT NOTIFIED OF DISCREPANCIES.

* MULCH - SHREDDED PINE MULCH BY "GRO BARK" OR APPROVED EQUAL. LANDSCAPE ARCHITECT TO APPROVE MULCH BEFORE INSTALLATION.

GENERAL MAINTENANCE

PROPER MAINTENANCE PROCEDURES ARE TO BE FULLY ADMINISTERED FOR ALL NEWLY CONSTRUCTED LANDSCAPE WORK, IN ACCORDANCE WITH LANDSCAPE ONTARIO SPECIFICATIONS (SECTION 1E - MAINTENANCE WORK). THIS SHALL APPLY ONLY DURING THE CONSTRUCTION PERIOD, UNLESS OTHERWISE SPECIFIED. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF SOD AND PLANTING UNTIL FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT.

RODENT PROTECTION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL TREES AND SHRUBS FOR WINTER PROTECTION AND FROM RODENT INJURY FOR THE DURATION OF GUARANTY PERIOD. PROTECTIVE GUARDS SHALL BE EMPLOYED AROUND ALL DECIDUOUS TREES. GUARDS TO BE 150MM DIA. PVC PIPE OR AS MUNICIPAL GUIDELINES. GUARDS SHALL BE INSTALLED PRIOR TO THE APPLICATION OF THE MULCH AND SHOULD BE PLACED A MINIMUM OF 50MM (2") OUT FROM THE TREE TRUNK ON ALL SIDES.

ALL SHRUBS AND CONIFEROUS TREES SHALL HAVE AN APPLICATION OF "SKOOT" OR APPROVED EQUIVALENT RODENT FORMULA, TO BE APPLIED AT THE END OF OCTOBER. FOLLOW MANUFACTURER'S DIRECTIONS FOR APPLICATION.

GENERAL REQUIREMENTS

USE ABOVE SPECIFICATIONS IN CONJUNCTION WITH THE GENERAL LANDSCAPE SPECIFICATIONS OF THE ONTARIO LANDSCAPE CONTRACTORS ASSOCIATION, THE NURSERY SOD GROWERS ASSOCIATION OF ONTARIO AND WITH THE GUIDE SPECIFICATIONS FOR NURSERY STOCK OF THE CANADIAN NURSERY TRADES ASSOCIATION. USE ONLY PLANT MATERIAL TRUE TO NAME, SIZE AND GRADE AS SPECIFIED ON PLANTING PLAN; PROVIDE SUFFICIENT LABELS OR MARKINGS TO INDICATE CLEARLY THE VARIETY, SIZE AND GRADE OF EACH SPECIMEN OR BUNDLE.

OBTAIN APPROVAL FOR SUBSTITUTIONS AS TO VARIETY, SIZE OR GRADE FROM THE LANDSCAPE ARCHITECT. USE ONLY NURSERY STOCK GROWN UNDER PROPER HORTICULTURAL PRACTICES, VIABLE, FREE FROM PEST AND DISEASE AND UNDAMAGED. CHECK LOCATIONS AND OBTAIN STAKEOUTS OF ALL UTILITY LINES BEFORE EXCAVATION. OBTAIN ALL NECESSARY PERMITS BEFORE COMMENCEMENT OF CONSTRUCTION. REPORT IN WRITING ANY DISCREPANCIES IN THE DRAWINGS, SPECIFICATIONS AND CONTRACT DOCUMENTS TO THE LANDSCAPE ARCHITECT BEFORE THE END OF THE BIDDING PROCESS AND COMMENCEMENT OF CONSTRUCTION. THESE SPECIFICATIONS MAY BE SUPERCEDED BY ADDITIONAL SPECIFICATIONS SET OUT IN THE TENDER DOCUMENTS. CONTRACTOR TO REVIEW ALL DOCUMENTS.

GUARANTEE PERIOD

PROVIDE ONE FULL YEAR GUARANTEE ON ALL LANDSCAPE WORK FROM DATE OF FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT. GUARANTEE PERIOD MAY BE EXTENDED TO TWO FULL YEARS DEPENDING ON MUNICIPAL STANDARDS. CONTRACTOR TO VERIFY WITH OWNER AND LANDSCAPE ARCHITECT.

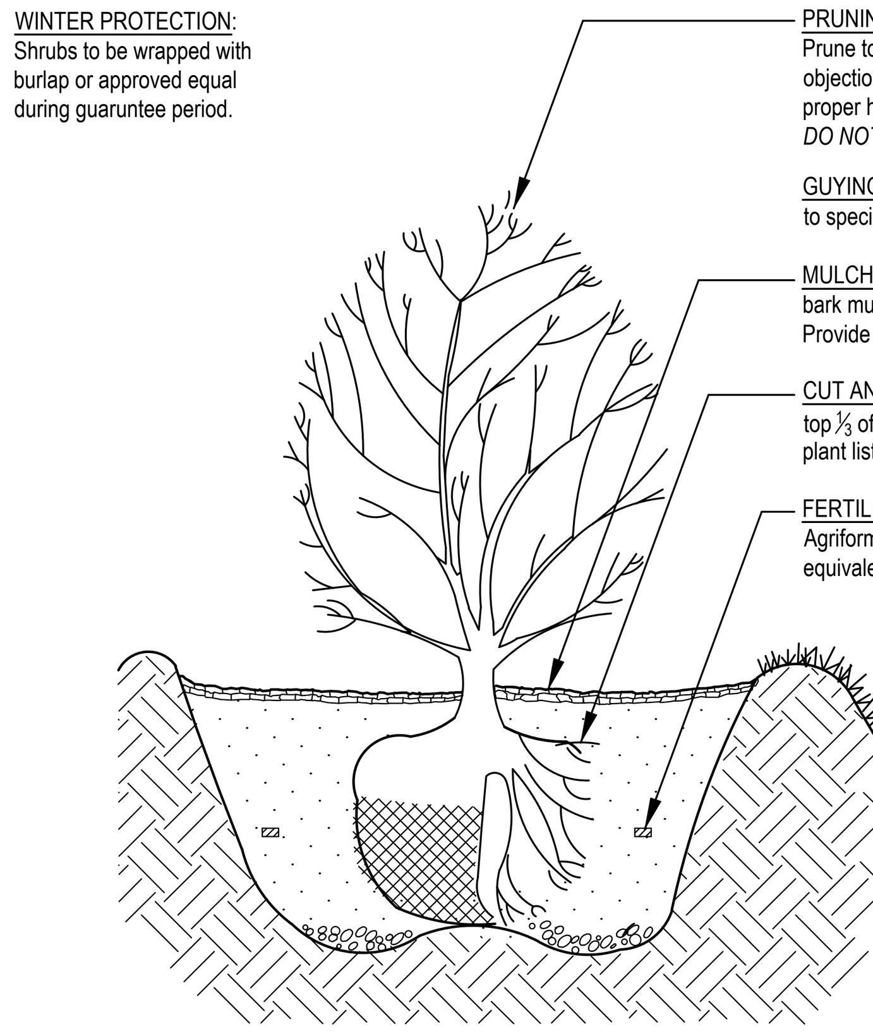
REFER TO PLAN FOR LOCATION

PLANT MATERIAL INSTALLATION — 2 — LD-01

SCALE: N.T.S. DATE:

STANDARD SHRUB PLANTING DETAIL

WINTER PROTECTION: Shrubs to be wrapped with burlap or approved equal during guaruntee period.



PRUNING: (To suit species) Prune to remove damaged or objectionable branches following proper horticultural practice. *DO NOT PRUNE LEADERS.*

GUYING: As directed; appropriate to species and size of shrub

MULCHING: 102 (4") shredded bark mulch be "All Treat" or equal. Provide 102 (4") saucer.

CUT AND REMOVE: burlap from top ⅓ of ball as shown. (B.B. as per plant list)

FERTILIZER: Two (2) 21 gram Agriform tablets or approved equivalent for each shrub in bed.

PLANTING SOIL MIXTURE: (Mix thoroughly)
A. For ideal situations mix:
- 6 parts good quality topsoil
- 2 parts well rotted cow manure
- 1 part peat moss

B. For clay or wet situations:
- Contact consultants for proper soil mixture, before proceeding with work

C. Add 0.58 kg (1 lb) of bonemeal per cubic yard of soil
D. Soil mixture should be firmly compacted to eliminate air pockets and prevent settlement.

PREPARATION OF BED: Excavate shrub bed to size outlined on drawings, minimum 457 (18") depth. Remove any subsoil or rubbish off site unless otherwise directed.

SPACING: As directed.

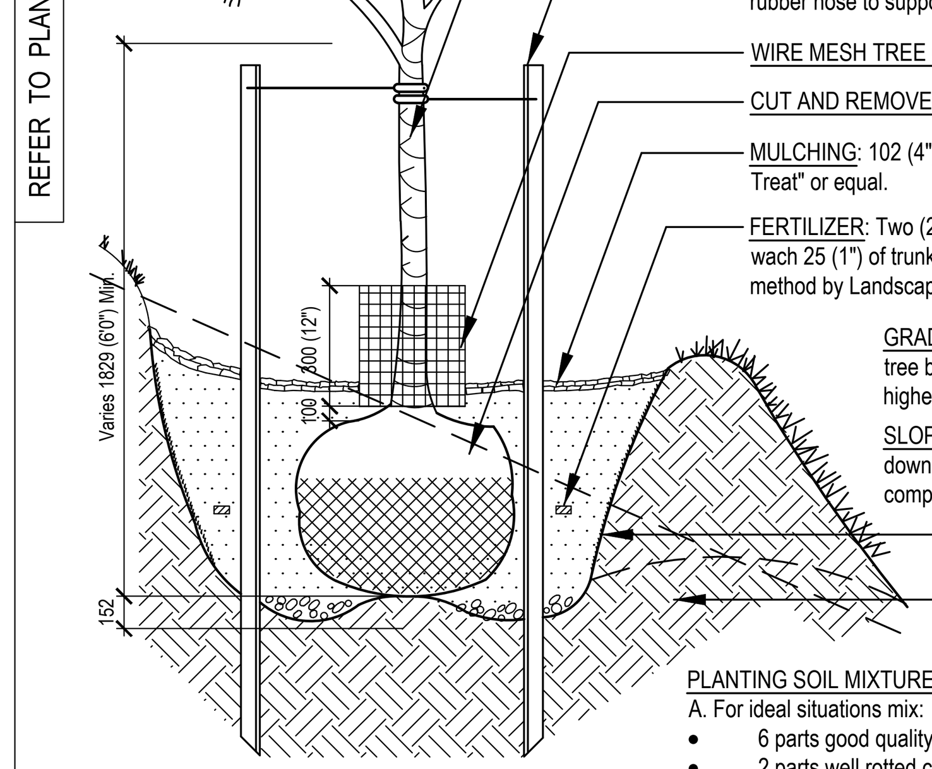
FOR RODENT CONTROL: See landscape specifications or apply "Skoot" at the end of October. Note: All tree stakes, ties and guards are to be removed one year after installation by the landscape contractor.

REFER TO PLAN FOR LOCATION

STANDARD SHRUB PLANTING DETAIL — 3 — LD-01

SCALE: N.T.S. DATE:

STANDARD DECIDUOUS TREE DETAIL



PRUNING: By ⅓ to remove damaged or objectionable branches following proper horticultural practice. *DO NOT PRUNE LEADERS.*

WRAPPING: Approved tree wrap from top of ball to 305 (12") above first branch. Secure with binder twine, wound opposite to wrapping. Secure top, middle and bottom.

GUYING: 1 wo 51 x 51 x 6 (2" x 2" x ¼") steel T-bars, minimum 2.438 (8'-0") long, and drilled to receive #10 wire threaded through 13 (½") Ø rubber hose to support tree. Paint "T" flat black.

WIRE MESH TREE GUARD: For rodent protection

CUT AND REMOVE: burlap from top ⅓ of ball.

MULCHING: 102 (4") shredded bark mulch by "All Treat" or equal.

FERTILIZER: Two (2) 21 gram Agriform tablets for wach 25 (1") of trunk diameter (or approved method by Landscape Architect).

GRADES: Maintain original grade of tree base after planting, or slightly higher to suit site conditions.

SLOPES: Build up earth saucer on downhill side. Earth saucer to compacted.

SCARIFY: edges to allow for root penetration

UNDISTURBED SOIL

NOTE: All tree stakes, ties, wraps and guards are to be removed one year after installation by the landscape contractor.

ALL GIVEN DIMENSIONS ARE IN METRIC

WIRE BASKETS OR STRING ON ROOT BALL - CUT AND TOP REMOVE ⅔

PLANTING SOIL MIXTURE: (Mix thoroughly)
A. For ideal situations mix:
- 6 parts good quality topsoil
- 2 parts well rotted cow manure
- 1 part peat moss

B. For clay or wet situations:
- Contact consultants for proper soil mixture, before proceeding with work.

C. Add 0.58 kg (1 lb) of bonemeal per cubic yard of soil
D. Soil mixture should be firmly compacted to eliminate air pockets and prevent settlement.

REFER TO PLAN FOR LOCATION

STANDARD DECIDUOUS TREE DETAIL — 4 — LD-01

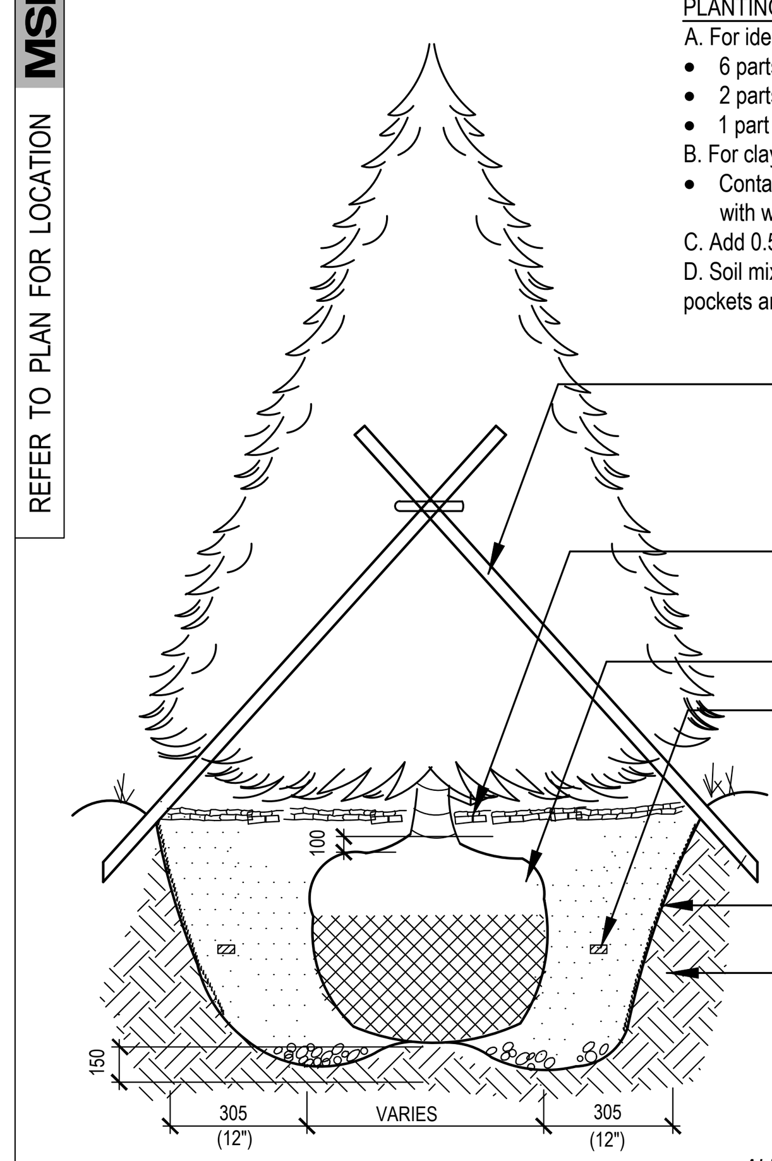
SCALE: N.T.S. DATE:

STANDARD CONIFEROUS TREE DETAIL

PLANTING SOIL MIXTURE: (Mix thoroughly)
A. For ideal situations mix:
- 6 parts good quality topsoil
- 2 parts well rotted cow manure
- 1 part peat moss

B. For clay or wet situations:
- Contact consultants for proper soil mixture, before proceeding with work

C. Add 0.58 kg (1 lb) of bonemeal per cubic yard of soil
D. Soil mixture should be firmly compacted to eliminate air pockets and prevent settlement.



STAKING: Secure three (3) stakes to main tree trunk with approved short hemp rope. Ensure the stakes are not in contact with the bark. Secure into ground with a minimum depth of 350 (1'-6").

MULCHING: Provide 102 (4") shredded bark mulch forming a saucer around base of tree. Maintain the original grade or slightly higher.

CUT AND REMOVE: burlap from top ⅓ of ball.

FERTILIZER: Two (2) 21 gram Agriform tablets for wach 25 (1") of trunk diameter (or approved method by Landscape Architect).

GRADES: Maintain original grade of tree base after planting, or slightly higher to suit site conditions.

SCARIFY: edges to allow for root penetration

UNDISTURBED SOIL

NOTE: All tree stakes, ties, wraps and guards are to be removed one year after installation by the landscape contractor.

ALL GIVEN DIMENSIONS ARE IN METRIC

WIRE BASKETS OR STRING ON ROOT BALL - CUT AND TOP REMOVE ⅔

REFER TO PLAN FOR LOCATION

STANDARD CONIFEROUS TREE DETAIL — 5 — LD-01

SCALE: N.T.S. DATE:

MARTON SMITH LANDSCAPE ARCHITECTS
170 The Donway W Suite 206.
Toronto, Ontario, Canada. M3C 2G3
tel. 416.492.9966 | email. info@msla.ca

Architect:

n Architecture Inc
PRINCIPAL: NITIN MALHOTRA, ARCHITECT.
9120 Leslie Street. Suite-208.
Richmond Hill, ON. L4B 3J9
T:416.303.4821 F:1.866.340.5265
E: info@narchitecture.com
www.narchitecture.com

Client/Owner:

Municipality: County of Simcoe — For the Greater Good

Notes:

No.	Revision	Date
01	Issued for Review	04/13/22

North:

Stamp: ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS — LUCIEN J. MARTON — OALA — MEMBER

Project:

Proposed Landscape and Site Upgrades
601 Norfolk St South,
Simcoe, Ontario

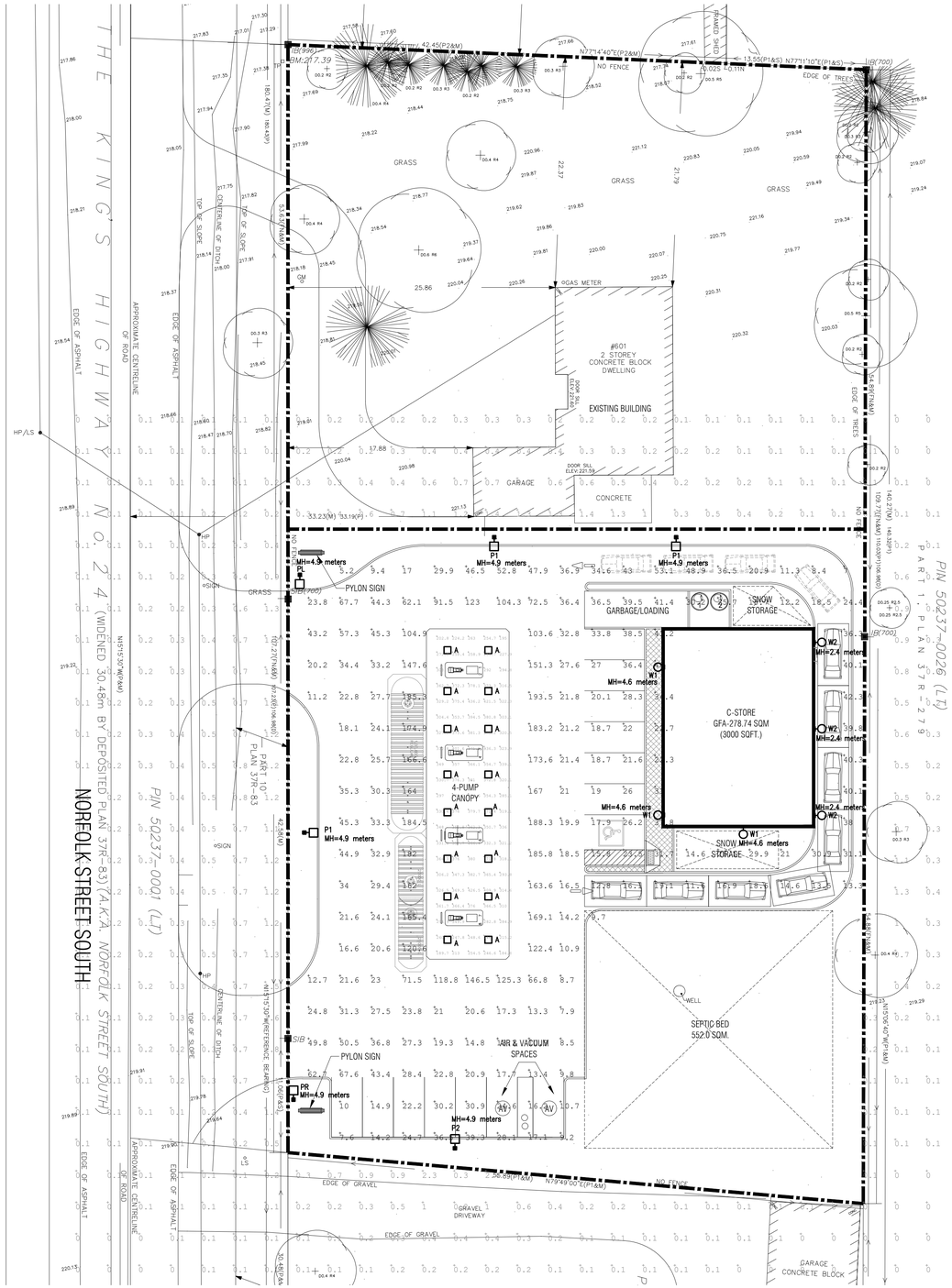
Scale: **As Shown** Date: **Mar 2022**

Drawn By: **J.B.** Checked By: **L.M.**

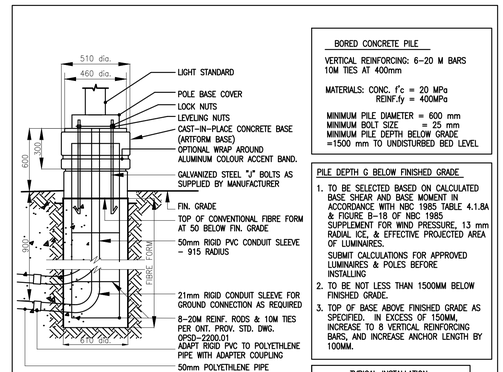
Drawing Title:

Landscape Details

Project No. **22125** Sheet No. **LD-01**



1 SITE PLAN - ELECTRICAL LAYOUT
E-1.1 1:250



NOTES:

.1 ALL DIMENSION UNIT SHALL mm UNLESS OTHERWISE NOTED.

BORED CONCRETE PILE

VERTICAL REINFORCING: 6-20 M BARS 10M TIES AT 400mm

MATERIALS: CONC. f'c = 20 MPa
REINF.fy = 400MPa

MINIMUM PILE DIAMETER = 600 mm
MINIMUM BOLT SIZE = 25 mm
MINIMUM PILE DEPTH BELOW GRADE =1500 mm TO UNDISTURBED BED LEVEL

PILE DEPTH G BELOW FINISHED GRADE

1. TO BE SELECTED BASED ON CALCULATED BASE SHEAR AND BASE MOMENT IN ACCORDANCE WITH NBC 1985 TABLE 4.1.8A & FIGURE B-18 OF NBC 1985 SUPPLEMENT FOR WIND PRESSURE, 13 mm RADIAL ICE, & EFFECTIVE PROJECTED AREA OF LUMINAIRES.
   SUBMIT CALCULATIONS FOR APPROVED LUMINAIRES & POLES BEFORE INSTALLING
2. TO BE NOT LESS THAN 1500MM BELOW FINISHED GRADE.
3. TOP OF BASE ABOVE FINISHED GRADE AS SPECIFIED. IN EXCESS OF 150MM, INCREASE TO 8 VERTICAL REINFORCING BARS, AND INCREASE ANCHOR LENGTH BY 100MM.

TYPICAL INSTALLATION
PRE-SET ANCHOR WITH STUDS
AS PER MTC SPEC. OPSD-2215.02

BOLT CIRCLE DIAMETER MM	MINIMUM ANCHOR LENGTH C MM
400	450
350	450
300	400
250	350
200	300

2 E-1.1 LIGHT STANDARD ART FORM CONCRETE BASE DETAIL
SCALE: N.T.S.

Luminaire Schedule

Symbol	Qty	Label	Arrangement	LLF	Description	Lum. Watts	Lum. Lumens	(MANUFAC)	BUG Rating	Remarks
A	16	A	SINGLE	0.900	SFC-CD-48L-550-NW-G2	81.5	9364	Gardco by Signify	B3-U0-G1	
P1	3	P1	SINGLE	0.900	ECF-S-32L-700-NW-G2-BLC	71.82	6930	Gardco by Signify	B0-U0-G2	Complete with 4.9 meters round steel pole on a 610 mm high concrete base
P2	1	P2	SINGLE	0.900	ECF-S-32L-700-NW-G2-4-HIS	72.9	7802	Gardco by Signify	B1-U0-G2	Complete with 4.9 meters round steel pole on a 610 mm high concrete base
PL	1	PL	SINGLE	0.900	ECF-S-32L-700-NW-G2-LCL	71.82	4415	Gardco by Signify	B0-U0-G1	Complete with 4.9 meters round steel pole on a 610 mm high concrete base
PR	1	PR	SINGLE	0.900	ECF-S-32L-700-NW-G2-RCL	71.82	4414	Gardco by Signify	B0-U0-G1	Complete with 4.9 meters round steel pole on a 610 mm high concrete base
W1	3	W1	SINGLE	0.900	121-16L-700-NW-G4-4	38.4	4217	Gardco by Signify	B1-U0-G1	
W2	3	W2	SINGLE	0.900	121-16L-400-NW-G4-2	22.2	2862	Gardco by Signify	B1-U0-G0	

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
GAS PUMPS	Illuminance	Lux	326.36	436.2	184.8	1.77	2.36
LIGHTSPILL	Illuminance	Lux	0.32	2.4	0.0	N.A.	N.A.
SITE	Illuminance	Lux	45.82	193.5	5.2	8.81	37.21

TYPE A TYPE P's TYPE W's

Jain
7405 EAST DANBRO CRESCENT
MISSISSAUGA, ONTARIO, L5N 6P8
TEL. 905 285 9900, FAX 905 567 5246
Email : mail@jainconsultants.com

D. JAIN
VAR. 2872
22-115

N
(DEGREE(TO-North))
PROJECT NORTH

No.	Date	Version	Dwn.
1	28MAR2022	ISSUED FOR SPA	D.P.

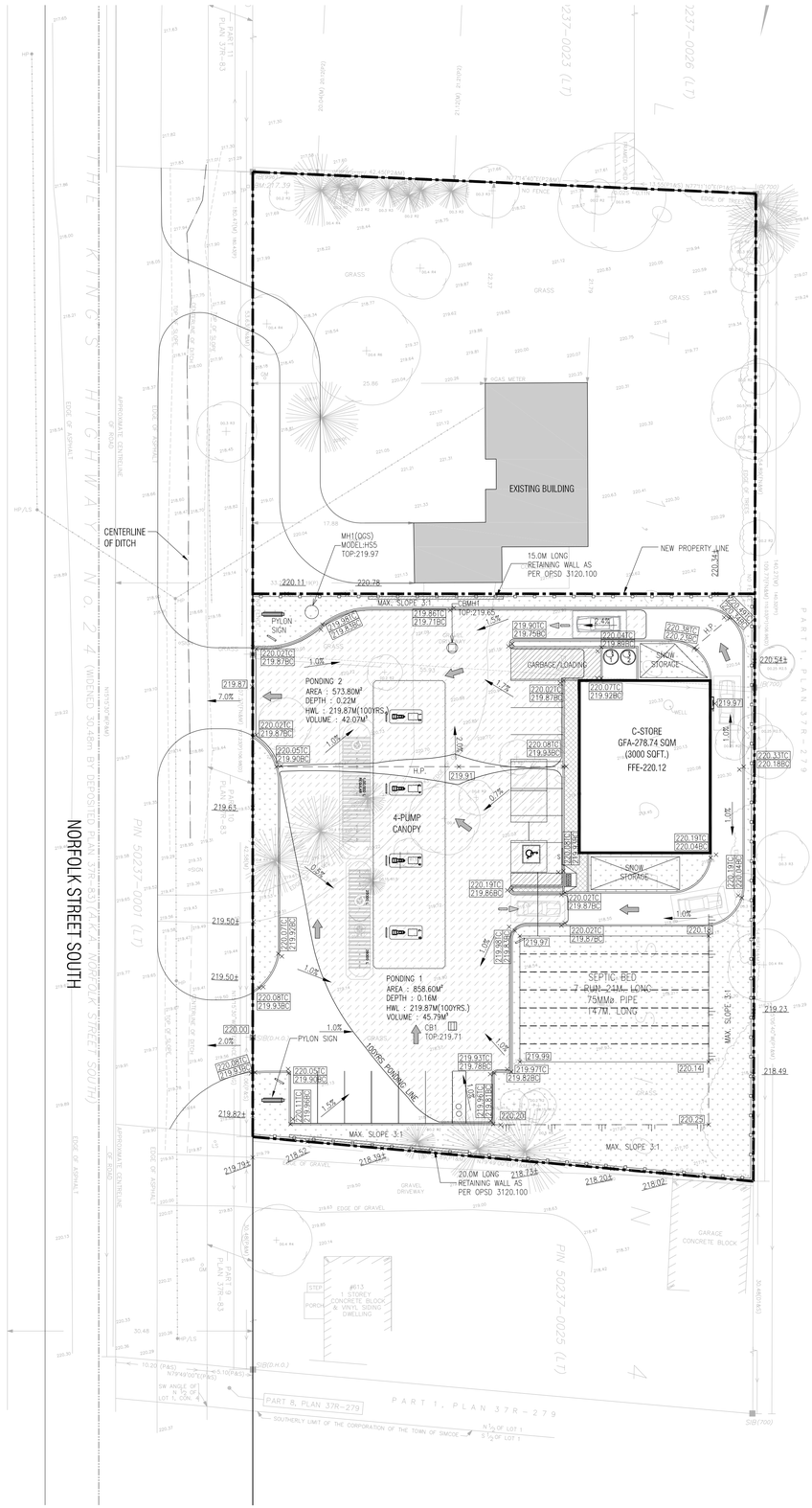
PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH SIMCOE, ON

DRAWING TITLE:

SITE PLAN - ELECTRICAL LAYOUT

DRAWN BY: DP	DATE: 25 MAR 2022
CHECKED BY: RH	SCALE: AS NOTED
PROJECT NO.: 21-54	DRAWING NO.: E-1.1



LEGAL DESCRIPTION

PART OF LOT 1 CONCESSION 4 FORMERLY IN THE TOWNSHIP OF WOODHOUSE NOW IN THE TOWN OF SIMCOE COUNTY OF NORFOLK

SURVEYOR INFORMATION

FARZAD SALEHI
ONTARIO LAND SURVEYORS

BENCH MARK NOTE

BEARINGS ARE ASTRONOMIC, AND ARE REFERRED TO THE EASTERLY LIMIT OF THE KING'S HIGHWAY NO. 24 AS SHOWN ON PLAN 37R-83, HAVING A BEARING OF N15°15'30"W. ELEVATIONS SHOWN HEREON ARE GEODETIC, AND ARE FROM REAL TIME NETWORK GPS READINGS PROVIDED BY CAN-NET AND TOTAL STATION, AND ARE IN GEOID MODEL CGG2013.

APPLICANT

n Engineering Inc
9120 Leslie Street, Suite-208,
Richmond Hill, Ontario. L4B 3J9
T: 416.256.9741
E: info@nengineering.com
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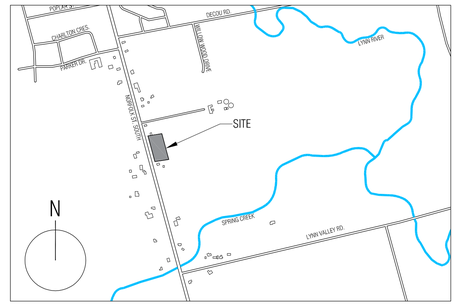


KEY PLAN
SCALE: NTS

GENERAL NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL AND LANDSCAPING PLANS.
2. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE APPLICABLE HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
3. ALL WORK, MATERIALS AND CONSTRUCTION METHODS TO CONFORM WITH THE LATEST STANDARDS, SPECIFICATIONS, POLICIES, REGULATIONS, GUIDELINES AND LAWS FOR THE COUNTY, THE ONTARIO BUILDING CODE (OBC), MINISTRY OF THE ENVIRONMENT (MOE), ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS (OPSD AND OPSS), THE ENVIRONMENTAL PROTECTION ACT AND THE WATER RESOURCES ACT. THE MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
4. THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS COMPILED FROM LOCATES INFORMATION AND RECORD DRAWINGS FROM THE. THE INFORMATION IS SHOWN FOR GENERAL INFORMATION ONLY AND THE ACCURACY OR COMPLETENESS OF THE PROVIDED INFORMATION HAS NOT BEEN CONFIRMED. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTOR'S EXPENSE.
5. THIS PLAN SHOULD BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS' PLANS. ANY DISCREPANCIES SHALL BE CLARIFIED PRIOR TO CONSTRUCTION. INFORMATION RELATED TO DIMENSIONS FOR PRIVATE ROADS, PARKING, CURBING, BUILDING LOCATION AND SETBACKS SHALL BE TAKEN FROM THE SITE PLAN PREPARED BY THE ARCHITECT.
6. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.

INSPECTIONS:

7. ALL WORK IN THE MUNICIPAL RIGHT OF WAY AND EASEMENTS IS TO BE INSPECTED BY THE COUNTY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE COUNTY AS PER THE SITE PLAN AGREEMENT.
8. ALL DISTURBED GRASSED AREAS TO BE RESTORED WITH MINIMUM 200MM TOPSOIL AND NO. 1 NURSERY SOD.
9. THE CONTRACTOR AGREES NOT TO MAKE A MATERIAL CHANGE OR CAUSE A MATERIAL CHANGE TO BE MADE TO A PLAN, SPECIFICATION, DOCUMENT OR OTHER INFORMATION, ON THE BASIS OF WHICH THIS DRAWING WAS APPROVED BY THE COUNTY, WITHOUT NOTIFYING, FILING DETAILS WITH AND OBTAINING WRITTEN AUTHORIZATION OF THE MUNICIPAL AND PROJECT ENGINEER.
10. ALL STORMWATER MANAGEMENT WORK, WATER SERVICING WORK AND SANITARY SEWER WORK INSIDE THE BOUNDARY OF THE SITE IS TO BE INSPECTED BY N ENGINEERING INC PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY N ENGINEERING AS PER APPROVED PLANS BY THE COUNTY.

LEGEND

	PROPERTY LINE
	DEVELOPMENT LIMIT
	PROPOSED CONCRETE CURB
1M D/C	PROPOSED DEPRESSED CONCRETE CURB
	LANDSCAPED AREA
	CONCRETE WALKWAY/SIDEWALK
	PAINTED LINE
	BARRIER FREE PARKING
	MAIN ENTRANCE
	OVER HEAD DOOR
	RETAINING WALL / CONCRETE TOE WALL
FFE	FINISHED FLOOR ELEVATION
HP	EX. HYDRO POLE
UP	UTILITY POLE
EX.CB	EXISTING CATCH BASIN
CB	PROPOSED CATCH BASIN MANHOLE
CBMH	PROPOSED CATCH BASIN MANHOLE
EX.MH	EXISTING STORM MANHOLE
MH	PROPOSED STORM MANHOLE
EX.MH	EXISTING SANITARY MANHOLE
MH1A	PROPOSED SANITARY MANHOLE
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
EX.WV	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE
	OVERLAND FLOW ROUTE
173.52	EXISTING ELEVATION TO REMAIN
174.00	EXISTING ELEVATION
173.90TC	PROPOSED TOP/CURB ELEVATION
173.90	PROPOSED ELEVATION
2%	PROPOSED SURFACE SLOPE
H.P	HIGH POINT (DRAINAGE DIVIDE)
	100 YR. STORM HWL AREA

n Engineering Inc
9120 Leslie Street, Suite-208
Richmond Hill, Ontario. L4B 3J9
T : 4 1 6 . 2 5 6 . 9 7 4 1
E: info@narchitecture.com
www.narchitecture.com

LICENSED PROFESSIONAL ENGINEER
A.S.ZIAUDDIN
100233432
11APR.2022
PROVINCE OF ONTARIO

N
(GEODETIC NORTH)
PROJECT NORTH

No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	LU.

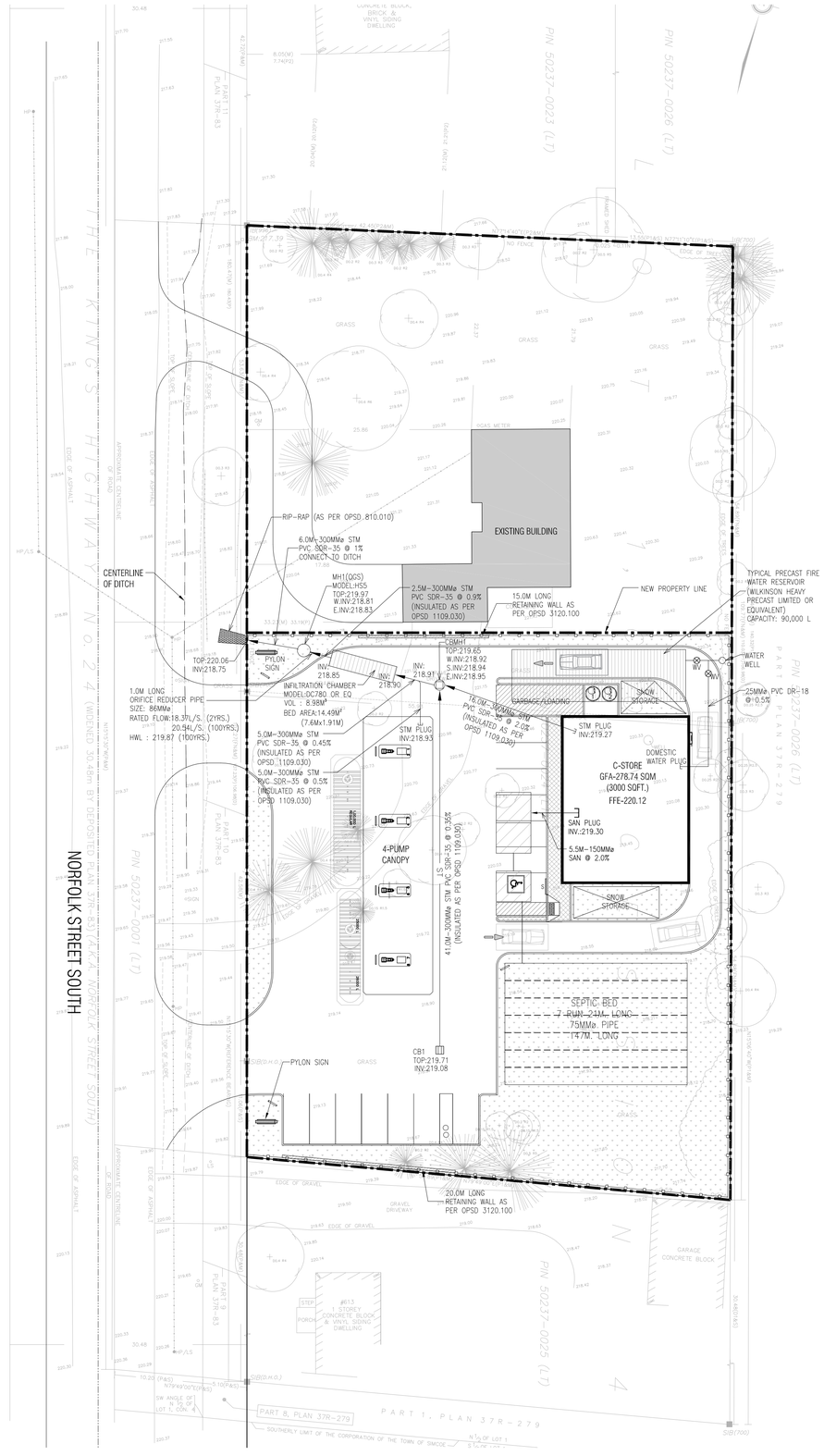
PROJECT:

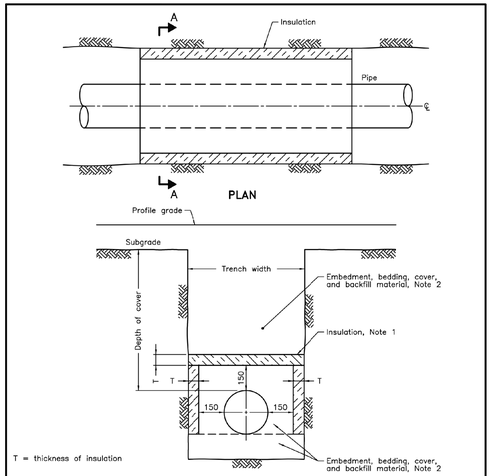
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

SITE GRADING PLAN

DRAWN BY: AZ	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: 21-54	DRAWING NO.: C1





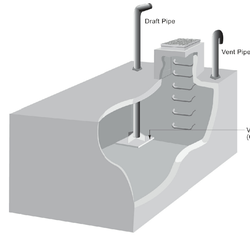
NOTES:
1 The insulation material shall be extruded polystyrene according to OPSS 1605 with a minimum compressive strength of 275 kPa.
2 Pipe embedment or bedding, cover, and backfill shall be according to:
a) Flexible OPSD 802.010, 802.013, 802.020, and 802.023.
b) Rigid – OPSD 802.030, 802.031, 802.032, 802.033, 802.050, 802.051, 802.052, and 802.053.
A Minimum insulation thickness shall be 50mm.
B Joints shall be staggered for multiple insulation sheets.
C This OPSD is to be read in conjunction with OPSD 3090.100 and 3090.101.
D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2020	Rev	1
INSULATION FOR SEWERS AND WATERMAINS IN SHALLOW TRENCHES			OPSD 1109.030

TYPICAL PRECAST FIRE WATER RESERVOIR

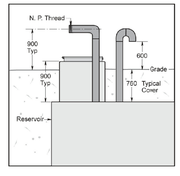
WILKINSON HEAVY PRECAST LIMITED
DUNDAS, ONTARIO 905-628-5611
www.wilkinsonheavyprecast.com

CONSTRUCTION DETAILS
Concrete: 35 MPa at 28 Days, 5 to 8% Air Entrainment.

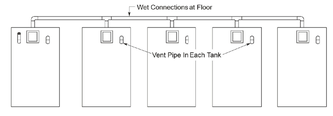


FEATURES
- Draft pipe and vent are steel pipe sized to suit, hot dip galvanized after fabrication.
- Vent pipe incorporates a stainless steel insect screen.
- Precast concrete access riser with frame and hinged, drip proof and lockable cover.
- Aluminum ladder rungs to the floor.
- Draft pipe draws from 75 mm above tank floor.
- Typical tank capacities from 25,000 to 114,000 Litres.
- For more capacity special fittings can be provided to connect any number of tanks in series.
- Contact the factory for optional cross connection and ventilation configurations.

TYPICAL APPURTENANCE DETAILS



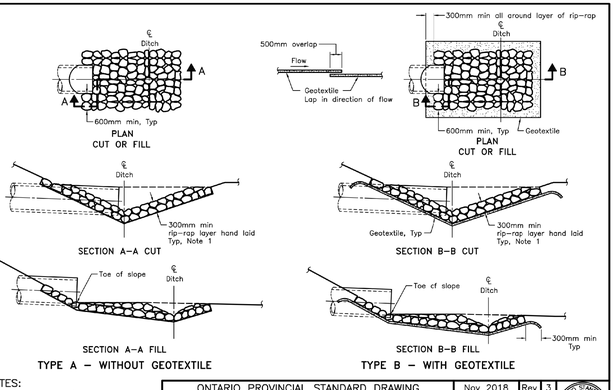
TYPICAL SERIES CONNECTION



Dimensions in mm
N.T.S.

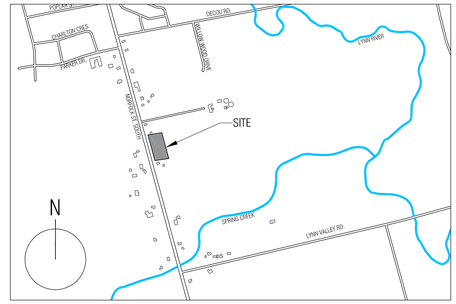
WARNING ! IMPROPER INSTALLATION ESPECIALLY IN UNSTABLE SOILS CAN RESULT IN THE STRUCTURAL FAILURE OF THIS PRODUCT

9 May, 2008



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

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev	3
GENERAL RIP–RAP LAYOUT FOR SEWER AND CULVERT OUTLETS			OPSD 810.010



KEY PLAN
SCALE: NTS

LEGAL DESCRIPTION
PART OF LOT 1 CONCESSION 4 FORMERLY IN THE TOWNSHIP OF WOODHOUSE NOW IN THE TOWN OF SIMCOE COUNTY OF NORFOLK

SURVEYOR INFORMATION
FARZAD SALEHI
ONTARIO LAND SURVEYORS

BENCH MARK NOTE
BEARINGS ARE ASTRONOMIC, AND ARE REFERRED TO THE EASTERLY LIMIT OF THE KING'S HIGHWAY NO. 24 AS SHOWN ON PLAN 37R–83, HAVING A BEARING OF N15°15'30"W. ELEVATIONS SHOWN HEREON ARE GEODETIC, AND ARE FROM REAL TIME NETWORK GPS READINGS PROVIDED BY CAN–NET AND TOTAL STATION, AND ARE IN GEOID MODEL CGG2013.

APPLICANT
n Engineering Inc
9120 Leslie Street, Suite–208,
Richmond Hill, Ontario. L4B 3J9
T: 416.256.9741
E: info@engineering.com
www.narchitecture.com

LEGEND

	PROPERTY LINE
	DEVELOPMENT LIMIT
	PROPOSED CONCRETE CURB
1M D/C	PROPOSED DEPRESSED CONCRETE CURB
	LANDSCAPED AREA
	CONCRETE WALKWAY/SIDEWALK
	PAINTED LINE
	BARRIER FREE PARKING
	MAIN ENTRANCE
	OVER HEAD DOOR
	RETAINING WALL / CONCRETE TOE WALL
FFE	FINISHED FLOOR ELEVATION
HP	EX. HYDRO POLE
UP	UTILITY POLE
EX.CB	EXISTING CATCH BASIN
CB	PROPOSED CATCH BASIN MANHOLE
CBMH	PROPOSED CATCH BASIN MANHOLE
EX.MH	EXISTING STORM MANHOLE
MH	PROPOSED STORM MANHOLE
EX.MH	EXISTING SANITARY MANHOLE
MH1A	PROPOSED SANITARY MANHOLE
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
EX.WV	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE
DD	DOUBLE CHECK DETECTOR ASSEMBLY
M	WATER METER
B	BACK FLOW PREVENTER

GENERAL NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL AND LANDSCAPING PLANS.
2. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE APPLICABLE HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
3. ALL WORK, MATERIALS AND CONSTRUCTION METHODS TO CONFORM WITH THE LATEST STANDARDS, SPECIFICATIONS, POLICIES, REGULATIONS, GUIDELINES AND LAWS FOR THE COUNTY, THE ONTARIO BUILDING CODE (OBC), MINISTRY OF THE ENVIRONMENT (MOE), ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS (OPSD AND OPSS), THE ENVIRONMENTAL PROTECTION ACT AND THE WATER RESOURCES ACT. THE MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
4. THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS COMPILED FROM LOCATES INFORMATION AND RECORD DRAWINGS FROM THE. THE INFORMATION IS SHOWN FOR GENERAL INFORMATION ONLY AND THE ACCURACY OR COMPLETENESS OF THE PROVIDED INFORMATION HAS NOT BEEN CONFIRMED. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTOR'S EXPENSE.
5. THIS PLAN SHOULD BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS' PLANS. ANY DISCREPANCIES SHALL BE CLARIFIED PRIOR TO CONSTRUCTION. INFORMATION RELATED TO DIMENSIONS FOR PRIVATE ROADS, PARKING, CURBING, BUILDING LOCATION AND SETBACKS SHALL BE TAKEN FROM THE SITE PLAN PREPARED BY THE ARCHITECT.
6. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.

INSPECTIONS:

7. ALL WORK IN THE MUNICIPAL RIGHT OF WAY AND EASEMENTS IS TO BE INSPECTED BY THE COUNTY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE COUNTY AS PER THE SITE PLAN AGREEMENT.
8. ALL DISTURBED GRASSED AREAS TO BE RESTORED WITH MINIMUM 200MM TOPSOIL AND NO. 1 NURSERY SOD.
9. THE CONTRACTOR AGREES NOT TO MAKE A MATERIAL CHANGE OR CAUSE A MATERIAL CHANGE TO BE MADE TO A PLAN, SPECIFICATION, DOCUMENT OR OTHER INFORMATION, ON THE BASIS OF WHICH THIS DRAWING WAS APPROVED BY THE COUNTY, WITHOUT NOTIFYING, FILING DETAILS WITH AND OBTAINING WRITTEN AUTHORIZATION OF THE MUNICIPAL AND PROJECT ENGINEER.
10. ALL STORMWATER MANAGEMENT WORK, WATER SERVICING WORK AND SANITARY SEWER WORK INSIDE THE BOUNDARY OF THE SITE IS TO BE INSPECTED BY N ENGINEERING INC PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY N ENGINEERING AS PER APPROVED PLANS BY THE COUNTY.

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LICENSED PROFESSIONAL ENGINEER
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100233432
11APR.2022
PROVINCE OF ONTARIO

N
(DEGREE TO NORTH)
PROJECT NORTH

No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	LU.

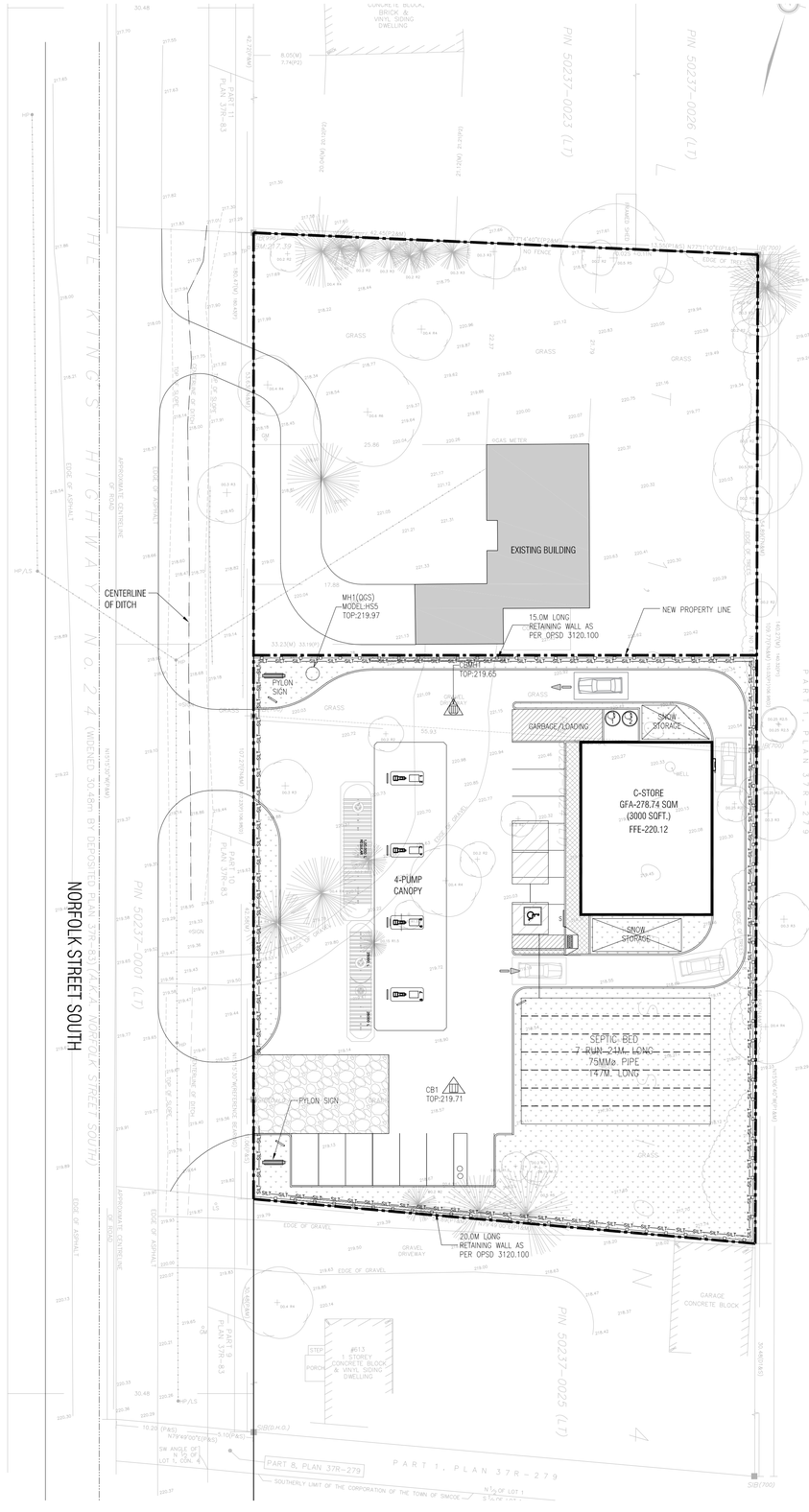
PROJECT:

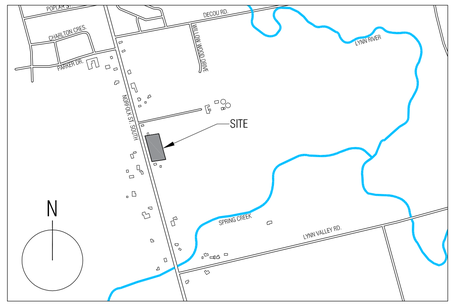
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

SITE SERVICING PLAN

DRAWN BY: AZ	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: 21-54	DRAWING NO.: C2





KEY PLAN

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LEGEND

- PROPERTY LINE
- DEVELOPMENT LIMIT
- PROPOSED CONCRETE CURB
- 1M D/C — PROPOSED DEPRESSED CONCRETE CURB
- LANDSCAPED AREA
- CONCRETE WALKWAY/SIDEWALK
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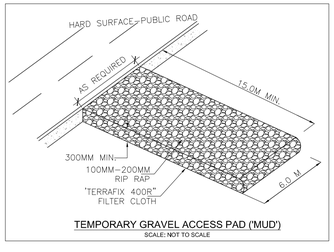
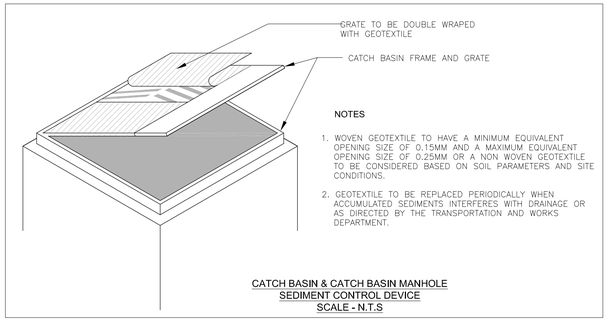
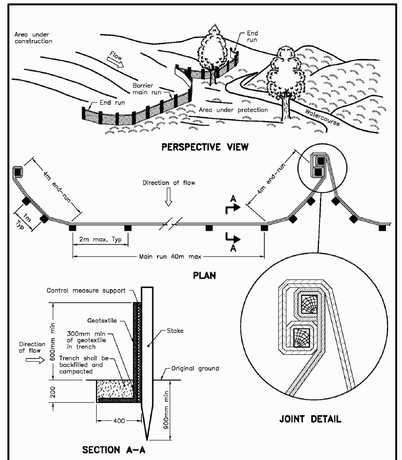
- EX.WV — EXISTING WATER VALVE
- WV — PROPOSED WATER VALVE
- SILT — SILT FENCE BARRIER
- MUD MAT



TEMPORARY GRAVEL ACCESS PAD ('MUD')
SCALE: NOT TO SCALE



CATCH BASIN & CATCH BASIN MANHOLE
SEDIMENT CONTROL DEVICE
SCALE - N.T.S



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

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

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No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	LU.

PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

EROSION & SEDIMENT CONTROL PLAN

DRAWN BY: AZ	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: 21-54	DRAWING NO.: C3

Proposed Gas Station at 601 Norfolk Street South, Simcoe, Norfolk County, Ontario

Servicing and Stormwater Management Report

PROJECT No. n 2154

Prepared By:

n Engineering Inc
9120 Leslie Street, Suite-208
Richmond Hill, Ontario L4B3J9
T: 905-597-5937 F: 1.866.340.5265
https://www.narchitecture.com

April 11, 2022

Table of Contents

List of Tables

List of Figures and Plans

List of Appendix

1.0 INTRODUCTION

n Engineering Inc. retained by Rajendra Patel, owner of the property (Client) to undertake the servicing and Stormwater Management (SWM) design for the proposed site development. The purpose of this report is to present the storm sewer connection, sanitary sewage disposal, water distribution and appropriate SWM measures to mitigate the impact of post development storm runoff from the proposed development.

2.0 STUDY AREA

Municipal address of the site is 601 Norfolk Street South, Simcoe, Norfolk County and is located at approximately 550m away from the intersection of Parker Dr. and Norfolk St. S. The total area of the property is approximately 0.35 ha. The Key Plan is shown in Figure 1.

A legal and topographic survey has been prepared by F.S. Surveying Inc., dated 14th Feb. 2022. The survey identifies the site as part of Lot 1 Concession 4 formerly in the Township of Woodhouse now in the town of Simcoe, County of Norfolk.

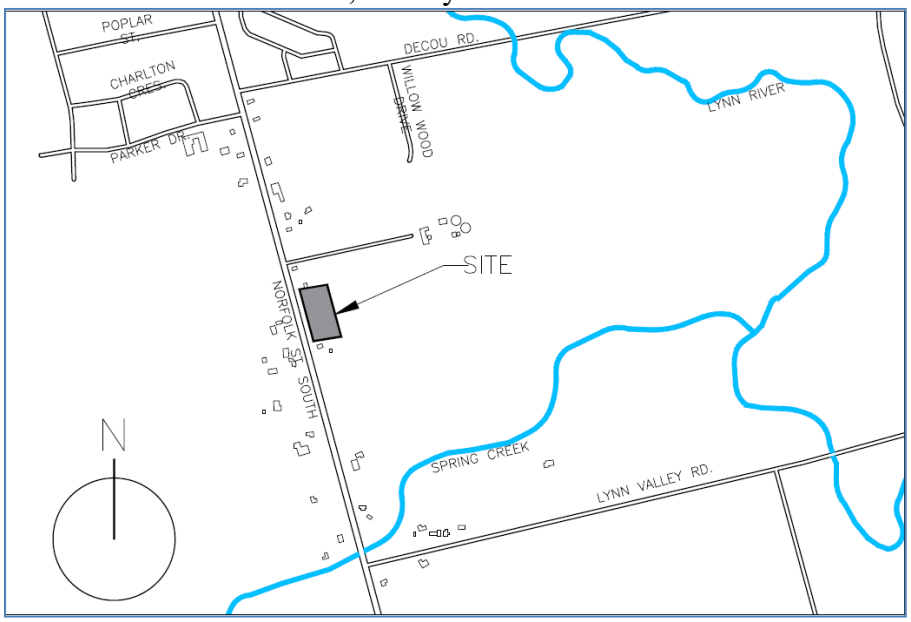


Figure 1 – Key Map

3.0 PROPOSED DEVELOPMENT

The proponent for this site proposed to develop the subject land consists of a four pump canopy and a convenience store with a takeout window along with the drive through lane. Existing grades of the site proposed to be match along the boundary limits. Proposed site servicing, grading and Erosions and sediment control plans will be submitted separately as full-size drawings with this report.

4.0 OBJECTIVES OF STORMWATER DRAINAGE AND SITE SERVICING

Potential SWM strategies as per design criteria of Norfolk County presented in this report were determined by carrying out the following:

- Identifying existing runoff pattern and quantity of runoff discharge from subject site;
- Identifying post development runoff from the site towards the existing County right of way;
- Evaluating the impact of development on existing road side ditches and culverts;
- Address the concerns from the reviewing agencies including Norfolk County.

5.0 EXISTING TOPOGRAPHY AND DRAINAGE PATTERN

The total site area is approximately 0.35 ha. At present time, shown in Figure 2, the site is covered with grass. As mentioned in Section 2.0, a topographic information plan has been prepared by F.S. Surveying Inc., dated 14th Feb. 2022, which identifies the site as part of Lot 1 Concession 4 formerly in the Township of Woodhouse now in the town of Simcoe, County of Norfolk. Please refer to Appendix B for the topographical survey information. The survey indicates that the site is sloped from north towards south limit. The highest elevation of the property is 221.19m, at the north side and the lowest elevation is 217.65m at south side of a slope of approximately 5.50%. The existing drainage pattern presented as Figure DR-101 in Appendix A.

Figure 2 - Existing Site Conditions

6.0 STORMWATER MANAGEMENT CRITERIA

SWM Criteria for the proposed development site was determined based on following guidelines and manuals:

- Stormwater Management Planning and Design Manual, MECP, 2003;
- Norfolk County Design Criteria and Integrated Sustainable Master Plan(ISMP);

The criteria for the proposed development are summarized below:

- **Water Quantity Control** - Maximum peak flow rates must not exceed pre-development values for storms with return periods ranging from 2 through 100 years (Norfolk County Design Criteria)
- **Water Quality Control -** Stormwater discharged from the post development site required to meet a minimum of 80% TSS removal or an enhanced (Level 1) removal as referenced in the MOE SWMPD Manual;
- **Water balance –** Water balance of the site to be determined by calculating pre to post development retained of 5mm of every rainfall event;
- **Erosion and Sediment Control –** Potential erosion during construction to be assessed using methods described in "Erosion and Sediment Control Guideline for Urban Construction (December 2006)" of temporary erosion and sediment control measures suitable for construction sites.

7.0 STORMWATER MANAGEMENT STUDY

7.1 Comparison Existing Landuse and Proposed Conditions

Landuse under proposed development conditions was compared to landuse under existing conditions to assess the changes in runoff flows on the site. The comparison is presented in Table 1. As revealed from the Table 1, there will be an overall 52% increase in imperviousness under the proposed development condition in contrast of about 52% decrease in grass area.

Table 1 – Comparison between Existing and Proposed Condition Landuse

LAND USE TYPE	PAVED AREA	ROOF AREA	GRASS AREA	TOTAL AREA
Existing Condition (m^2)	222.78	0	3280.48	3503.26
Existing Condition (%)	6%	0%	94%	
Proposed Condition (m^2)	2055.63	278.74	1168.89	3503.26
Proposed Condition (%)	59%	8%	33%	
Increase/Decrease (%)	52%	8%	-60%	

7.2 Runoff Coefficients

Runoff parameters used for site under existing and proposed conditions as per Norfolk County Design Criteria are shown in Table 2 below,

Table 2 – Runoff Coefficients

Landuse	Runoff Coefficient
Open Space (4.0 ha and under)	0.25
Gravel Road and Shoulder	0.70
Asphalt, Concrete	0.95
Roof Area	0.95

Pre-development composite runoff coefficients were calculated based on existing landuse and presented in Appendix B (Calculation Sheet 1). Based on the drainage as per proposed grading, the site has been divided into subcatchments. For subcatchments that have more than one landuse or soil type, a representative composite runoff coefficient was determined using areas of the different land cover as weighting factor. The composite runoff coefficient values were determined based on the soil type, landuse, and the antecedent moisture condition related to the subcatchment. Post development catchment areas have been shown in DR-102 in Appendix A. Calculations for pre-and post development imperviousness have been included in Appendix B and summarized below in Table 3.

Table 3 – Composite Runoff Coefficients

Drainage Area	Runoff Coefficient 'C' (Pre-development)	Runoff Coefficient 'C' (Post development)
SITE	0.29	0.71

7.2 Peak Flow Calculation

Given the size and characteristics of the site and catchment areas, the Rational Method was used to determine the peak flows from the subject site under pre-development and post development conditions. The rainfall-runoff relationship is as follows:

$$Q = 0.002778\ CIA$$

Where:
Q = Peak Flow in m^3/s;
A = Effective area of drainage basin in hectares (ha);
C = runoff coefficient; and
I = Rainfall intensity in mm/hr.

Rainfall intensities were calculated using the rainfall intensity-duration-frequency (IDF) values. The IDF values were obtained from the Norfolk Country design criteria and summarized in Table 4 below.

Table 4 – IDF Parameters

Return Period (Years)	2	5	10	25	50	100
A	529.711	583.017	670.324	721.533	766.038	801.041
B	4.501	3.007	3.007	2.253	1.898	1.501
C	0.745	0.703	0.698	0.679	0.668	0.657

7.4 Pre-development Peak Flow

Pre-development peak flows are calculated based on existing landuse and presented in Calculation Sheet 1, Appendix B. The results are summarized in Table 5.

Table 5 – Pre-development Peak Flow (L/sec)

Return Period (Years)	2	5	10	25	50	100
Q	20.71	27.52	32.06	37.73	41.99	46.14

7.5 Post Development Drainage Pattern and Peak Flow Rates

The proposed site development includes a mix of paved and grassed areas as well as a building. Proposed site grades were selected to ensure that vehicular access will be unimpeded as well as provide surface storage for rainfall events. Site elevations were raised at the entrance to ensure confinement of stormwater within the site and protect Norfolk Street south from drainage from the site.

Post development peak flows were calculated and presented in Calculation Sheet 2 of Appendix B. The results are summarized in Table 6.

Table 6 – Post Development Peak Flow (L/sec)

Return Period (Years)	2	5	10	25	50	100
Q	49.92	66.36	77.28	90.95	101.23	111.23

7.6 Comparison of Existing and Proposed Runoff Rates

Flow rates under different storm events were calculated for both existing and proposed conditions using the Rational Method. Catchment areas and hydrologic parameters were determined using the available landuse information and topographic maps (as shown in Figures DR 101 and DR 102 in Appendix A).

The primary goal of the drainage and hydrologic analysis is to examine the effect of the development on local storm drainage. This analysis was used to create goals for the stormwater management design. Table 7 presents the comparison between peak flow rates calculated for the entire site under both existing and proposed conditions, while the detailed flow calculations and are presented in Appendix C. It should be noted that the post development flows in Table 7 addresses the impact of the development only, and does not represent the final stormwater management design flows.

Table 7 – Comparison between Pre- and Post Development Flows (L/sec)

Return Period (Years)	2	5	10	25	50	100
Pre-Development Flow (L/sec)	20.71	27.52	32.06	37.73	41.99	46.14
Post-Development Peak Flow (L/sec)	49.92	66.36	77.28	90.95	101.23	111.23
Uncontrolled flow	2.30	3.06	3.56	4.61	5.60	6.41
Pre-Development Allowable Flow (L/sec)	18.40	24.46	28.49	33.11	36.39	39.73
Increase (decrease) (%)	29.21	38.83	45.22	53.22	59.24	65.09

7.7 Quantity Control Measure

7.7.1 Allowable Discharge Rate

As per the quantity control criteria, post development stormwater flows from the site are to be restricted to the pre-development flow levels for the 2, 5, 10, 25, 50 and 100 years rainfall events. However grading of some parts of the site will be unaltered. Identified as Uncontrolled (UC) areas, the stormwater flow from these areas will drain freely and therefore cannot be controlled. Please refer to Appendix A: Figure DR 102 for the identified uncontrolled areas UC1&UC2) and Appendix B: Calculation Sheet 3 for the UC flow calculations. Allowable discharges (2-100 year) to the Norfolk county storm sewer were calculated by deducting the uncontrolled flows from the pre-development flows (as shown below).

Allowable Discharge Rate = Pre-development peak flow (Calculation Sheet 1) – Uncontrolled Discharge Rate (Calculation Sheet 3)

7.7.2 Orifice (Reduced Pipe Size) Control

The runoff from the proposed site will be controlled with the help of a 86 mm diameter Orifice reducer pipe installed at inlet of Storm Manhole No. 1 (MH1-OGS). The orifice sizing calculations are presented as Table 1 in Appendix C.

7.7.3 Storage for Quantity Control

The calculated allowable (pre-development – uncontrolled) flows are presented in Table 8. Also included in Table 8 are the controlled flows. Table 8 indicates the flows under post development conditions will be controlled to levels less than the calculated allowable flow. Required detention storage was calculated based on controlled flow rates. Detailed detention storage calculations have been presented in Table 3 and Table 2 of Appendix C and summarized in Table 8.

Table 8 – Controlled Flows (L/sec) and Detention Storage (m^3)

RETURN PERIOD (YEARS)	2	5	10	25	50	100
PRE-DEVELOPMENT FLOW(L/Sec)	20.71	27.52	32.06	37.73	41.99	46.14
UNCONTROLLED FLOW(L/Sec)	2.30	3.06	3.56	4.61	5.60	6.41
ALLOWABLE FLOW(L/Sec)	18.40	24.46	28.49	33.11	36.39	39.73
CONTROLLED FLOW(L/Sec)	18.37	18.37	19.81	20.34	20.54	20.54
STORAGE REQUIRED(m^3)	19.78	31.74	39.03	49.40	58.06	67.19
AVAILABLE STORAGE(m^3)	20.03	16.12	104.36	104.36	104.36	104.36

7.7.3 Roof Control

Flow from the roof proposed to be detained by installing parabolic weirs (Zurn Z105 Control Flo Roof Drain). The roof top detention calculations attached in Appendix D, and summarized in Table 9.

Table 9 – Roof Control

Location	Area (m^2)	No. of Drains	Flow/Drain (L/sec)	Total Flow (L/sec)	100 yrs Rainfall Volume (m^3)	Design Ponding Depth (mm)
Building	278.70	1	1.2	1.2	10.07	109

Roof drain specs (to be detailed by mechanical engineer) are also attached in Appendix D.

7.8 Water Quality Control

Long term average removal of 80% of Total Suspended Solids (TSS) on an annual basis for all runoff leaving the site is required. Quality control will be achieved by using soft landscaped areas and an Oil/Grit Separator (OGS). Based on the area and imperviousness of the site, the Hydroguard HS5 (or eq.) unit has been proposed for the site. The HS 5 (or eq.) unit's overall TSS removal from runoff leaving the site will be 82%. The overall TSS removal is 96%. The summary of total TSS removal from all Low Impact Development (LID) Best Management Practices (BMP) as shown in Table 10. The sizing details for the OGS unit are provided in Appendix E.

Table 10– TSS Removal from all LID BMP

Surface Type	Treatment Method	Area (m^2)	Effective TSS Removal	% Area of Site	Overall TSS Removal (%)
Landscape	Inherent	1168.9	100	30.3	30.3
Rooftop	Inherent	278.7	100	20.6	20.6
Asphalt/Concrete Pavement	OGS (HS5)	2055.6	82.0	49.1	40.3
Total		*3503.26*		*100.0*	*91.2*

7.9 Water Balance

According to MOE guideline for Environmental Design Criteria pre and post development average annual site infiltration calculated as follows:

Exiting site is covered with landscaped as considered as urban lawns – as per MOE guide line the average annual infiltration is 276 mm, based the value,

Pre-development average annual infiltration = 276 mm x 0.3503 ha = 966.8 m^3

Of the total site area 0.2334 ha (67 %) would be converted to impervious area. The infiltration for this area would be 0 mm. The remaining 0.1169 ha of the site (33 %) is assumed to be covered with urban lawns (shallow rooted crops) with an average annual infiltration of 276 mm.

Post Development average annual infiltration = 276 mm ×0.1169 ha = 322.6 m³

Estimated average net reduction in infiltration = 966.8 m³ -322.6m³ = 644.28 m³

To design the infiltration chamber for the site – 5 mm of every rainfall event considered to calculate pre and post development water balance quantity based on land-use and attached in Appendix G. Deficit of a quantity from pre to post calculated as 8.45 m^3 for every rainfall event.

An infiltration chamber (DC780 or equivalent) is recommended to install with a capacity of 8.98m^3. Detail calculation of water balance and specification of infiltration tank include in Appendix G.

According to MOE guideline design draw down time will be 72 for the infiltration chamber. Based on this calculation annual average infiltration through the chamber will be 1,028 m^3.

7.10 Erosion and Sediment Control

During construction, various temporary measures proposed to be implemented to prevent the discharge of sediment laden stormwater from the site. These measures include silt fencing, catch basin buffers and mud-mats etc.
In addition to the above, the following "good housekeeping" measures are recommended:

- All exposed soil shall be stabilized as soon as possible with a seed and mulch application as directed by the Engineer;
- No construction activity or machinery shall intrude beyond the silt/snow fence or limit of construction area.
- All construction vehicles shall leave the site at designated locations as shown on the plans;
- Stockpiles of soil shall be set back from any watercourse and stabilized against erosion as soon as possible. A set back of at least 15m from any top-of-bank, watercourse or pond is required;
- Cleaning and repairs of mud-mats and any other temporary sediment control measures shall be completed as deemed necessary through regular inspection;
- Sediment/silt shall be removed from the sediment control devices after each storm event and deposited in areas as approved by the engineer; and
- All re-graded areas within the development which are not occupied by buildings, roadways, sidewalks, or driveways shall be top-soiled and sodded/seeded immediately after completion of final grading operations as directed by the engineer.

8.0 MINOR SYSTEM DRAINAGE

The minor storm (5-year storm event) drainage system was designed to convey stormwater to the ditch at the Norfolk Street South right of way. (Refer: Storm Sewer Design Sheet in Appendix F). Site servicing plan (Dwg: C2) submitted separately shows the stormwater management design for the site.

9.0 MAJOR SYSTEM DRAINAGE

No impact the building due to overland flow anticipated since the grading of the site ensures storm flows greater than 100 years will be able to flow through the site without any impact to proposed buildings and adjacent site. Overland flow direction is shown in Grading Plan (Drawing C1).

10.0 WATER DEMAND

10.1 Domestic Water Demand

Water demand the proposed site is calculated as follows:

Average Daily Demand	= 28 m^3/ha.day[1]
Area of the site	= 3503.26 m^2 = 0.35 ha.
Average Daily Demand	= 28 x 0.35
	= 9.81 m^3/day = 0.12 L/sec

As per MOECC standards Table 3-1, a Maximum Day Factor of 2.75 and peak hourly demand Factor of 4.13 will be applied to the average day flows;

Maximum day demand = 0.12 l/s x 2.75 = 0.33 l/s
Maximum hour demand = 0.12 l/s x 4.13 = 0.49 l/s

10.2 Fire Water Demand

.
Fire Flow demand calculated following Fire Underwriters survey (1999). Fire flow demand for site calculated as table 6 presented in Appendix H.

As per Norfolk County Criteria, water demand estimated as follows:

1) Firewater Demand + Maximum Daily Demand : 50 + 0.33= 50.33 L/sec
2) Maximum Hour Demand: 0.49 l/s

[1] Design Guidelines for Drinking Water System, MECP, 2008

Considering the highest value, water demand for the site: 50.33 L/sec

As per OFM – 30 min flow to be confirmed for firefighting – a 90,000 L fire water chamber recommended to install to provide water for fire fighting. The details and the figures are presented in Appendix H.

11.0 SERVICE CONNECTIONS

11.1 Sanitary:

A sanitary sewer of 150mm diameter PVC SDR-35 pipe at 2% slope proposed to connect to the septic tank. (Refer: Septic System Design – DWG SD1)

11.2 Domestic / Fire Water

Fire and domestic water service connection proposed for proposed development is as follows:

1. A typical precast fire water reservoir (Wilkinson heavy precast limited or Equivalent) of capacity of 90,000 L is proposed to connect to the water well; (Refer to Appendix H for details)

2. 25 mm diameter PVC DR18 pipe at 0.5% slope with water valve connect to the water well is proposed;

Please refer to Drawing C-2: Site Servicing Plan for details on the water and fire service connection and layout.

12.0 SUMMARY & CONCLUSIONS

This analysis presents a detailed stormwater management control plan addressing both quantity and quality controls required to meet all design criteria. Drainage boundaries have been established to estimate flows to the proposed drainage collection system for the site in order to develop a comprehensive drainage and stormwater management plan for the proposed development. There will be no negative impact or increase in stormwater peak flows under proposed controlled conditions. The drainage summary of our findings and drainage analysis for the subject property is as follows:

- Stormwater management design was performed for the subject site to provide flow quantity and quality control;
- The hydrologic and hydraulic analysis presented in this report addresses the existing and proposed site conditions;
- External agencies' criteria were collected and reviewed during the course of the study and all other available information was retrieved and reviewed;
- Impervious areas were calculated under both existing and proposed conditions and as expected, a significant increase in impervious areas was found;

- Recommended quantity control measures for the site will be achieved through the use of a 86mm diameter orifice pipe;
- Adequate stormwater runoff storage for large design storms will be achieved through temporary surface storage;
- An Oil/Grit Separator (Hydroguard model HS 5 or eq.) has been recommended to ensure the required water quality control will be achieved; and
- Adequate Erosion and Sediment Control measures have been proposed.

We trust that this proposed stormwater management plan will provide appropriate service to the proposed site.

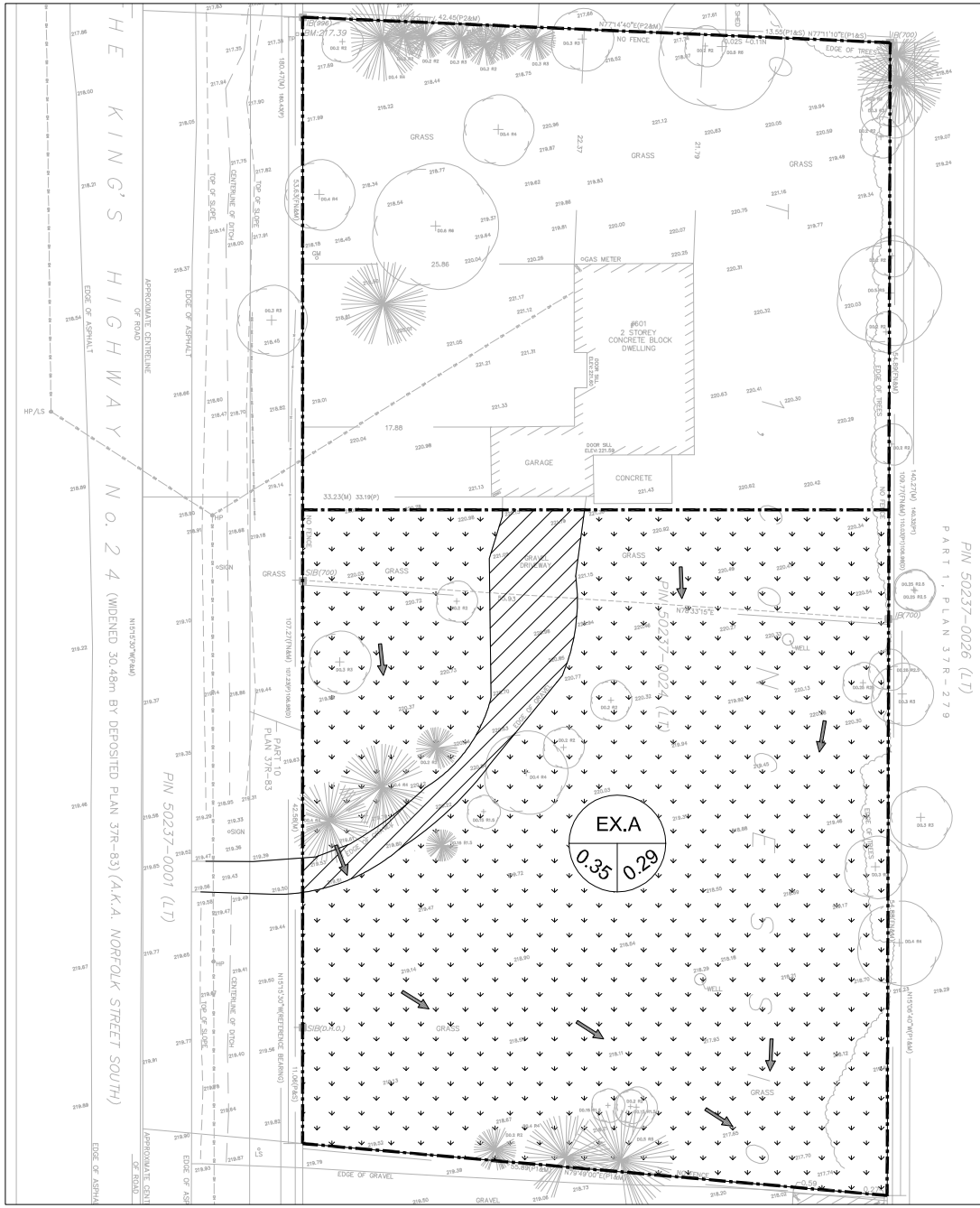
Respectfully Submitted,
n Engineering Inc.

Abu. S. Ziauddin M. Eng P. Eng.
MUNICIPAL PROJECT MANAGER
n Engineering Inc.

Lekhnath Upadhyaya- EIT-M.Eng
MUNICIPAL ENGINEER
n Engineering Inc.

Appendix A

Figures



LEGEND

- DRAINAGE AREA IDENTIFICATION
- EX. B
- 1.006 — AREA IN HA.
- 0.500 — RUNOFF COEFFICIENT
- DRAINAGE BOUNDARY
- SITE BOUNDARY
- OVERLAND FLOW

PRE–DEVELOPMENT LAND USE TABLE

LAND COVER	HATCH	AREA (SQ.M.)	RUNOFF CO–EFFICCIENT
ROOF		0.00	0.95
CONCRETE/ ASPHALT		222.78	0.95
LANDSCAPING		3280.48	0.25

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PROJECT:

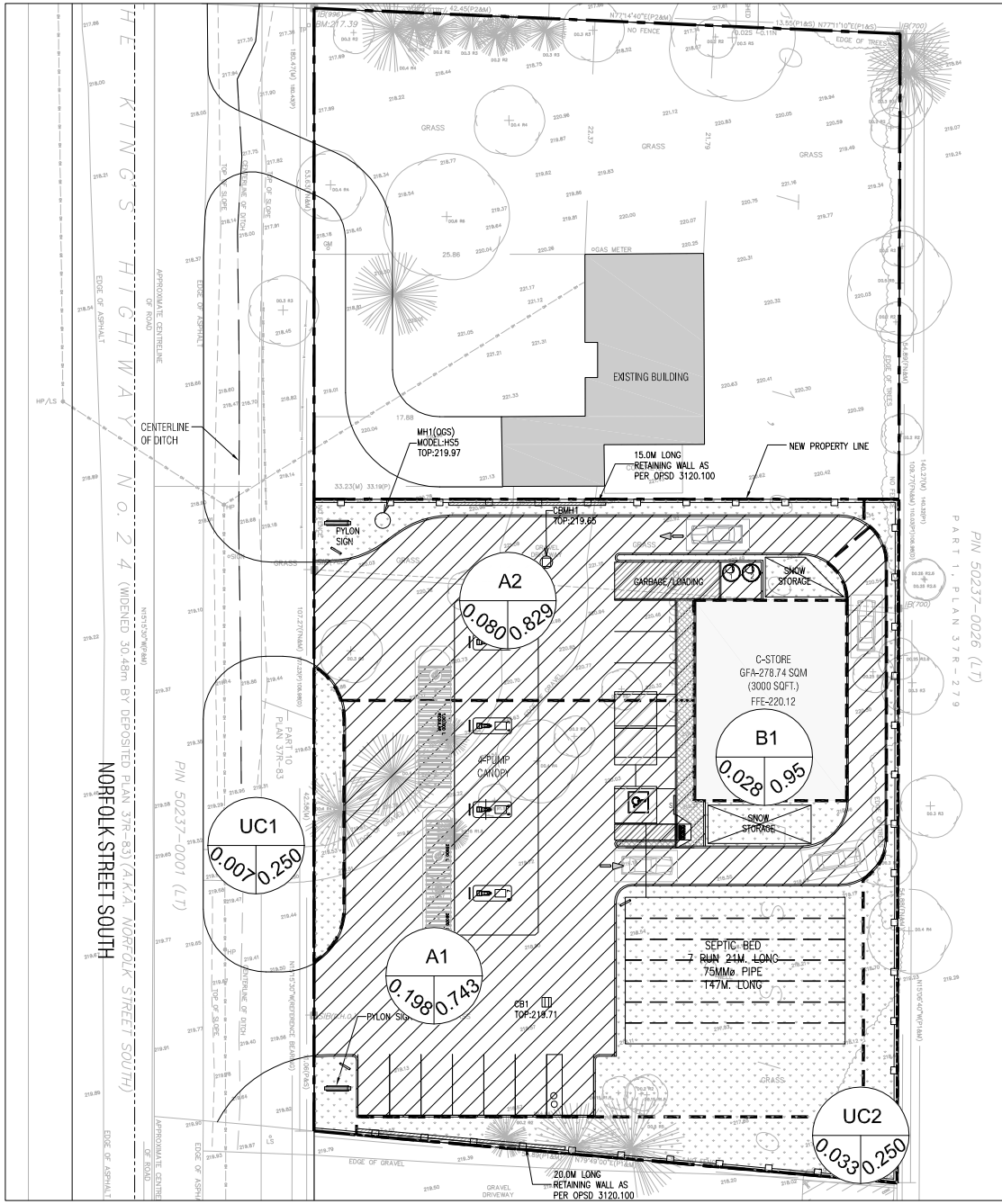
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

PRE-DEVELOPMENT SITE DRAINAGE PLAN

DRAWN BY: AZ	DATE: 21 NOV. 2021
CHECKED BY: AZ	SCALE: NTS
PROJECT NO.: **21-54**	DRAWING NO.: **DR-101**

N (GEODETIC NORTH)
PROJECT NORTH



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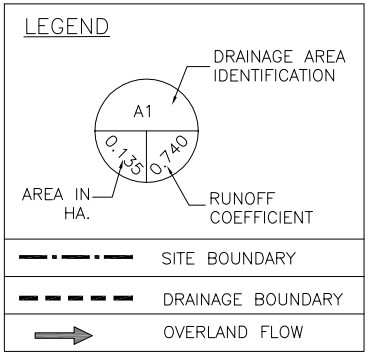

POST-DEVELOPMENT LAND USE TABLE

LAND COVER	HATCH	AREA (SQ.M.)	RUNOFF CO-EFFICCIENT
ROOF		278.74	0.95
CONCRETE/ ASPHALT		2055.62	0.95
LANDSCAPING		1168.90	0.25

SUBCATCHMENT AREA

SUBCATCHMENT	ROOF	ASPHALT /CONCRETE	GREEN	TOTAL
A1	0.00	1368.75	616.60	1985.35
A2	0.00	686.87	149.43	836.30
B1	278.74	0.00	0.00	278.74
UC1	0.00	0.00	71.92	71.92
UC2	0.00	0.00	330.95	330.95

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www.narchitecture.com

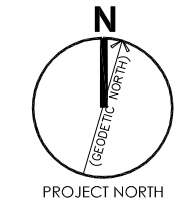
PROJECT:

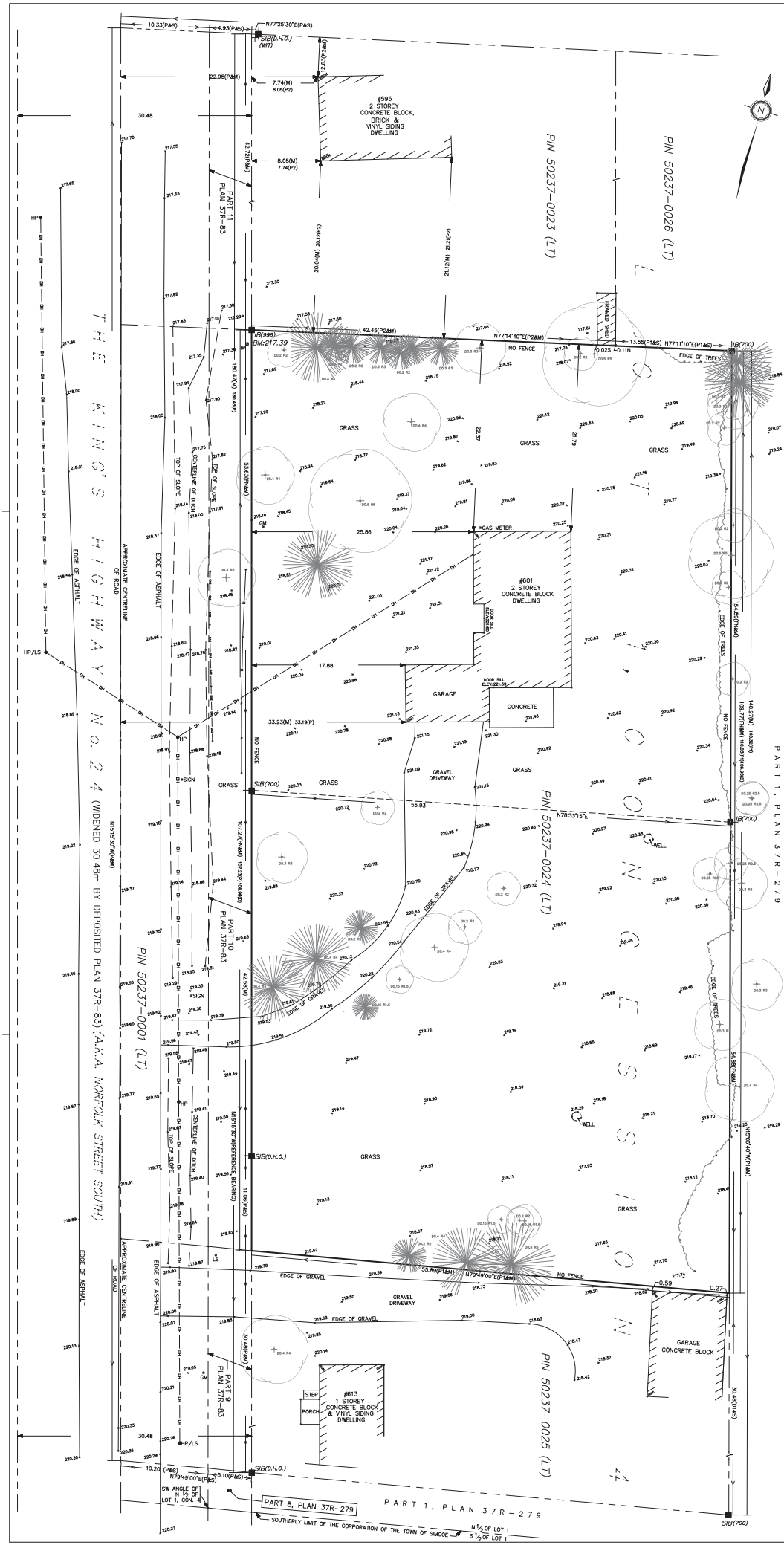
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

POST-DEVELOPMENT SITE DRAINAGE PLAN

DRAWN BY: AZ	DATE: 21 NOV. 2021
CHECKED BY: AZ	SCALE: NTS
PROJECT NO.: **21-54**	DRAWING NO.: **DR-102**





SURVEYOR'S REAL PROPERTY REPORT

PART 1 - PLAN

PLAN OF SURVEY OF
PART OF LOT 1
CONCESSION 4
FORMERLY IN THE TOWNSHIP OF WOODHOUSE
NOW
IN THE TOWN OF SIMCOE
COUNTY OF NORFOLK

FARZAD SALEHI, OLS
SCALE: 1 : 300

0 4 8 16 24 m

LEGEND

■	DENOTES – SURVEY MONUMENT FOUND
□	DENOTES – SURVEY MONUMENT PLANTED
M	DENOTES – MEASURED
S	DENOTES – SET
P	DENOTES – PLAN 37R-83
P1	DENOTES – PLAN 37R-279
P2	DENOTES – PLAN BY JEWITT & DIXON LTD., OLS, DATED JULY 16, 1987
D	DENOTES – INSTRUMENT NR261357
D1	DENOTES – INSTRUMENT NR483280
IB	DENOTES – IRON BAR
SIB	DENOTES – STANDARD IRON BAR
(D.H.O.)	DENOTES – DEPARTMENT OF HIGHWAYS ONTARIO, OLS
(700)	DENOTES – JEWITT AND DIXON LTD., OLS
(996)	DENOTES – JOHN B. DODD LTD., OLS
(WIT)	DENOTES – WITNESSED
TP	DENOTES – TELEPHONE PEDESTAL
⊛	DENOTES – DECIDUOUS TREE
●	DENOTES – CONIFEROUS TREE
●HP/LS	DENOTES – HYDRO POLE/HYDR POLE WITH LIGHT STANDARD
LS	DENOTES – LIGHT STANDARD
GM	DENOTES – GAS METER
-H-	DENOTES – OVER-HEAD HYDRO LINE
-H-	DENOTES – UNDERGROUND HYDRO LINE
-GAS-	DENOTES – UNDERGROUND GAS LINE
BM	DENOTES – SITE BENCH MARK

METRIC NOTE

DISTANCES & CO-ORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

BEARING NOTE

BEARINGS ARE ASTRONOMIC, AND ARE REFERRED TO THE EASTERLY LIMIT OF THE KING'S HIGHWAY NO. 24 AS SHOWN ON PLAN 37R-83, HAVING A BEARING OF N15°15'30"W.

ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC, AND ARE FROM REAL TIME NETWORK GPS READINGS PROVIDED BY CAN-NET AND TOTAL STATION, AND ARE IN GEOID MODEL CGG2013.

COPYRIGHT 2022: ©

PART 2 - REPORT

REGISTERED EASEMENTS AND/OR RIGHT-OF-WAY:

NONE LISTED ON THE PARCEL REGISTER FOUND IN THE LAND REGISTRY OFFICE.

BOUNDARY FEATURES

*ALL BUILDING TIES ARE PERPENDICULAR TO PROPERTY LINES UNLESS OTHERWISE NOTED.

*NOTE THE LOCATION OF THE FRAMED SHED AT THE NORTHERLY BOUNDARY LINE.

*THERE IS NO FENCE AROUND THE SUBJECT PROPERTY.

*THIS REPORT WAS PREPARED FOR n ENGINEERING INC. AND UNDERSIGNED ACCEPTS NO RESPONSABILITY OF USE BY OTHER PARTIES.

COMPLIANCE WITH MUNICIPAL ZONING BY-LAWS

THIS PLAN DOES NOT CERTIFY ZONING COMPLIANCE.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-17632

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3).

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM;

2. THE SURVEY WAS COMPLETED ON THE 8th DAY OF FEBRUARY, 2022.

NORTH YORK, ONTARIO
FEBRUARY 14, 2022

FARZAD SALEHI
ONTARIO LAND SURVEYOR

F.S. SURVEYING INC.
7 COLWICK DRIVE
NORTH YORK, ON M2K 2G2
416-786-8080

F. S. SURVEYING INC.

DATE	PARTY CHIEF	DRAWN BY	PROJECT No.
FEBRUARY 14, 2022	F. SALEHI	N. RABIEI	2022-005

Appendix B

Flow Analysis

n Engineering Inc

Calculation Sheet 1

(Pre-development Peak Flow)

Project:	**Gas Station**
Address:	**601 Norfolk Street South**
Town/Township/City	**Simcoe, Norfolk County**
Project No.	**n2154**
Proposed Development Area (m^2)	**3503.26**
Date:	**2021-12-03**

PRE-DEVELOPMENT RUNOFF COEFFICIENT

AREA TYPE	AREA (M^2)	RUNOFF COEFFICIENT "C"	AREA x C
ASPHALT/CONC.	222.780	0.95	211.64
BUILDING ROOF	0.000	0.95	0.00
LANDSCAPED AREA	3280.480	0.25	820.12
		ΣAREA X C	1031.76
		WEIGHTED AVERAGE "C"	**0.29**
		AREA "A" (Hectares)	0.3503

Rainfall intensity: $$i = \frac{a}{(t + b)^C}$$

Where:
i = Rainfall Intensity (mm/hr)
a= coefficient
b = coefficient
c = coefficient

t =Time of concentration (hr) 10.00 min

Design Flow:

$$Q = 0.002778\ CIA$$

Where:
Q= Volume of runoff in cubic metres per secc
C = Runoff coefficient dimensionless
A = Contributing drainage area in hectares
I= Rainfall intensity mm/hr

Return Period (Years)	2 -Years	5-Years	10 -Years	25 -Years	50 -Years	100-Years
A	529.71	583.02	670.32	721.53	766.04	801.04
B	4.501	3.007	3.007	2.253	1.898	1.501
C	0.745	0.703	0.698	0.679	0.668	0.657
t (mins)	10.00	10.00	10.00	10.00	10.00	10.00
i (mm/hr)	72.24	96.03	111.84	131.63	146.50	160.97
C	0.29	0.29	0.29	0.29	0.29	0.29
Q (m^3/sec)	0.02	0.03	0.03	0.04	0.04	0.05
Q (l/sec)	20.71	27.52	32.06	37.73	41.99	46.14

n Engineering Inc

Calculation Sheet 2

(Post-development Peak Flow)

Project:	**Gas Station**
Address:	**601 Norfolk Street South**
Town/Township/City	**Simcoe, Norfolk County**
Project No.	**n2154**
Proposed Development Area (m^2)	**3503.26**
Date:	**2021-12-03**

POST DEVELOPMENT RUNOFF COEFFICIENT

AREA TYPE	AREA (M^2)	RUNOFF COEFFICIENT "C_2"	AREA x C_2
BUILDING	278.74	0.95	264.80
ASPHALT/CONC.	2055.63	0.95	1952.85
LANDSCAPED AREA	1168.89	0.25	292.22
		ΣAREA X C	2509.87
		WEIGHTED AVERAGE "C"	**0.71**
		AREA "A" (Hectares)	0.3503

Rainfall intensity: $$i = \frac{a}{(t + b)^C}$$

Where:

i = Rainfall Intensity (mm/hr)

a= coefficient

b = coefficient

c = coefficient

t =Time of concentration (hr) 10.00

Design Flow:

$$Q = 0.002778\ CIA$$

Where:

Q= Flow (m^3/second)

C = Runoff coefficient

A = Draingae Area (hectares)

I= Average rainfall intensity (milimeters/hour)

Return Period (Years)	2 -Years	5-Years	10 -Years	25 -Years	50 -Years	100-Years
A	529.71	583.02	670.32	721.53	766.04	801.04
B	4.501	3.007	3.007	2.253	1.898	1.501
c	0.745	0.703	0.698	0.679	0.668	0.657
t (mins)	10.00	10.00	10.00	10.00	10.00	10.00
I (mm/hr)	72.24	96.03	111.84	131.63	146.50	160.97
C	0.71	0.71	0.71	0.71	0.71	0.71
Q (m^3/sec)	0.05	0.07	0.08	0.09	0.10	0.11
Q (l/sec)	49.92	66.36	77.28	90.95	101.23	111.23

n Engineering Inc

Calculation Sheet 3

(Uncontrolled Area Peak Flow)

Project:	**Gas Station**
Address:	**601 Norfolk Street South**
Town/Township/City	**Simcoe, Norfolk County**
Project No.	**n2154**
Proposed Development Area (m^2)	**3503.26**
Date:	**2021-12-03**

UNCONTROLLED AREA RUNOFF COEFFICIENT

AREA TYPE	AREA (M^2)	RUNOFF COEFFICIENT "C"	AREA x C
ASPHALT/CONC.	0.000	0.95	0.00
GRASSED AREA	455.300	0.25	113.83
BUILDING	0.000	0.95	0.00
		ΣAREA X C	113.83
		WEIGHTED AVERAGE "C"	**0.25**
		AREA "A" (Hectares)	0.0455

Rainfall intensity: $i = \frac{A}{(t + B)^C}$

Where:
I = Rainfall Intensity (mm/hr)
A = coefficient
B = coefficient
t =Time of concentration (hr) 10.00 min

Design Flow: $Q = 0.00278\ CIA$

Where:
Q= Flow (m^3/second)
C = Runoff coefficient
A = Draingae Area (hectares)
I= Average rainfall intensity (milimeters/hour)

Return Period (Years)	2 -Years	5-Years	10 -Years	25 -Years	50 -Years	100-Years
A	529.71	583.02	670.32	721.53	766.04	801.04
B	4.501	3.007	3.007	2.253	1.898	1.501
C	0.745	0.703	0.698	0.679	0.668	0.657
t (mins)	10.00	10.00	10.00	10.00	10.00	10.00
I (mm/hr)	72.24	96.03	111.84	131.63	146.50	160.97
C_2	0.25	0.25	0.25	0.25	0.25	0.25
Ca	1.00	1.00	1.00	1.10	1.20	1.25
C	0.25	0.25	0.25	0.28	0.30	0.31
Q (m^3/sec)	0.00	0.00	0.00	0.00	0.01	0.01
Q (l/sec)	2.30	3.06	3.56	4.61	5.60	6.41

Appendix C

On-site Detention Storage Orifice Pipe Sizing

n Engineering Inc

Table 1
Orifice Sizing Calculations

Project:	**Gas Station**
Address:	**601 Norfolk Street South**
Town/Township/City	**Simcoe, Norfolk County**
Project No.	**n2154**
Proposed Development Area (m^2)	**3503.26**
Date:	**2022-04-08**

Orifice Location	MH	
Orifice Type	Orifice Recuder Pipe	
Invert Elevation	218.830	m
Min. Ground Elevation	219.650	m
Orifice Center Elevation	218.873	
Diameter of Orifce Pipe	86	mm
Area of Orifice (A)	0.00580586	m^2
Coefficient of Discharge (C_d)	0.8	
Gravitational Constant	9.81	

Orifice Flow Equation:

$$Q = C_d A_o \sqrt{(2gH)}$$

Where:

Q = Flow (m3/sec)

A_o = Orifice area (m2)

g = Gravitational Constant

H = Center line head (m)

C_d = coefficient of discharge, dimensionless, typically between 0.6 and 0.85, depending on the orifice geometry

	2 years	5 years	10 years	25 years	50 years	100 years
Ponding Depth (m)	0.020	0.020	0.150	0.200	0.220	0.220
Water Elevation	219.67	219.67	219.80	219.85	219.87	219.87
Upstearm Head (m)	0.797	0.797	0.927	0.977	0.997	0.997
Controlled Discharge (L/sec)	**18.37**	**18.37**	**19.81**	**20.34**	**20.54**	**20.54**
Uncontrolled Flow (L/sec)	2.30	3.06	3.56	4.61	5.60	6.41
Pre-development Flow(L/sec)	20.71	27.52	32.06	37.73	41.99	46.14
Discharge Velocity (m/sec)	3.16	3.16	3.41	3.50	3.54	3.54
Allowable Peak Flow (l/sec)	**18.40**	**24.46**	**28.49**	**33.11**	**36.39**	**39.73**
Detention Storage Required (m^3)	**19.78**	**31.74**	**39.03**	**49.40**	**58.06**	**67.19**
Storage Used in MH (m^3)	1.06	1.06	1.36	1.36	1.36	1.36
Storage Used in Pipe (m^3)	5.08	5.08	5.08	5.08	5.08	5.08
Storage Used On RoofTop (m^3)	10.07	10.07	10.07	10.07	10.07	10.07
Storage Used in Ponding (m^3)	3.82	3.82	22.52	32.90	41.56	50.69
Maximum Available Storage	**20.03**	**16.12**	**104.36**	**104.36**	**104.36**	**104.36**

On-Site Storage Calculator

Simcoe, Norfolk County

Project: Gas Station
Project No.: n2154
Date: 8-Apr-22

n Engineering Inc

Table 2A - 2 Years Storage

Equation of IDF:

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

I = Rainfall Intensity (mm/hr)
T = Time of Concentration (hr)

R = 0.71
A = 0.35 ha
$Q_{release}$ = 0.018 m^3/s
18.37 L/s

A= 529.711
B= 4.501
C= 0.745

Storage Required (m^3) 19.78

t_c (min)	i_2 (mm/hr)	Q_2 (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
15	57.94	0.040	0.022	19.784	MAX
16	55.82	0.039	0.021	19.687	
17	53.87	0.038	0.019	19.535	
18	52.08	0.036	0.018	19.334	
19	50.42	0.035	0.017	19.091	
20	48.88	0.034	0.016	18.807	
21	47.44	0.033	0.015	18.488	
22	46.10	0.032	0.014	18.137	
23	44.85	0.031	0.013	17.755	
24	43.67	0.030	0.012	17.346	
25	42.56	0.030	0.011	16.912	
26	41.52	0.029	0.011	16.454	
27	40.53	0.028	0.010	15.975	
28	39.60	0.028	0.009	15.475	
29	38.71	0.027	0.009	14.956	
30	37.88	0.026	0.008	14.420	
31	37.08	0.026	0.007	13.867	
32	36.32	0.025	0.007	13.299	
33	35.59	0.025	0.006	12.717	
34	34.90	0.024	0.006	12.120	
35	34.24	0.024	0.005	11.511	
36	33.61	0.023	0.005	10.889	
37	33.01	0.023	0.005	10.256	
38	32.43	0.023	0.004	9.611	
39	31.87	0.022	0.004	8.957	
40	31.33	0.022	0.003	8.292	
41	30.82	0.021	0.003	7.618	
42	30.32	0.021	0.003	6.935	
43	29.85	0.021	0.002	6.243	
44	29.39	0.020	0.002	5.543	
45	28.94	0.020	0.002	4.835	
46	28.52	0.020	0.001	4.120	
47	28.10	0.020	0.001	3.397	
48	27.70	0.019	0.001	2.668	
49	27.32	0.019	0.001	1.931	
50	26.94	0.019	0.000	1.189	
51	26.58	0.019	0.000	0.440	

On-Site Storage Calculator

Simcoe, Norfolk County

Project: Gas Station

Project No.: n2154

Date: 8-Apr-22

n Engineering Inc.

Table 2B - 5 Years Storage

Equation of IDF:

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

I = Rainfall Intensity (mm/hr)

T = Time of Concentration (hr)

R =	0.71	
A =	0.35	ha
$Q_{release}$ =	0.018	m^3/s
	18.37	L/s

A= 583.017

B= 3.007

C= 0.703

Storage Required (m^3) 31.74

t_c (min)	i_5 (mm/hr)	Q_5 (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
15	76.40	0.053	0.035	31.359	
16	73.55	0.051	0.033	31.545	
17	70.95	0.049	0.031	31.667	
18	68.56	0.048	0.029	31.731	
19	66.35	0.046	0.028	31.743	MAX
20	64.31	0.045	0.026	31.708	
21	62.42	0.043	0.025	31.630	
22	60.65	0.042	0.024	31.514	
23	59.00	0.041	0.023	31.361	
24	57.46	0.040	0.022	31.176	
25	56.01	0.039	0.021	30.960	
26	54.64	0.038	0.020	30.716	
27	53.36	0.037	0.019	30.446	
28	52.14	0.036	0.018	30.151	
29	50.99	0.036	0.017	29.834	
30	49.90	0.035	0.016	29.495	
31	48.86	0.034	0.016	29.136	
32	47.88	0.033	0.015	28.758	
33	46.94	0.033	0.014	28.362	
34	46.04	0.032	0.014	27.949	
35	45.19	0.031	0.013	27.521	
36	44.37	0.031	0.013	27.077	
37	43.59	0.030	0.012	26.620	
38	42.84	0.030	0.011	26.148	
39	42.12	0.029	0.011	25.664	
40	41.43	0.029	0.010	25.167	
41	40.76	0.028	0.010	24.658	
42	40.13	0.028	0.010	24.138	
43	39.51	0.028	0.009	23.608	
44	38.92	0.027	0.009	23.067	
45	38.35	0.027	0.008	22.516	
46	37.79	0.026	0.008	21.956	
47	37.26	0.026	0.008	21.387	
48	36.75	0.026	0.007	20.809	
49	36.25	0.025	0.007	20.222	
50	35.77	0.025	0.007	19.628	
51	35.30	0.025	0.006	19.025	
52	34.85	0.024	0.006	18.415	
53	34.41	0.024	0.006	17.798	
54	33.98	0.024	0.005	17.174	
55	33.57	0.023	0.005	16.543	
56	33.17	0.023	0.005	15.906	

On-Site Storage Calculator

Simcoe, Norfolk County

Project: Gas Station
Project No.: n2154
Date: 8-Apr-22

n Engineering Inc

Table 2C - 10 Years Storage

Equation of IDF:

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

I = Rainfall Intensity (mm/hr)
T = Time of Concentration (hr)

R = 0.71
A = 0.35 ha
$Q_{release}$ = 0.020 m^3/s
19.81 L/s

A= 670.324
B= 3.007
C= 0.698

Storage Required (m^3) 39.03

t_c (min)	i_{10} (mm/hr)	Q_{10} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
15	89.12	0.062	0.042	38.035	
16	85.82	0.060	0.040	38.364	
17	82.81	0.058	0.038	38.619	
18	80.03	0.056	0.036	38.806	
19	77.48	0.054	0.034	38.932	
20	75.11	0.052	0.033	39.004	
21	72.91	0.051	0.031	39.025	MAX
22	70.87	0.049	0.030	39.001	
23	68.95	0.048	0.028	38.935	
24	67.16	0.047	0.027	38.830	
25	65.48	0.046	0.026	38.690	
26	63.89	0.044	0.025	38.517	
27	62.40	0.043	0.024	38.313	
28	60.99	0.042	0.023	38.080	
29	59.65	0.042	0.022	37.821	
30	58.38	0.041	0.021	37.536	
31	57.18	0.040	0.020	37.228	
32	56.04	0.039	0.019	36.898	
33	54.94	0.038	0.018	36.547	
34	53.90	0.038	0.018	36.176	
35	52.91	0.037	0.017	35.786	
36	51.96	0.036	0.016	35.379	
37	51.05	0.036	0.016	34.955	
38	50.18	0.035	0.015	34.514	
39	49.34	0.034	0.015	34.059	
40	48.54	0.034	0.014	33.589	
41	47.76	0.033	0.013	33.105	
42	47.02	0.033	0.013	32.608	
43	46.31	0.032	0.012	32.098	
44	45.62	0.032	0.012	31.577	
45	44.95	0.031	0.011	31.043	
46	44.31	0.031	0.011	30.498	
47	43.69	0.030	0.011	29.943	
48	43.09	0.030	0.010	29.377	
49	42.51	0.030	0.010	28.802	
50	41.95	0.029	0.009	28.217	
51	41.40	0.029	0.009	27.623	
52	40.88	0.028	0.009	27.019	
53	40.37	0.028	0.008	26.408	
54	39.87	0.028	0.008	25.788	
55	39.39	0.027	0.008	25.160	
56	38.92	0.027	0.007	24.524	

On-Site Storage Calculator

Simcoe, Norfolk County

Project: Gas Station

Project No.: n2154

Date: 8-Apr-22

Table 2D - 25 Years Storage

Equation of IDF:

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

I = Rainfall Intensity (mm/hr)

T = Time of Concentration (hr)

R =	0.71	
A =	0.35	ha
$Q_{release}$ =	0.020	m^3/s
	20.34	L/s

A= 721.533

B= 2.253

C= 0.679

Storage Required (m^3) 49.40

t_c (min)	i_{25} (mm/hr)	Q_{25} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
20	87.78	0.061	0.041	48.956	
21	85.20	0.059	0.039	49.139	
22	82.79	0.058	0.037	49.271	
23	80.55	0.056	0.036	49.357	
24	78.46	0.055	0.034	49.401	
25	76.49	0.053	0.033	49.405	*MAX
26	74.64	0.052	0.032	49.372	
27	72.90	0.051	0.030	49.306	
28	71.25	0.050	0.029	49.207	
29	69.70	0.049	0.028	49.079	
30	68.22	0.048	0.027	48.922	
31	66.82	0.047	0.026	48.740	
32	65.49	0.046	0.025	48.532	
33	64.23	0.045	0.024	48.301	
34	63.02	0.044	0.024	48.048	
35	61.86	0.043	0.023	47.774	
36	60.76	0.042	0.022	47.480	
37	59.71	0.042	0.021	47.167	
38	58.69	0.041	0.021	46.836	
39	57.72	0.040	0.020	46.488	
40	56.79	0.040	0.019	46.124	
41	55.90	0.039	0.019	45.744	
42	55.04	0.038	0.018	45.349	
43	54.21	0.038	0.017	44.939	
44	53.41	0.037	0.017	44.516	
45	52.64	0.037	0.016	44.080	
46	51.90	0.036	0.016	43.631	
47	51.18	0.036	0.015	43.169	
48	50.49	0.035	0.015	42.696	
49	49.81	0.035	0.014	42.212	
50	49.17	0.034	0.014	41.717	
51	48.54	0.034	0.013	41.211	
52	47.93	0.033	0.013	40.695	
53	47.34	0.033	0.013	40.170	
54	46.76	0.033	0.012	39.635	
55	46.21	0.032	0.012	39.090	
56	45.67	0.032	0.011	38.537	
57	45.14	0.031	0.011	37.976	
58	44.63	0.031	0.011	37.406	
59	44.14	0.031	0.010	36.828	
60	43.65	0.030	0.010	36.242	
61	43.18	0.030	0.010	35.648	
62	42.73	0.030	0.009	35.047	
63	42.28	0.029	0.009	34.439	
64	41.85	0.029	0.009	33.824	
65	41.42	0.029	0.009	33.202	
66	41.01	0.029	0.008	32.574	

On-Site Storage Calculator

Simcoe, Norfolk County

Project: Gas Station

Project No.: n2154

Date: 8-Apr-22

n Engineering Inc

Table 2E - 50 Years Storage

Equation of IDF:

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

I = Rainfall Intensity (mm/hr)

T = Time of Concentration (hr)

R =	0.71	
A =	0.35	ha
$Q_{release}$ =	0.021	m^3/s
	20.54	L/s

A= 766.038

B= 1.898

C= 0.668

Storage Required (m^3) 58.06

t_c (min)	i_{50} (mm/hr)	Q_{50} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
30	75.81	0.053	0.032	58.062	MAX
31	74.26	0.052	0.031	57.993	
32	72.79	0.051	0.030	57.897	
33	71.39	0.050	0.029	57.775	
34	70.06	0.049	0.028	57.630	
35	68.78	0.048	0.027	57.461	
36	67.57	0.047	0.027	57.271	
37	66.40	0.046	0.026	57.060	
38	65.29	0.045	0.025	56.830	
39	64.21	0.045	0.024	56.580	
40	63.19	0.044	0.023	56.313	
41	62.20	0.043	0.023	56.028	
42	61.25	0.043	0.022	55.727	
43	60.33	0.042	0.021	55.411	
44	59.45	0.041	0.021	55.079	
45	58.60	0.041	0.020	54.733	
46	57.78	0.040	0.020	54.372	
47	56.99	0.040	0.019	53.999	
48	56.23	0.039	0.019	53.612	
49	55.48	0.039	0.018	53.213	
50	54.77	0.038	0.018	52.802	
51	54.07	0.038	0.017	52.380	
52	53.40	0.037	0.017	51.946	
53	52.75	0.037	0.016	51.502	
54	52.12	0.036	0.016	51.047	
55	51.50	0.036	0.015	50.581	
56	50.91	0.035	0.015	50.107	
57	50.33	0.035	0.015	49.622	
58	49.77	0.035	0.014	49.129	
59	49.22	0.034	0.014	48.626	
60	48.69	0.034	0.013	48.115	
61	48.17	0.034	0.013	47.595	
62	47.66	0.033	0.013	47.067	
63	47.17	0.033	0.012	46.532	
64	46.69	0.033	0.012	45.988	
65	46.22	0.032	0.012	45.437	
66	45.77	0.032	0.011	44.879	
67	45.32	0.032	0.011	44.314	
68	44.89	0.031	0.011	43.741	
69	44.47	0.031	0.010	43.162	
70	44.05	0.031	0.010	42.577	
71	43.65	0.030	0.010	41.984	

On-Site Storage Calculator

Simcoe, Norfolk County

Project: Gas Station

Project No.: n2154

Date: 8-Apr-22

Table 2F - 100 Years Storage

R = 0.71

A = 0.35 ha

$Q_{release}$ = 0.021 m^3/s

20.54 L/s

Equation of IDF:

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

I = Rainfall Intensity (mm/hr)

T = Time of Concentration (hr)

A= 801.041

B= 1.501

C= 0.657

Storage Required (m^3) 67.19

t_c (min)	i_{100} (mm/hr)	Q_{100} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
30	83.03	0.058	0.037	67.115	
31	81.35	0.057	0.036	67.167	
32	79.74	0.056	0.035	67.189	MAX
33	78.22	0.054	0.034	67.184	
34	76.76	0.053	0.033	67.153	
35	75.37	0.052	0.032	67.098	
36	74.05	0.052	0.031	67.019	
37	72.78	0.051	0.030	66.919	
38	71.56	0.050	0.029	66.797	
39	70.40	0.049	0.028	66.655	
40	69.28	0.048	0.028	66.493	
41	68.20	0.047	0.027	66.313	
42	67.17	0.047	0.026	66.116	
43	66.17	0.046	0.026	65.901	
44	65.21	0.045	0.025	65.670	
45	64.29	0.045	0.024	65.424	
46	63.40	0.044	0.024	65.162	
47	62.53	0.044	0.023	64.886	
48	61.70	0.043	0.022	64.596	
49	60.90	0.042	0.022	64.292	
50	60.12	0.042	0.021	63.976	
51	59.36	0.041	0.021	63.647	
52	58.63	0.041	0.020	63.306	
53	57.92	0.040	0.020	62.953	
54	57.23	0.040	0.019	62.589	
55	56.57	0.039	0.019	62.214	
56	55.92	0.039	0.018	61.828	
57	55.29	0.039	0.018	61.432	
58	54.68	0.038	0.018	61.026	
59	54.08	0.038	0.017	60.610	
60	53.50	0.037	0.017	60.185	
61	52.94	0.037	0.016	59.750	
62	52.39	0.036	0.016	59.307	
63	51.85	0.036	0.016	58.855	
64	51.33	0.036	0.015	58.394	
65	50.82	0.035	0.015	57.926	
66	50.33	0.035	0.015	57.449	
67	49.84	0.035	0.014	56.965	
68	49.37	0.034	0.014	56.473	
69	48.91	0.034	0.014	55.974	
70	48.46	0.034	0.013	55.467	
71	48.02	0.033	0.013	54.954	
72	47.59	0.033	0.013	54.433	
73	47.17	0.033	0.012	53.906	
74	46.76	0.033	0.012	53.372	
75	46.35	0.032	0.012	52.832	
76	45.96	0.032	0.011	52.286	

On-Site Available Storage Calculator

Simcoe, Norfolk County

Table 3- Available Storage (100-year)

Project:	**Gas Station**
Address:	**601 Norfolk Street South**
Project No.:	**n2154**
Date:	**08-Apr-22**

MH/CATCHBASIN

			HWL	**219.87**	
Description	**Length (m)**	**Width (m)**	**Invert**	**Height (m)**	**Volume (m^3)**
CB1	0.6	0.6	219.080	0.79	0.28
CBMH1	1.2		218.920	0.95	1.07
TOTAL					1.36

PIPES

FROM MH	**TO MH**	**Length (m)**		**DIA (mm)**	**Volume (m^3)**
INFILTRATION CHAMBER	MH1(OGS)	2.5		300	0.18
STM CANOPY PLUG	PIPE	5.0		300	0.37
CBMH1	INFILTRATION CHAMBER	5.0		300	0.37
STM ROOF PLUG	CBMH1	16.0		300	1.17
CB1	CBMH1	41.0		300	2.99
TOTAL					5.08

ROOFTOP DETENTION

Location	**Area(m^2)**	**Design Depth of**	**Volume**
BLDG.A	278.7	109	10.07
TOTAL			10.07

SURFACE PONDING

Ponding Location	**Top Elevation**	**Ponding Depth (m)**	**Ponding Area (m^2)**	**Ponding Volume (m^3)**
CB	219.71	0.16	858.6	45.79
CBMH1	219.65	0.22	573.8	42.07
TOTAL				87.86

AVAILABLE TOTAL VOLUME (m^3)	**104.36**
REQUIRED VOLUME (m^3)	**67.19**

Appendix D

Roof Detention

Table 2G

Roof Storage Calculator

Simcoe, Norfolk County

100 Years Detention Storage

Required Flood Storage Volume:

Equation of IDF:

$$i = \frac{a}{(t + b)^{C}}$$

I = Rainfall Intensity (mm/hr)

T = Time of Concentration (hr)

a= 801.041

b= 1.501

c= 0.657

Where:

Composite Runoff Coefficient: R =	0.95		
Site Area, A =	0.0279	ha	
Maximum Allowable Discharge Rate $Q_{release}$ =	0.001	m^3/s	Max Storage
(No. Single Notch Drain = 1@ 1.2 LPS)	1.20	L/s	10.07

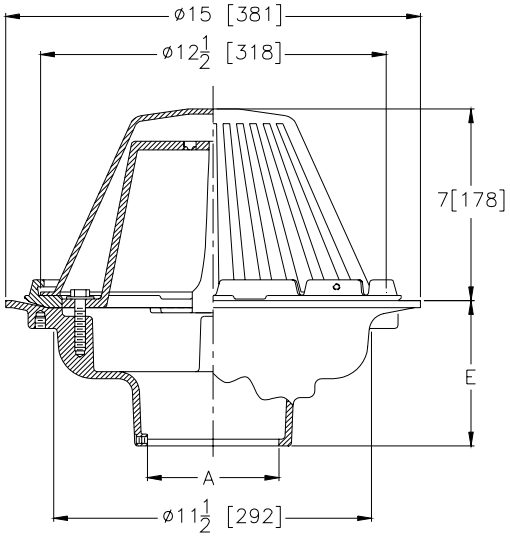
t_c (min)	i_{100} (mm/hr)	Q_{100} (m^3/s)	Q_{stored} (m^3/s)	Peak Volume (m^3)	
15	126.98	0.009	0.008	7.394	
16	122.17	0.009	0.008	7.544	
17	117.79	0.009	0.008	7.684	
18	113.79	0.008	0.007	7.816	
19	110.11	0.008	0.007	7.939	
20	106.72	0.008	0.007	8.055	
21	103.58	0.008	0.006	8.164	
22	100.66	0.007	0.006	8.268	
65	50.82	0.004	0.003	10.016	
66	50.33	0.004	0.003	10.025	
67	49.84	0.004	0.002	10.032	
68	49.37	0.004	0.002	10.039	
69	48.91	0.004	0.002	10.045	
70	48.46	0.004	0.002	10.050	
71	48.02	0.004	0.002	10.055	
72	47.59	0.004	0.002	10.059	
73	47.17	0.003	0.002	10.062	
74	46.76	0.003	0.002	10.064	
75	46.35	0.003	0.002	10.066	
76	45.96	0.003	0.002	10.067	
77	45.57	0.003	0.002	10.068	MAX
78	45.20	0.003	0.002	10.067	
79	44.83	0.003	0.002	10.066	
80	44.47	0.003	0.002	10.065	
81	44.11	0.003	0.002	10.063	
82	43.76	0.003	0.002	10.060	
83	43.42	0.003	0.002	10.057	
84	43.09	0.003	0.002	10.053	
85	42.76	0.003	0.002	10.049	
86	42.44	0.003	0.002	10.044	
87	42.12	0.003	0.002	10.039	
88	41.81	0.003	0.002	10.033	
89	41.51	0.003	0.002	10.026	
90	41.21	0.003	0.002	10.020	
91	40.92	0.003	0.002	10.012	
92	40.63	0.003	0.002	10.004	
93	40.35	0.003	0.002	9.996	
94	40.07	0.003	0.002	9.987	

Z-105
CONTROL-FLO ROOF DRAIN
w/ Parabolic Weir

SPECIFICATION SHEET

TAG_____

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice



A Pipe Size Inches / [mm]	Approx. Wt. Lbs. / [kg]	Dome Open Area Sq. In. / [sq cm]
2 - 3 - 4 [51 - 76 - 102]	34 [15]	148 [955]

ENGINEERING SPECIFICATION: ZURN Z-105 "Control-Flo" roof drain for dead -level roof construction, Dura-Coated cast iron body. "Control-Flo" weir shall be linear functioning with integral membrane flashing clamp/gravel guard and Poly-Dome. All data shall be verified proportional to flow rates.

OPTIONS (Check/specify appropriate options)

PIPE SIZE

2,3,4 [50,75,100]
2,3,4 [50,75,100]
2,3,4 [50,75,100]
2,3,4 [50,75,100]

(Specify size/type) **OUTLET**

_____ IC Inside Caulk
_____ IP Threaded
_____ NH No-Hub
_____ NL Neo-Loc

E BODY HT. DIM.

5 1/4 [133]
3 3/4 [95]
5 1/4 [133]
4 5/8 [117]

PREFIXES

____ Z- D.C.C.I. Body with Poly-Dome*
____ ZA- D.C.C.I. Body with Aluminum Dome

SUFFIXES

____ -A Waterproof Flange
____ -AR Acid Resistant Epoxy Coated Finish
____ -C Underdeck Clamp
____ -DP Top Set® Roof Deck Plate (Replaces both the -C and -R)
____ -DR Adjustable Drain Riser Extension Assembly 3-5/8" [92] to 7-1/4" [184]
____ -E Static Extension 1 [25] thru 4 [102] (Specify Ht.)
____ -EA Adjustable Extension Assembly 1 3/4 [44] thru 3 1/2 [89]
____ -EB Elevating Body Plate
____ -G Galvanized Cast Iron
____ -R Roof Sump Receiver
____ -VP Vandal Proof Secured Top
____ -90 90º Threaded Side Outlet Body

*REGULARLY FURNISHED UNLESS OTHERWISE SPECIFIED

REV. A DATE: 09/14/05 C.N. NO. 89837

DWG. NO. 63601 PRODUCT NO. Z-105

ZURN INDUSTRIES LIMITED ♦ 3544 Nashua Drive ♦ Mississauga, Ontario L4V 1L2 ♦ Phone: 905/405-8272 Fax: 905/405-1292
In the U.S.: ZURN INDUSTRIES, INC. ♦ SPECIFICATION DRAINAGE OPERATION ♦ 1801 Pittsburgh Ave. ♦ Erie, PA 16514
Phone: 814/455-0921 ♦ Fax: 814/454-7929 ♦ World Wide Web: www.zurn.com

Appendix E

OGS Sizing

Hydroworks Sizing Summary

Norflok Gas

n2154

04-04-2022

Recommended Size: HS 5

A HydroStorm HS 5 is recommended to provide 80 % annual TSS removal based on a drainage area of 0.3503 (ha) with an imperviousness of 0.70 % and Hamilton Airport, Ontario rainfall for the ETV Canada particle size distribution.

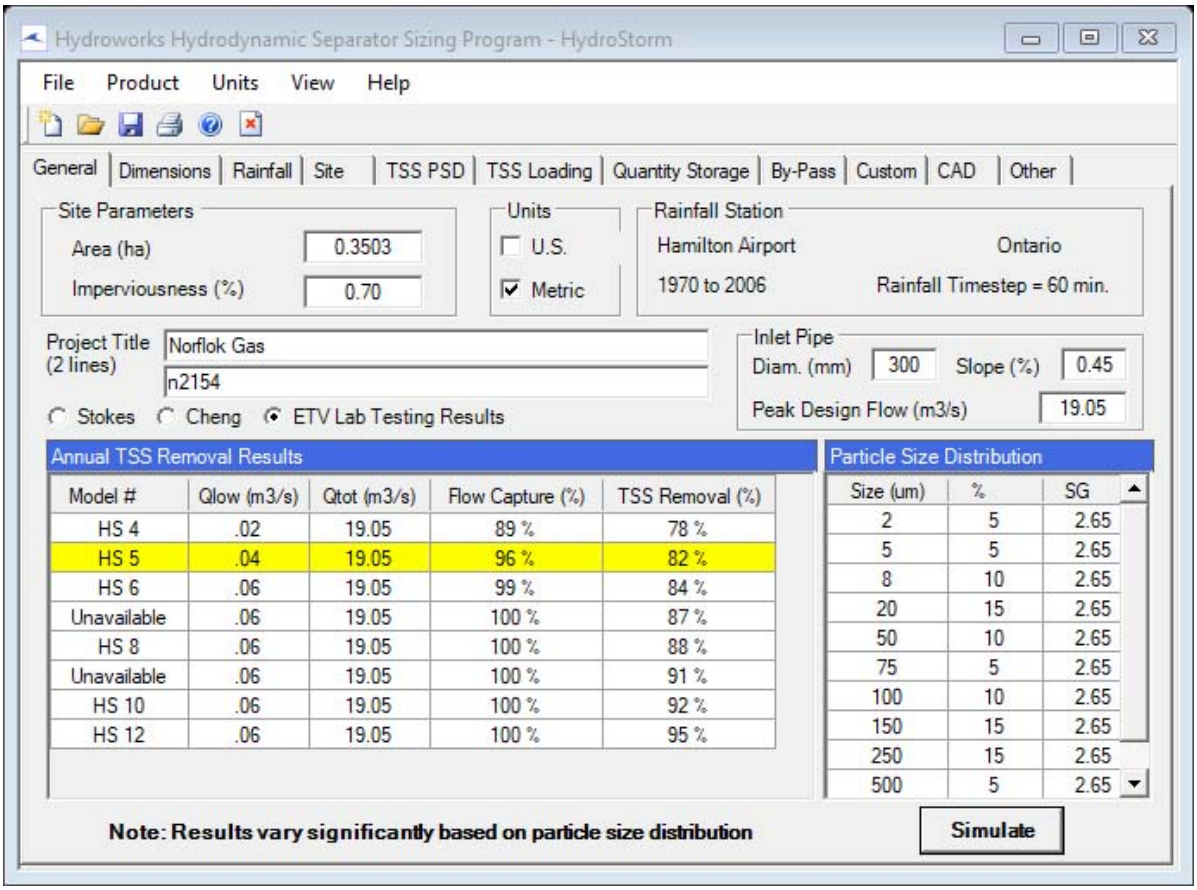
The recommended HydroStorm HS 5 treats 96 % of the annual runoff and provides 82 % annual TSS removal for the Hamilton Airport rainfall records and ETV Canada particle size distribution.

The HydroStorm has a headloss coefficient (K) of 1.04. The given peak flow of 19.05 (m3/s) is greater than the full pipe flow of <= .06 (m3/s) indicating the pipe will be surcharged during the peak flow. Full pipe flow was assumed For the headloss calculations. The pressure head in the pipe was not evaluated since this would require a hydraulic gradeline analysis. The headloss was calculated to be > 1000 (mm) which is an unacceptable design.

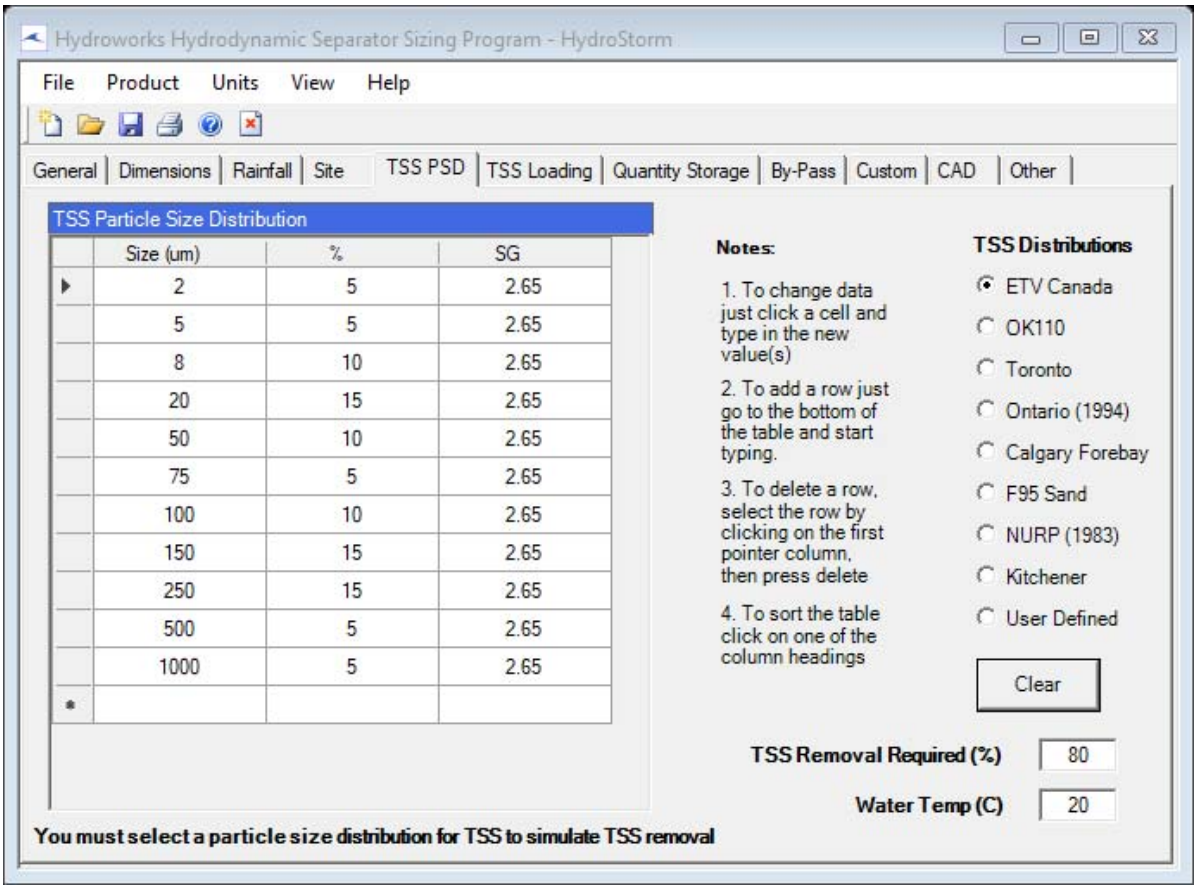
This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

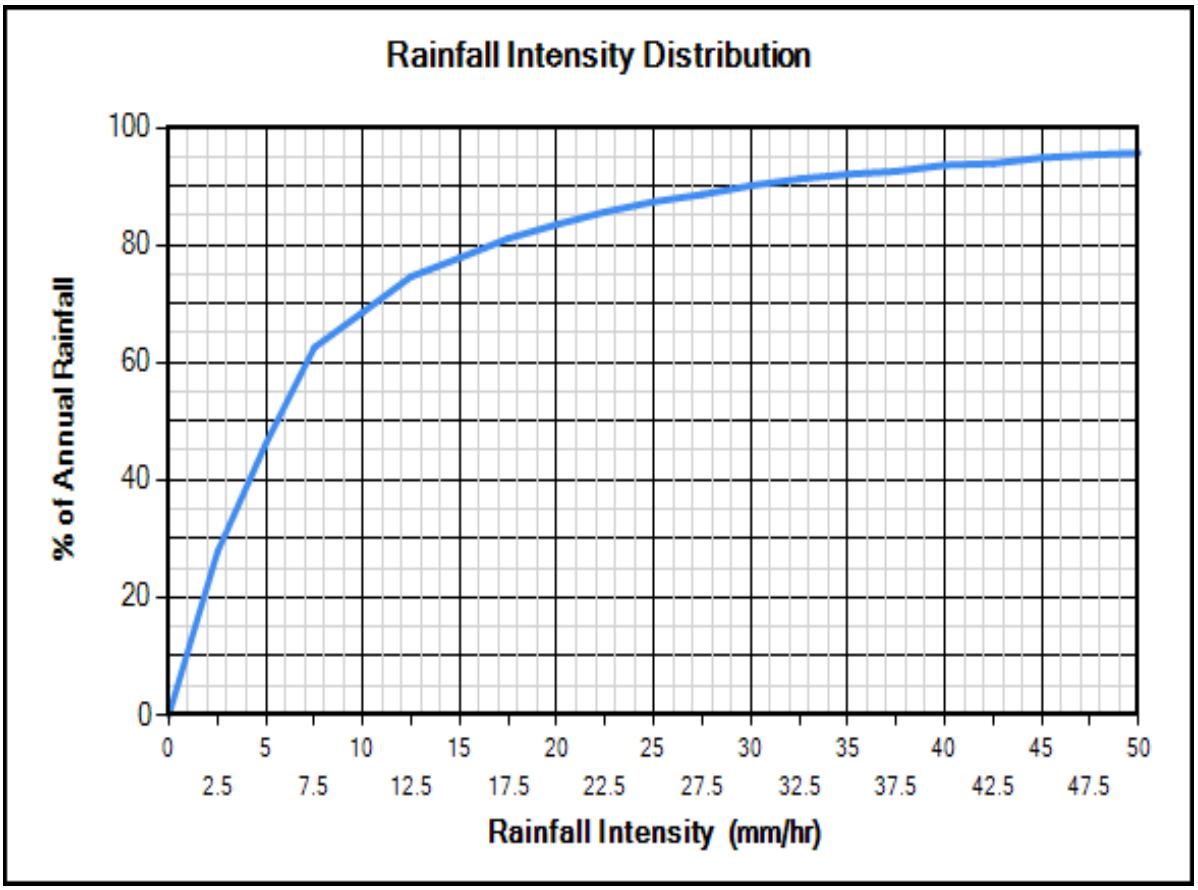
TSS Removal Sizing Summary



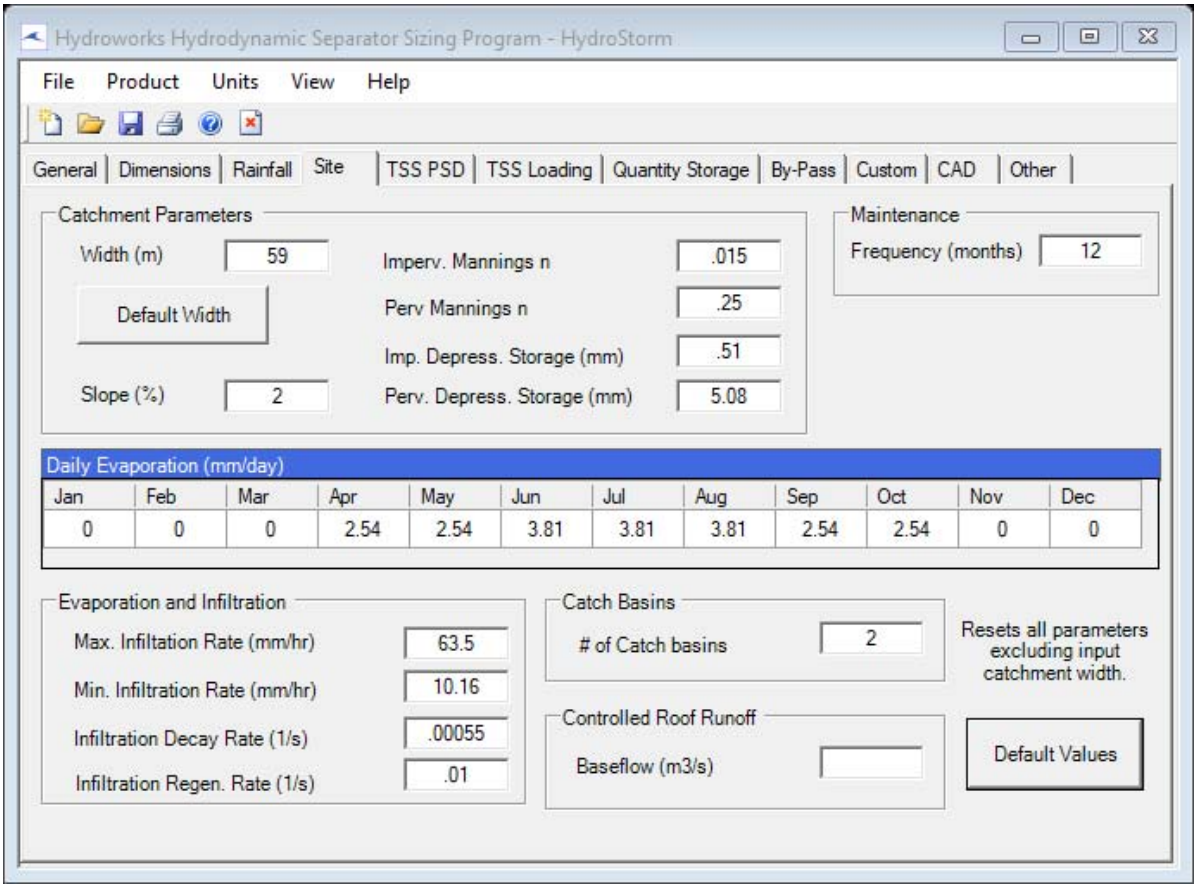
TSS Particle Size Distribution



Rainfall Station - Hamilton Airport, Ontario(1970 to 2006)



Site Physical Characteristics



Dimensions And Capacities

Hydroworks Hydrodynamic Separator Sizing Program - HydroStorm

File Product Units View Help

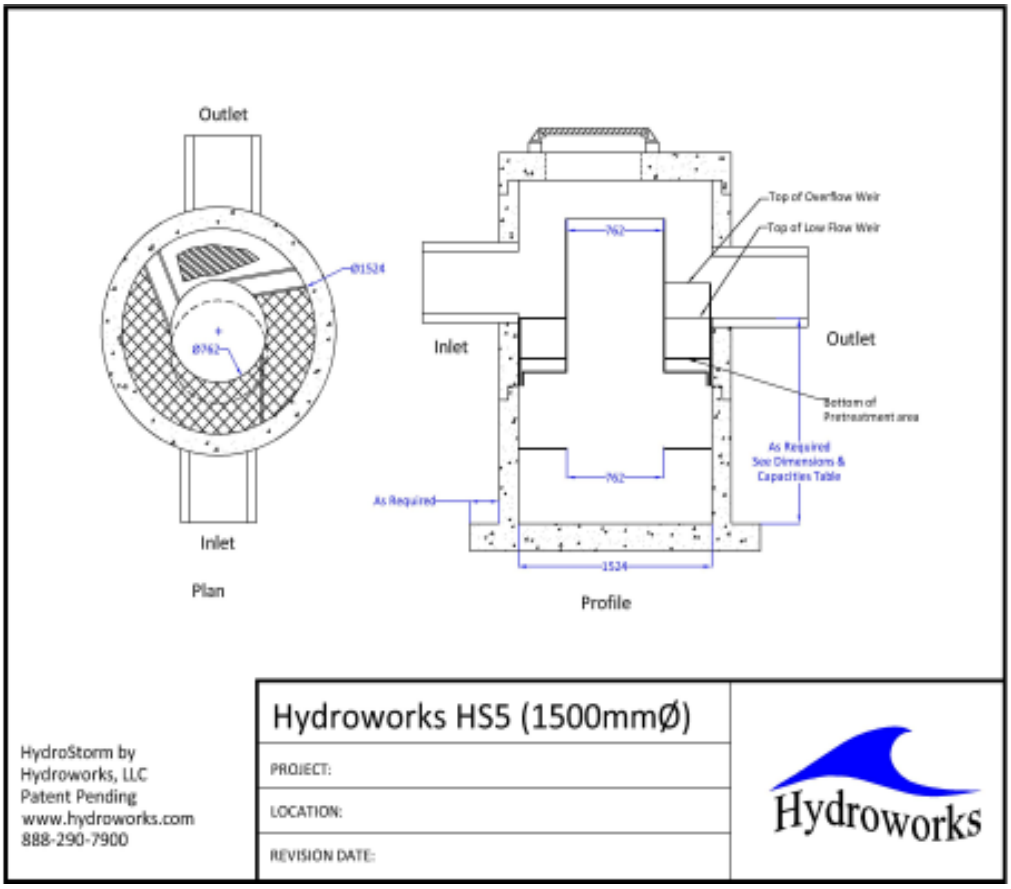
General | Dimensions | Rainfall | Site | TSS PSD | TSS Loading | Quantity Storage | By-Pass | Custom | CAD | Other

Dimensions and Capacities

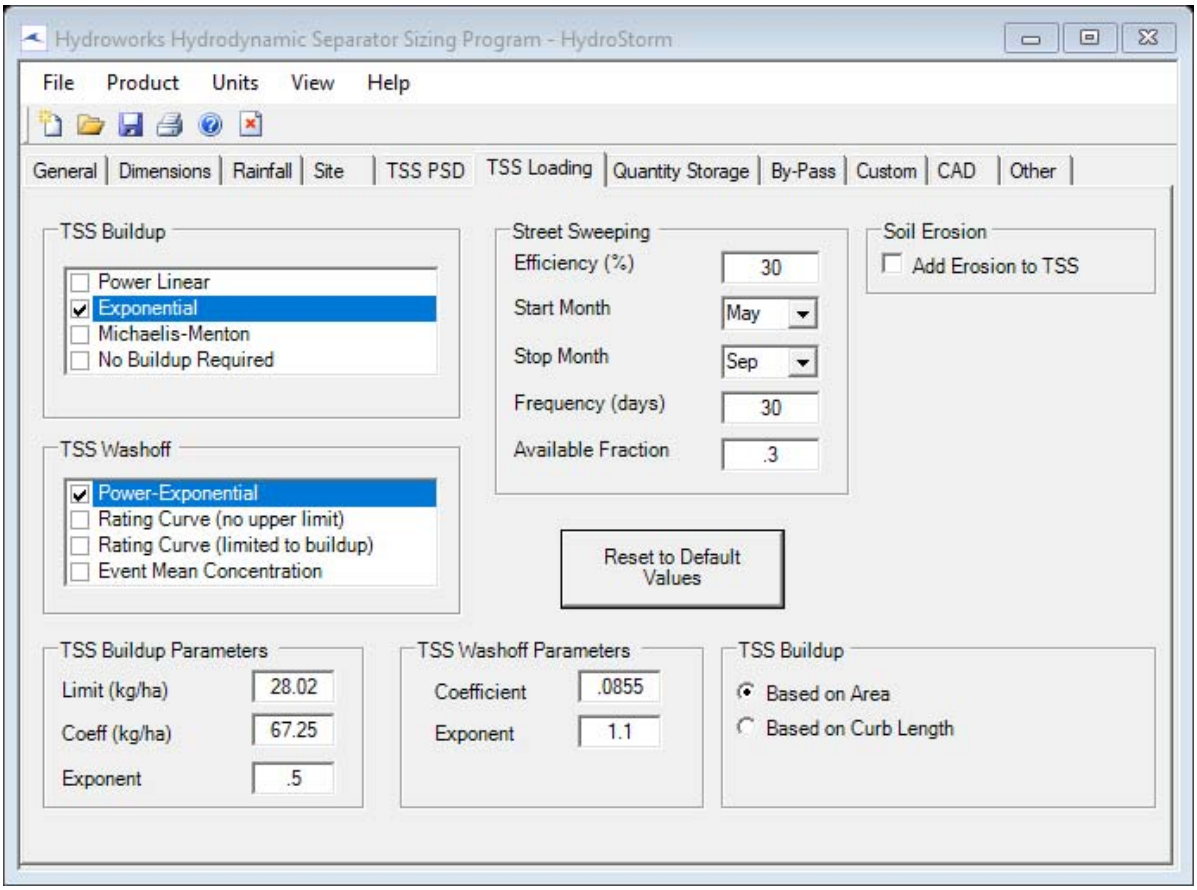
Model	Diam. (m)	Depth (m)	Float. Vol. (L)	Sediment Vol. (m3)	Total Vol. (m3)
HS 4	1.22	1.22	381	0.9	1.4
HS 5	1.52	1.52	642	1.8	2.8
HS 6	1.83	1.83	1041	3.2	4.8
HS 7	2.13	1.98	1575	4.6	7.1
HS 8	2.44	2.13	2354	6.3	10
HS 9	2.74	2.44	3242	9.3	14.4
HS 10	3.05	2.74	4327	13.2	20
HS 12	3.66	3.35	7164	23.8	35.2

Depth = Depth from outlet invert to inside bottom of tank

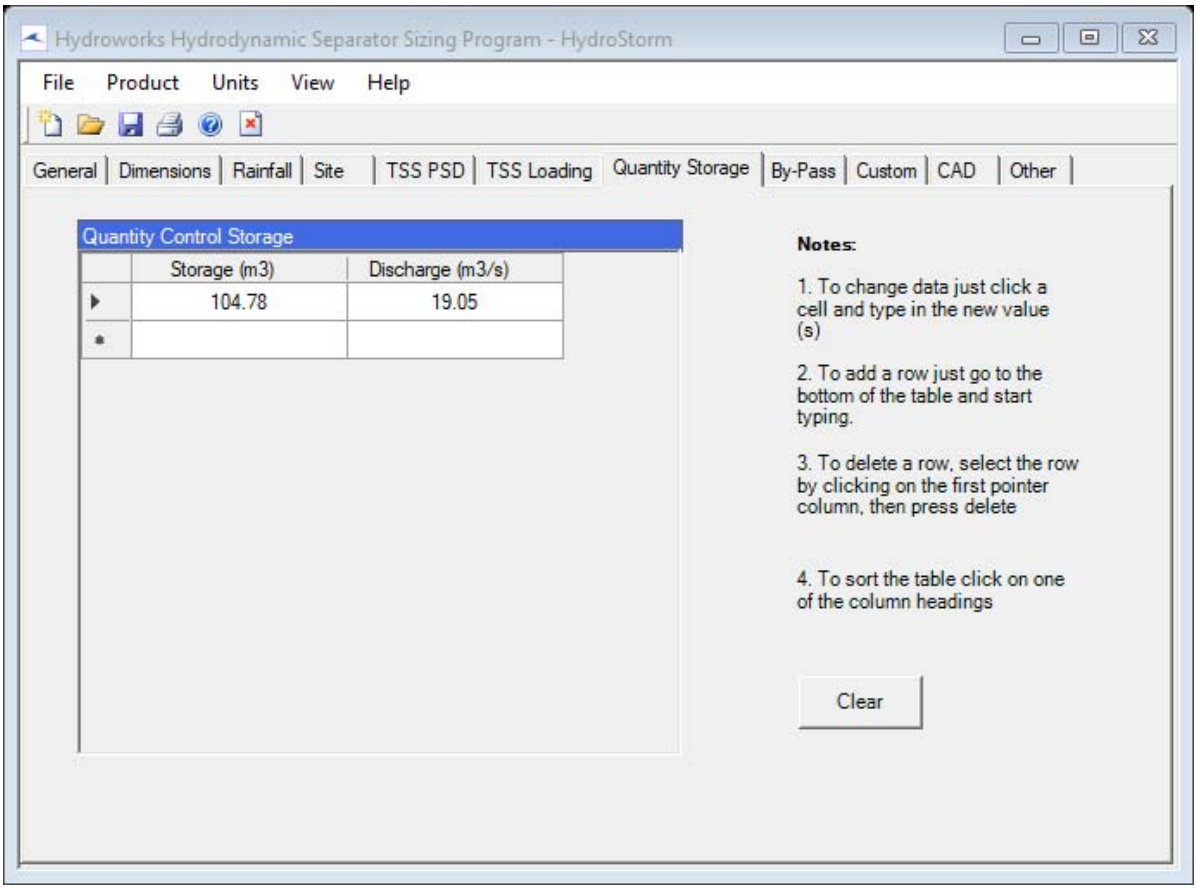
Generic HS 5 CAD Drawing



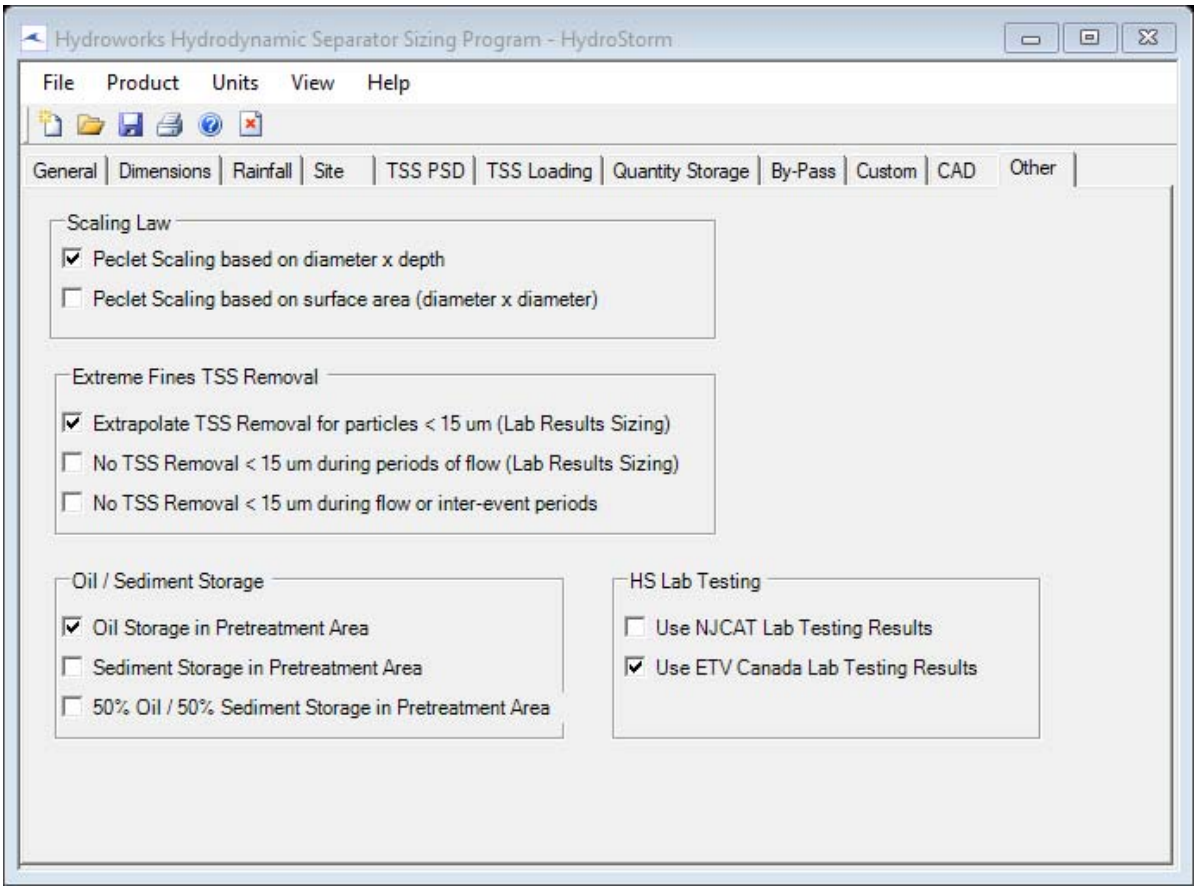
TSS Buildup And Washoff



Upstream Quantity Storage



Other Parameters



Hydroworks Sizing Program - Version 5.0

Hydroworks® HydroStorm

Operations & Maintenance Manual

Version 1.0

Please call Hydroworks at 888-290-7900 or email us at support@hydroworks.com if you have any questions regarding the Inspection Checklist. Please fax a copy of the completed checklist to Hydroworks at 888-783-7271 for our records.

Introduction

The HydroStorm is a state of the art hydrodynamic separator. Hydrodynamic separators remove solids, debris and lighter than water (oil, trash, floating debris) pollutants from stormwater. Hydrodynamic separators and other water quality measures are mandated by regulatory agencies (Town/City, State, Federal Government) to protect storm water quality from pollution generated by urban development (traffic, people) as part of new development permitting requirements.

As storm water treatment structures fill up with pollutants they become less and less effective in removing new pollution. Therefore, it is important that storm water treatment structures be maintained on a regular basis to ensure that they are operating at optimum performance. The HydroStorm is no different in this regard and this manual has been assembled to provide the owner/operator with the necessary information to inspect and coordinate maintenance of their HydroStorm.

Hydroworks® HydroStorm Operation

The Hydroworks HydroStorm (HS) separator is a unique hydrodynamic by-pass separator. It incorporates a protected submerged pretreatment zone to collect larger solids, a treatment tank to remove finer solids, and a dual set of weirs to create a high flow bypass. High flows are conveyed directly to the outlet and do not enter the treatment area, however, the submerged pretreatment area still allows removal of coarse solids during high flows.

Under normal or low flows, water enters an inlet area with a horizontal grate. The area underneath the grate is submerged with openings to the main treatment area of the separator. Coarse solids fall through the grate and are either trapped in the pretreatment area or conveyed into the main treatment area depending on the flow rate. Fines are transported into the main treatment area. Openings and weirs in the pretreatment area allow entry of water and solids into the main treatment area and cause water to rotate in the main treatment area creating a vortex motion. Water in the main treatment area is forced to rise along the walls of the separator to discharge from the treatment area to the downstream pipe.

The vortex motion forces solids and floatables to the middle of the inner chamber. Floatables are trapped since the inlet to the treatment area is submerged. The design maximizes the retention of settled solids since solids are forced to the center of the inner chamber by the vortex motion of water while water must flow up the walls of the separator to discharge into the downstream pipe.

A set of high flow weirs near the outlet pipe create a high flow bypass over both the pretreatment area and main treatment chamber. The rate of flow into the treatment area is regulated by the number and size of openings into the treatment chamber and the height of by-pass weirs. High flows flow over the weirs directly to the outlet pipe preventing the scour and resuspension of any fines collected in the treatment chamber.

A central access tube is located in the structure to provide access for cleaning. The arrangement of the inlet area and bypass weirs near the outlet pipe facilitate the use of multiple inlet pipes.

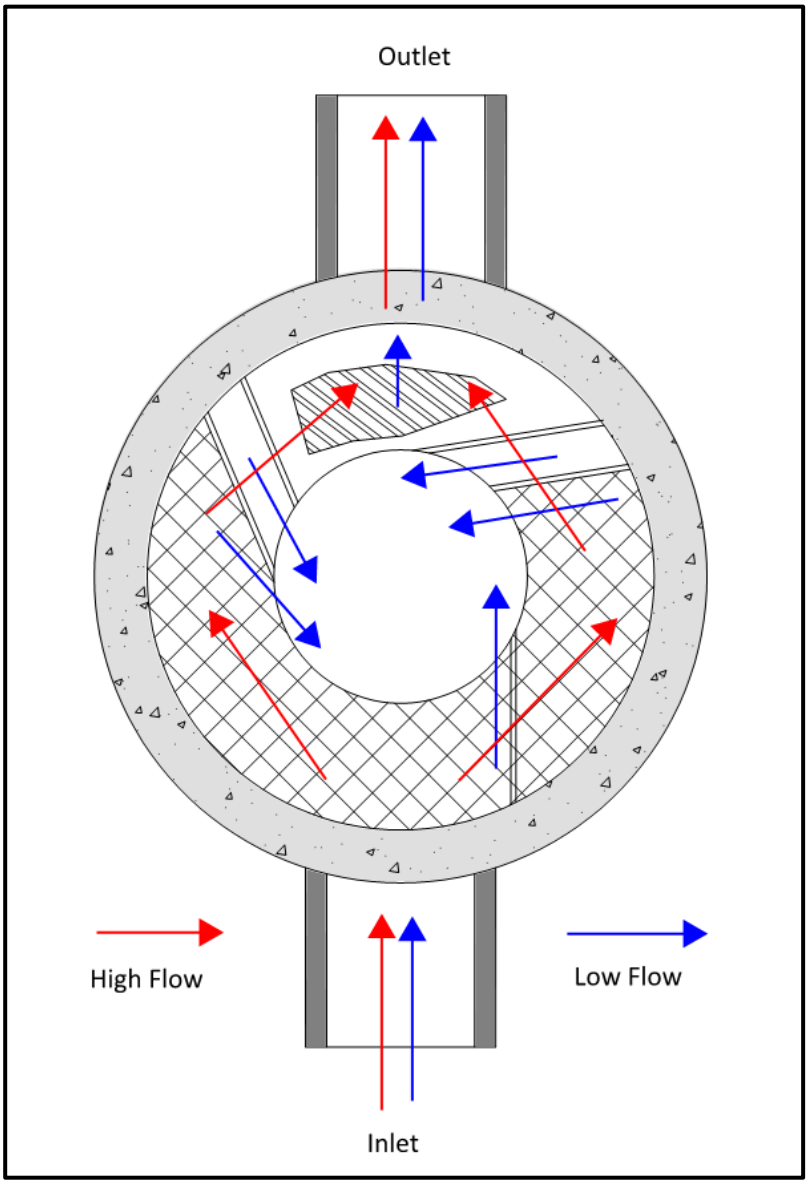


Figure 1. Hydroworks HydroStorm Operation – Plan View

Figure 2 is a profile view of the HydroStorm separator showing the flow patterns for low and high flows.

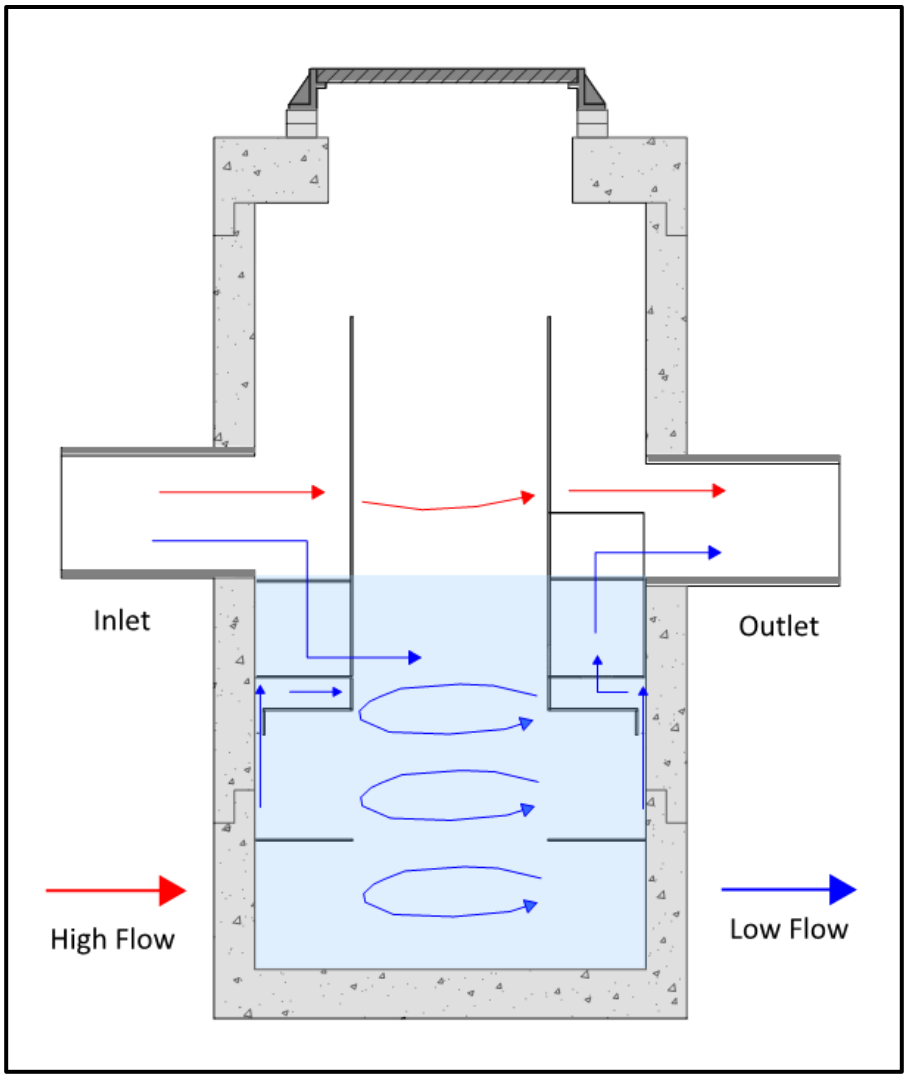


Figure 2. Hydroworks HydroStorm Operation – Profile View

The HS 4i is an inlet version of the HS 4 separator. There is a catch-basin grate on top of the HS 4i. A funnel sits sits underneath the grate on the frame and directs the water to the inlet side of the separator to ensure all lows flows are properly treated. The whole funnel is removed for inspection and cleaning.

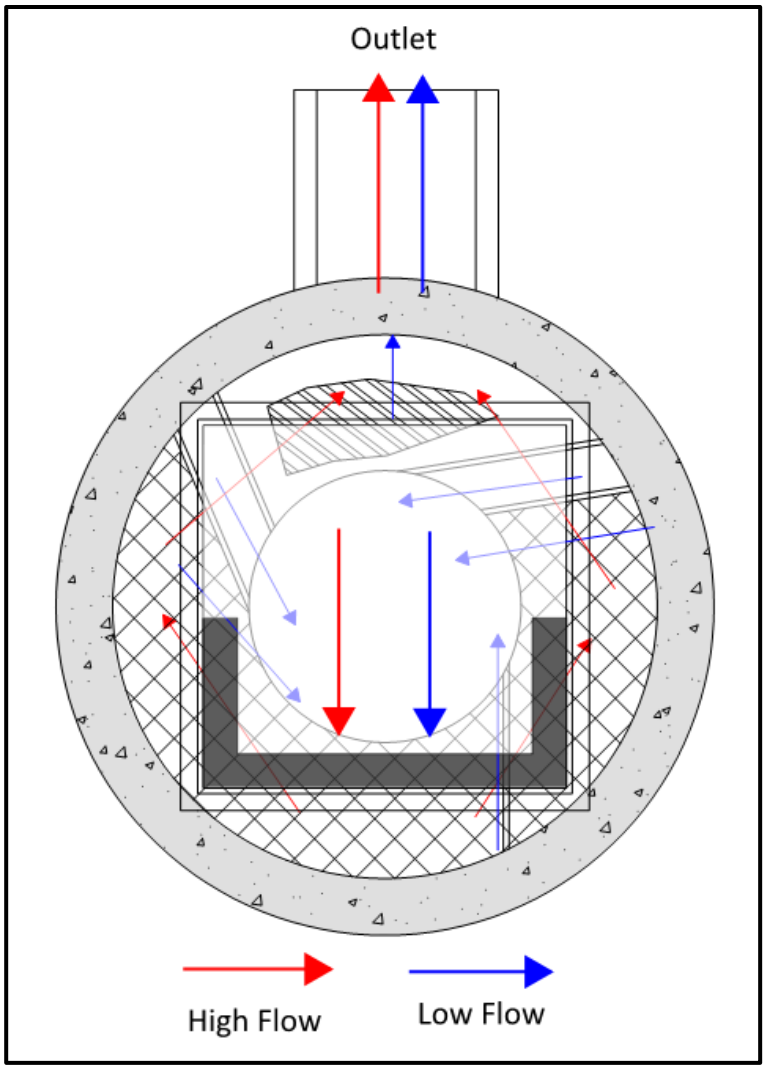


Figure 3. Hydroworks HS 4i Funnel

Inspection

Procedure

Floatables

A visual inspection can be conducted for floatables by removing the covers and looking down into the center access tube of the separator. Separators with an inlet grate (HS 4i or custom separator) will have a plastic funnel located under the grate that must be removed from the frame prior to inspection or maintenance. If you are missing a funnel please contact Hydroworks at the numbers provided at the end of this document.

Hydroworks

TSS/Sediment

Inspection for TSS build-up can be conducted using a Sludge Judge®, Core Pro®, AccuSludge® or equivalent sampling device that allows the measurement of the depth of TSS/sediment in the unit. These devices typically have a ball valve at the bottom of the tube that allows water and TSS to flow into the tube when lowering the tube into the unit. Once the unit touches the bottom of the device, it is quickly pulled upward such that the water and TSS in the tube forces the ball valve closed allowing the user to see a full core of water/TSS in the unit. The unit should be inspected for TSS through each of the access covers. Several readings (2 or 3) should be made at each access cover to ensure that an accurate TSS depth measurement is recorded.

Frequency

Construction Period

The HydroStorm separator should be inspected every four weeks and after every large storm (over 0.5" (12.5 mm) of rain) during the construction period.

Post-Construction Period

The Hydroworks HydroStorm separator should be inspected during the first year of operation for normal stabilized sites (grassed or paved areas). If the unit is subject to oil spills or runoff from unstabilized (storage piles, exposed soils) areas the HydroStorm separator should be inspected more frequently (4 times per year). The initial annual inspection will indicate the required future frequency of inspection and maintenance if the unit was maintained after the construction period.

Reporting

Reports should be prepared as part of each inspection and include the following information:

1. Date of inspection
2. GPS coordinates of Hydroworks unit
3. Time since last rainfall
4. Date of last inspection
5. Installation deficiencies (missing parts, incorrect installation of parts)
6. Structural deficiencies (concrete cracks, broken parts)
7. Operational deficiencies (leaks, blockages)
8. Presence of oil sheen or depth of oil layer
9. Estimate of depth/volume of floatables (trash, leaves) captured
10. Sediment depth measured
11. Recommendations for any repairs and/or maintenance for the unit
12. Estimation of time before maintenance is required if not required at time of inspection

A sample inspection checklist is provided at the end of this manual.

Maintenance

Procedure

The Hydroworks HydroStorm unit is typically maintained using a vacuum truck. There are numerous companies that can maintain the HydroStorm separator. Maintenance with a vacuum truck involves removing all of the water and sediment together. The water is then separated from the sediment on the truck or at the disposal facility.

A central access opening (24” or greater) is provided to the gain access to the lower treatment tank of the unit. This is the primary location to maintain by vacuum truck. The pretreatment area can also be vacuumed and/or flushed into the lower treatment tank of the separator for cleaning via the central access once the water level is lowered below the pretreatment floor.

In instances where a vacuum truck is not available other maintenance methods (i.e. clamshell bucket) can be used, but they will be less effective. If a clamshell bucket is used the water must be decanted prior to cleaning since the sediment is under water and typically fine in nature. Disposal of the water will depend on local requirements. Disposal options for the decanted water may include:

1. Discharge into a nearby sanitary sewer manhole
2. Discharge into a nearby LID practice (grassed swale, bioretention)
3. Discharge through a filter bag into a downstream storm drain connection

The local municipality should be consulted for the allowable disposal options for both water and sediments prior to any maintenance operation. Once the water is decanted the sediment can be removed with the clamshell bucket.

Disposal of the contents of the separator depend on local requirements. Maintenance of a Hydroworks HydroStorm unit will typically take 1 to 2 hours based on a vacuum truck and longer for other cleaning methods (i.e. clamshell bucket).

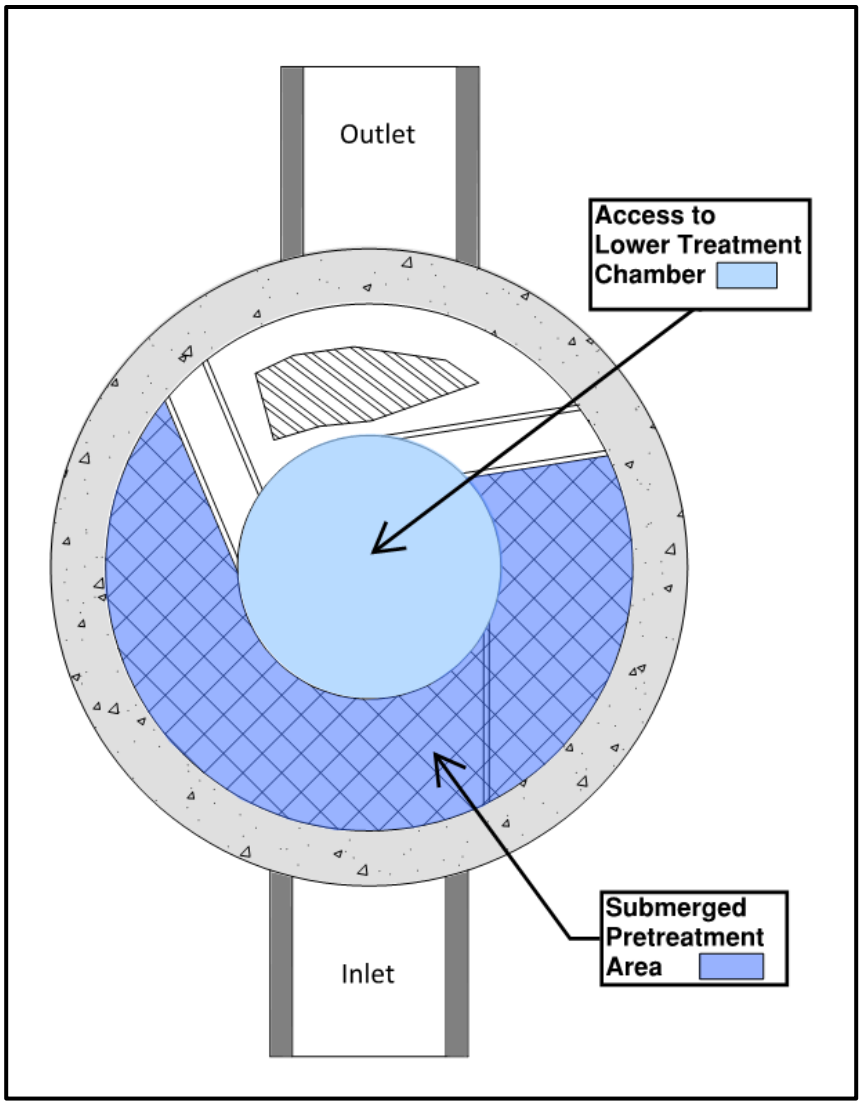


Figure 3. Maintenance Access

Frequency

Construction Period

A HydroStorm separator can fill with construction sediment quickly during the construction period. The HydroStorm must be maintained during the construction period when the depth of TSS/sediment reaches 24” (600 mm). It must also be maintained during the construction period if there is an appreciable depth of oil in the unit (more than a sheen) or if floatables other than oil cover over 50% of the area of the separator

The HydroStorm separator should be maintained at the end of the construction period, prior to operation for the post-construction period.

Post-Construction Period

The HydroStorm was independently tested by Alden Research Laboratory in 2017. A HydroStorm HS 4 was tested for scour with a 50% sediment depth of 0.5 ft. Therefore, maintenance for sediment accumulation is required if the depth of sediment is 1 ft or greater in separators with standard water (sump) depths (Table 1).

There will be designs with increased sediment storage based on specifications or site-specific criteria. A measurement of the total water depth in the separator through the central access tube should be taken and compared to water depth given in Table 1. The standard water depth from Table 1 should be subtracted from the measured water depth and the resulting extra depth should be added to the 1 ft to determine the site-specific sediment maintenance depth for that separator.

For example, if the measured water depth in the HS-7 is 7 feet, then the sediment maintenance depth for that HS-7 is 2 ft (= 1 + 7 – 6) and the separator does not need to be cleaned for sediment accumulation until the measure sediment depth is 2 ft.

The HydroStorm separator must also be maintained if there is an appreciable depth of oil in the unit (more than a sheen) or if floatables other than oil cover over 50% of the water surface of the separator.

Table 1 Standard Dimensions for Hydroworks HydroStorm Models

Model	Diameter (ft)	Total Water Depth (ft)	Sediment Maintenance Depth for Table 1 Total Water Depth(ft)
HS-3	3	3	1
HS-4	4	4	1
HS-5	5	4	1
HS-6	6	4	1
HS-7	7	6	1
HS-8	8	7	1
HS-9	9	7.5	1
HS-10	10	8	1
HS-11	11	9	1
HS-12	12	9.5	1

HYDROSTORM INSPECTION SHEET

Date _____
Date of Last Inspection _____

Site _____
City _____
State _____
Owner _____

GPS Coordinates _____

Date of last rainfall _____

Site Characteristics	**Yes**	**No**
Soil erosion evident	☐	☐
Exposed material storage on site	☐	☐
Large exposure to leaf litter (lots of trees)	☐	☐
High traffic (vehicle) area	☐	☐

HydroStorm	**Yes**	**No**
Obstructions in the inlet or outlet	☐ *	☐
Missing internal components	☐ **	☐
Improperly installed inlet or outlet pipes	☐ ***	☐
Internal component damage (cracked, broken, loose pieces)	☐ **	☐
Floating debris in the separator (oil, leaves, trash)	☐	☐
Large debris visible in the separator	☐ *	☐
Concrete cracks/deficiencies	☐ ***	☐
Exposed rebar	☐ **	☐
Water seepage (water level not at outlet pipe invert)	☐ ***	☐

Water level depth below outlet pipe invert _____“

Routine Measurements

Floating debris depth	**< 0.5” (13mm)**	☐	**>0.5” 13mm)**	☐ *
Floating debris coverage	**< 50% of surface area**	☐	**> 50% surface area**	☐ *
Sludge depth	**< 12” (300mm)**	☐	**> 12” (300mm)**	☐ ****

* Maintenance required
** Repairs required
*** Further investigation is required

Hydroworks

Other Comments:

Hydroworks

Hydroworks® HydroStorm

One Year Limited Warranty

Hydroworks, LLC warrants, to the purchaser and subsequent owner(s) during the warranty period subject to the terms and conditions hereof, the Hydroworks HydroStorm to be free from defects in material and workmanship under normal use and service, when properly installed, used, inspected and maintained in accordance with Hydroworks written instructions, for the period of the warranty. The standard warranty period is 1 year.

The warranty period begins once the separator has been manufactured and is available for delivery. Any components determined to be defective, either by failure or by inspection, in material and workmanship will be repaired, replaced or remanufactured at Hydroworks' option provided, however, that by doing so Hydroworks, LLC will not be obligated to replace an entire insert or concrete section, or the complete unit. This warranty does not cover shipping charges, damages, labor, any costs incurred to obtain access to the unit, any costs to repair/replace any surface treatment/cover after repair/replacement, or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to any material that has been disassembled or modified without prior approval of Hydroworks, LLC, that has been subjected to misuse, misapplication, neglect, alteration, accident or act of God, or that has not been installed, inspected, operated or maintained in accordance with Hydroworks, LLC instructions and is in lieu of all other warranties expressed or implied. Hydroworks, LLC does not authorize any representative or other person to expand or otherwise modify this limited warranty.

The owner shall provide Hydroworks, LLC with written notice of any alleged defect in material or workmanship including a detailed description of the alleged defect upon discovery of the defect. Hydroworks, LLC should be contacted at 136 Central Ave., Clark, NJ 07066 or any other address as supplied by Hydroworks, LLC. (888-290-7900).

This limited warranty is exclusive. There are no other warranties, express or implied, or merchantability or fitness for a particular purpose and none shall be created whether under the uniform commercial code, custom or usage in the industry or the course of dealings between the parties. Hydroworks, LLC will replace any goods that are defective under this warranty as the sole and exclusive remedy for breach of this warranty.

Subject to the foregoing, all conditions, warranties, terms, undertakings or liabilities (including liability as to negligence), expressed or implied, and howsoever arising, as to the condition, suitability, fitness, safety, or title to the Hydroworks HydroStorm are hereby negated and excluded and Hydroworks, LLC gives and makes no such representation, warranty or undertaking except as expressly set forth herein. Under no circumstances shall Hydroworks, LLC be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the HydroStorm, or the cost of other goods or services related to the purchase and installation of the HydroStorm. For this Limited Warranty to apply, the HydroStorm must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Hydroworks' written installation instructions.

Hydroworks, LLC expressly disclaims liability for special, consequential or incidental damages (even if it has been advised of the possibility of the same) or breach of expressed or implied warranty. Hydroworks, LLC shall not be liable for penalties or liquidated damages, including loss of production and profits; labor and materials; overhead costs; or other loss or expense incurred by the purchaser or any third party. Specifically excluded from limited warranty coverage are damages to the HydroStorm arising from ordinary wear and tear; alteration, accident, misuse, abuse or neglect; improper maintenance, failure of the product due to improper installation of the concrete sections or improper sizing; or any other event not caused by Hydroworks, LLC. This limited warranty represents Hydroworks' sole liability to the purchaser for claims related to the HydroStorm, whether the claim is based upon contract, tort, or other legal basis.

Appendix F

Storm Sewer Design Sheet

n Engineering Inc.
PREPARED BY: SN
DATE PREPARED 11-Apr-22

Storm Drainage Design Sheet
For Circular Drains Flowing Full
601 Norfolk Street South
Simcoe, Norfolk County

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

IDF CURVE	
Constants	**5 -yrs**
a	**583.017**
b	**3.007**
c	**0.703**

td (start): 10.00 min

Catchments							td (min)	Hydrology		Hyraulics						Comments
				R		ACC.		Rainfall Intensity, I	Peak Flow	STORM SEWER DESIGN INFORMATION					TIME	
Catchment ID	Total Area (m^2)	Captured By	Outlet to	Runoff Coeff.	A x R	A x R		I_5	5-yrs	size (mm)	slope (%)	length (m)	Q full (m^3/s)	V full (m/s)	SECT. (min)	
A1	1907.74	CB1	CBMH1	0.74	0.14	0.14	10.00	96.03	0.0378	300	0.35	41.0	0.057	0.809	0.84	
B1	278.74	STM ROOF PLUG	CBMH1	0.95	0.03	0.03	10.00	96.03	0.0071	300	2.00	16.0	0.137	1.935	0.14	
A2	861.48	CBMH1	INFILTARTION CHAMBER	0.83	0.07	0.24	10.84	91.88	0.0612	300	0.45	5.0	0.065	0.918	0.09	
Canopy	283.00	STM CANOPY PLUG	PIPE	0.95	0.03	0.03	10.00	96.03	0.0072	300	0.50	5.0	0.068	0.967	0.09	
A2	861.48	INFILTARTION CHAMBER	MH1(OGS)	0.83	0.07	0.34	10.93	91.48	0.0859	300	0.90	2.5	0.092	1.298	0.03	
Conveyance	-	MH1(OGS)	RIPRAP			0.34	11.00	91.14	0.0855	300	1.00	6.0	0.097	1.368	0.07	

Appendix G

Water Balance Calculation & Infiltration Chamber Details

n Engineering Inc

Table 4

Water balance Calculation (Pre-development)

Project:	**Gas Station**
Address:	**601 Norfolk Street South**
Town/Township/City	**Simcoe, Norfolk County**
Project No.	**n2154**
Proposed Development Are	**3503.26**
Date:	**2022-04-08**

Catchment	Area (m^2)	% of Total Area	IA (mm)	Retention(m^3)
Rooftop	0.00	0.00%	1	0.00
Asphalt/Concrete Surface	222.78	6.36%	1	0.22
Landscaped Surface	3,280.48	93.64%	5	16.40
Total	**3,503.26**	**100.00%**		**16.63**

n Engineering Inc

Table 5

Water balance Calculation (Post-Development)

Project:	**Gas Station**
Address:	**601 Norfolk Street South**
Town/Township/City	**Simcoe, Norfolk County**
Project No.	**n2154**
Proposed Development Are	**3503.26**
Date:	**2022-04-08**

Catchment	Area (m^2)	% of Total Area	IA (mm)	Retention(m^3)
Rooftop	278.74	7.96%	1	0.28
Asphalt/Concrete Surface	2,055.63	58.68%	1	2.06
Landscaped Surface	1,168.89	33.37%	5	5.84
Total	**3,503.26**	**100.00%**		**8.18**

User Inputs

Chamber Model:	DC-780
Outlet Control Structure:	No
Project Name:	Norflok Gas
Engineer:	N/A
Project Location:	
Measurement Type:	Metric
Required Storage Volume:	8.45 cubic meters.
Stone Porosity:	40%
Stone Foundation Depth:	229 mm.
Stone Above Chambers:	152 mm.
Average Cover Over Chambers:	457 mm.
Design Constraint Dimensions:	(3.50 m. x 10.00 m.)

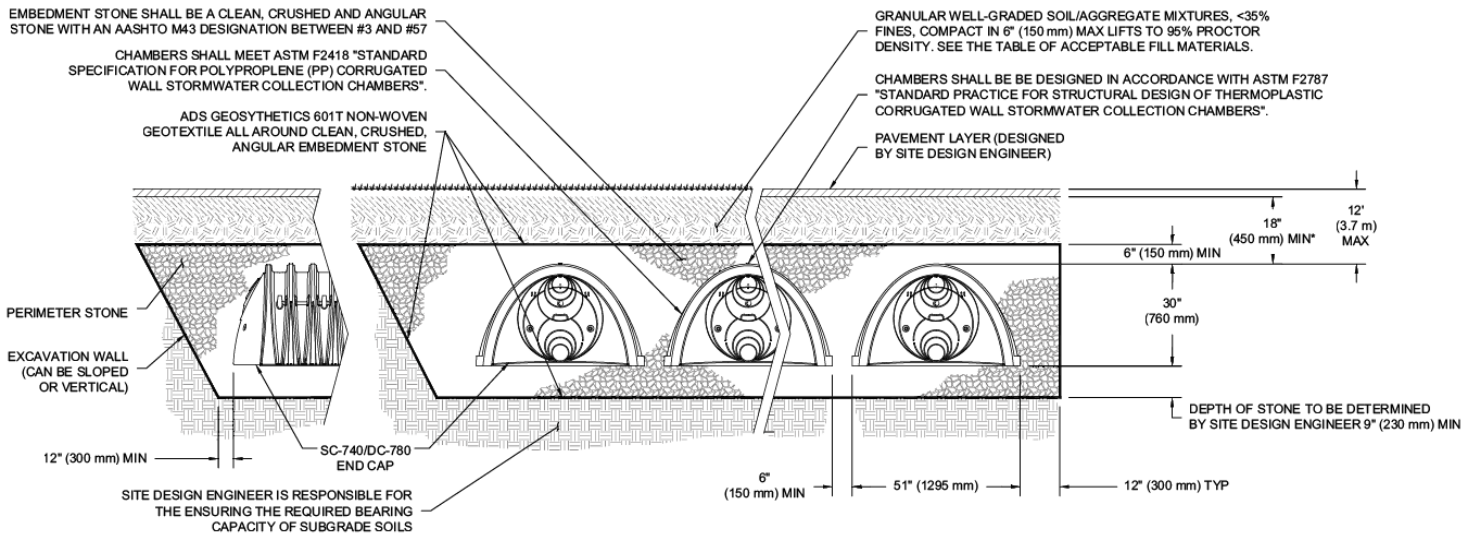
Results

System Volume and Bed Size

Installed Storage Volume:	8.98 cubic meters.
Storage Volume Per Chamber:	1.31 cubic meters.
Number Of Chambers Required:	3
Number Of End Caps Required:	2
Chamber Rows:	1
Maximum Length:	7.60 m.
Maximum Width:	1.91 m.
Approx. Bed Size Required:	14.49 square meters.

System Components

Amount Of Stone Required:	12.63 cubic meters
Volume Of Excavation (Not Including Fill):	16.56 cubic meters
Total Non-woven Geotextile Required:	72.78 square meters
Woven Geotextile Required (excluding Isolator Row):	0 square meters
Woven Geotextile Required (Isolator Row):	15.3 square meters
Total Woven Geotextile Required:	15.3 square meters



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

Isolator® Row
O&M Manual

ADS StormTech™

The Isolator® Row

Introduction

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

The Isolator Row

The Isolator Row is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-7200 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row and passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow stormwater to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the chamber's sidewall. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-7200 models as these chambers do not have perforated side walls.

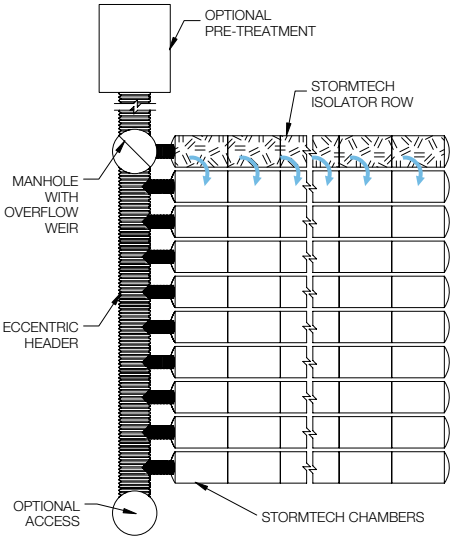
The Isolator Row is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole provides access to the Isolator Row and includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row. After Stormwater flows through the Isolator Row and into the rest of the chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

The Isolator Row may be part of a treatment train system. The treatment train design and pretreatment device selection by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, StormTech recommend using the Isolator Row to minimize maintenance requirements and maintenance costs.

Note: *See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.*

Looking down the Isolator Row from the manhole opening, woven geotextile Fabric is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (*not to scale*)



Isolator Row Inspection/Maintenance

Inspection

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the **actual frequency of inspection and maintenance practices.**

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

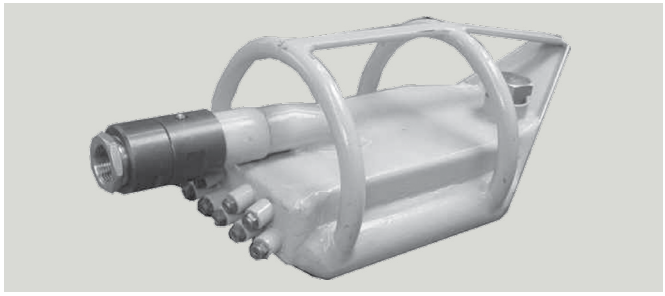
The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

Maintenance

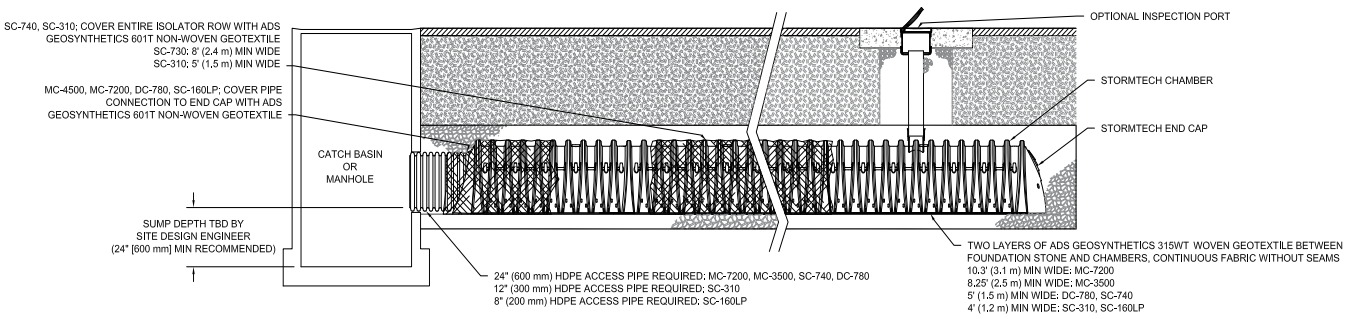
The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row lengths up to 200" (61 m). **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**



StormTech Isolator Row (not to scale)

Note: *Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-7200 chamber models and is not required over the entire Isolator Row.*



Isolator Row Step By Step Maintenance Procedures

Step 1

Inspect Isolator Row for sediment.

A) Inspection ports (if present)
   i. Remove lid from floor box frame
   ii. Remove cap from inspection riser
   iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
   iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row
   i. Remove cover from manhole at upstream end of Isolator Row
   ii. Using a flashlight, inspect down Isolator Row through outlet pipe
      1. Mirrors on poles or cameras may be used to avoid a confined space entry
      2. Follow OSHA regulations for confined space entry if entering manhole
   iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

Step 2

Clean out Isolator Row using the JetVac process.

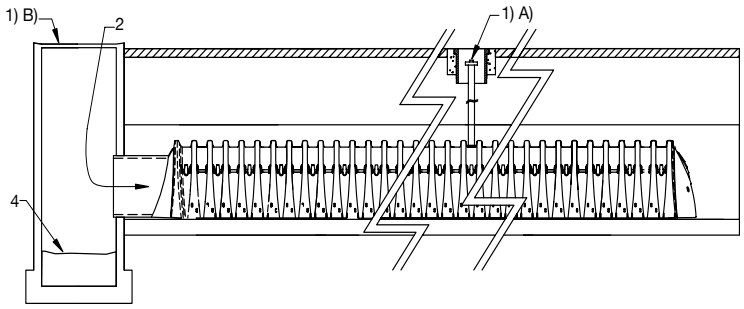
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

Step 3

Replace all caps, lids and covers, record observations and actions.

Step 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



Sample Maintenance Log

Date	Stadia Rod Readings		Sedi-ment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

adspipe.com
800-821-6710

Appendix H

Fire Flow Demand Calculation & Figures

TABLE 6. **FIRE FLOW CALCULATION as per FIRE UNDERWRITERS SURVEY (1999)**

PROJECT: n2154 Gas Sattion
601 Norfolk Street South,Simcoe, Norfolk County
(Parcel A)

Date: 04-08-22

1. Fire Flow Equation

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

where F is the required fire flow [LPM]
C is the coefficient determined by type of construction [unitless]
A is the total protection area [sq.m]

2. Architecture Information

	Convenient Store
Type of Construction	Ordinary Construction
Fire Rating	Combustible
Sprinkler Provided (Y/N)	No
	Floor Area (Largest Unit)
Total Floor Area [sq.m]	200.51
Coefficient, C [1]	1.0
Fire Flow, F [LPM]	3115

3. Combustible Product Risk *

Occupancy Adjustment	0%
Fire Flow, F [LPM]	0

4. Sprinkler Reduction

Sprinkler Reduction	0.00
Sprinkler Reduction [LPM]	0

(Note: Sprinkler not required as per OBC 3.2.2.20 - 83)

5. Exposure Adjustment

North	0.20%
East	0.00%
South	0.00%
West	0.00%
Total	**0.20%**
Exposure Adjustment [LPM]	6.23

6. Required Fire Flow, Duration & Volume

Fire Flow, F [LPM]	3115
Sprinkler Reduction [LPM]	0
Exposure Adjustment [LPM]	6.23
Required Fire Flow [LPM]	3121
Required Fire Flow [LPM]	**3000**
Required Fire Flow [LPS]	**50.00**
Req. Duration of Fire Flow [hrs]	0.5
Req. Storage [cubic.m]	90

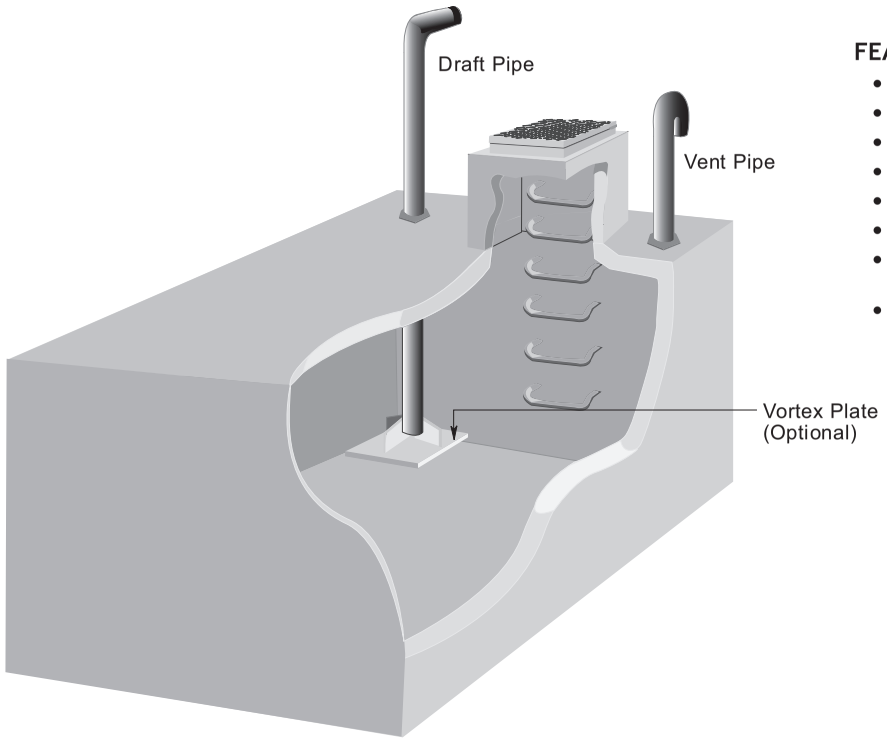
**Round to nearest 1000*

TYPICAL PRECAST FIRE WATER RESERVOIR

WILKINSON HEAVY PRECAST LIMITED
DUNDAS, ONTARIO 905-628-5611
www.wilkinsonheavyprecast.com

CONSTRUCTION DETAILS

Concrete: 35 MPa at 28 Days, 5 to 8% Air Entrainment.



FEATURES

- Draft pipe and vent are steel pipe sized to suit, hot dip galvanized after fabrication.
- Vent pipe incorporates a stainless steel insect screen.
- Precast concrete access riser with frame and hinged, drip proof and lockable cover.
- Aluminum ladder rungs to the floor.
- Draft pipe draws from 75 mm above tank floor.
- Typical tank capacities from 25,000 to 114,000 Litres.
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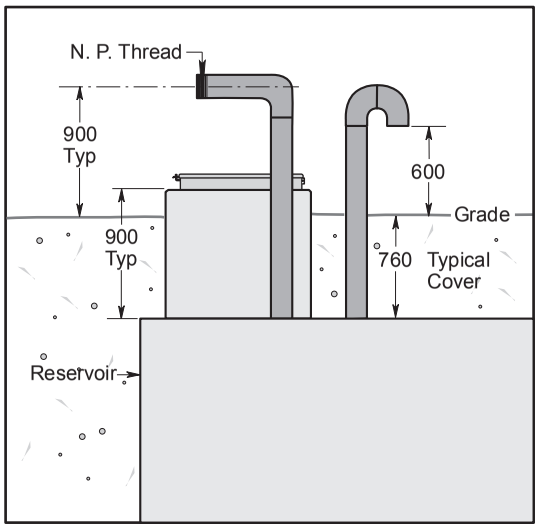
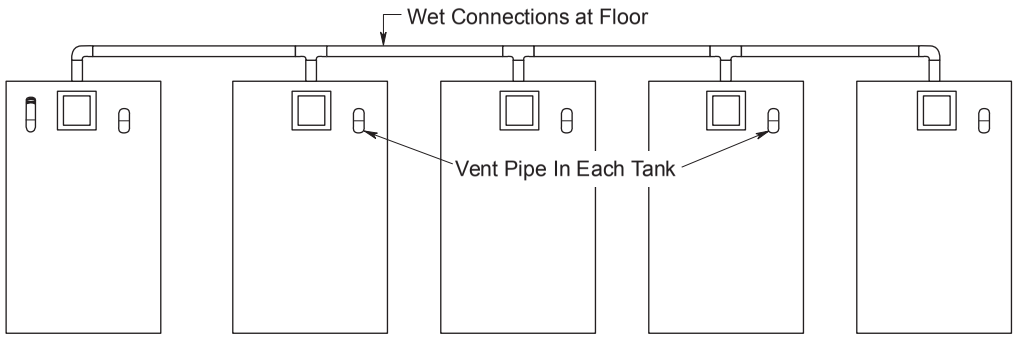
TYPICAL APPURTENANCE DETAILS



TYPICAL SERIES CONNECTION



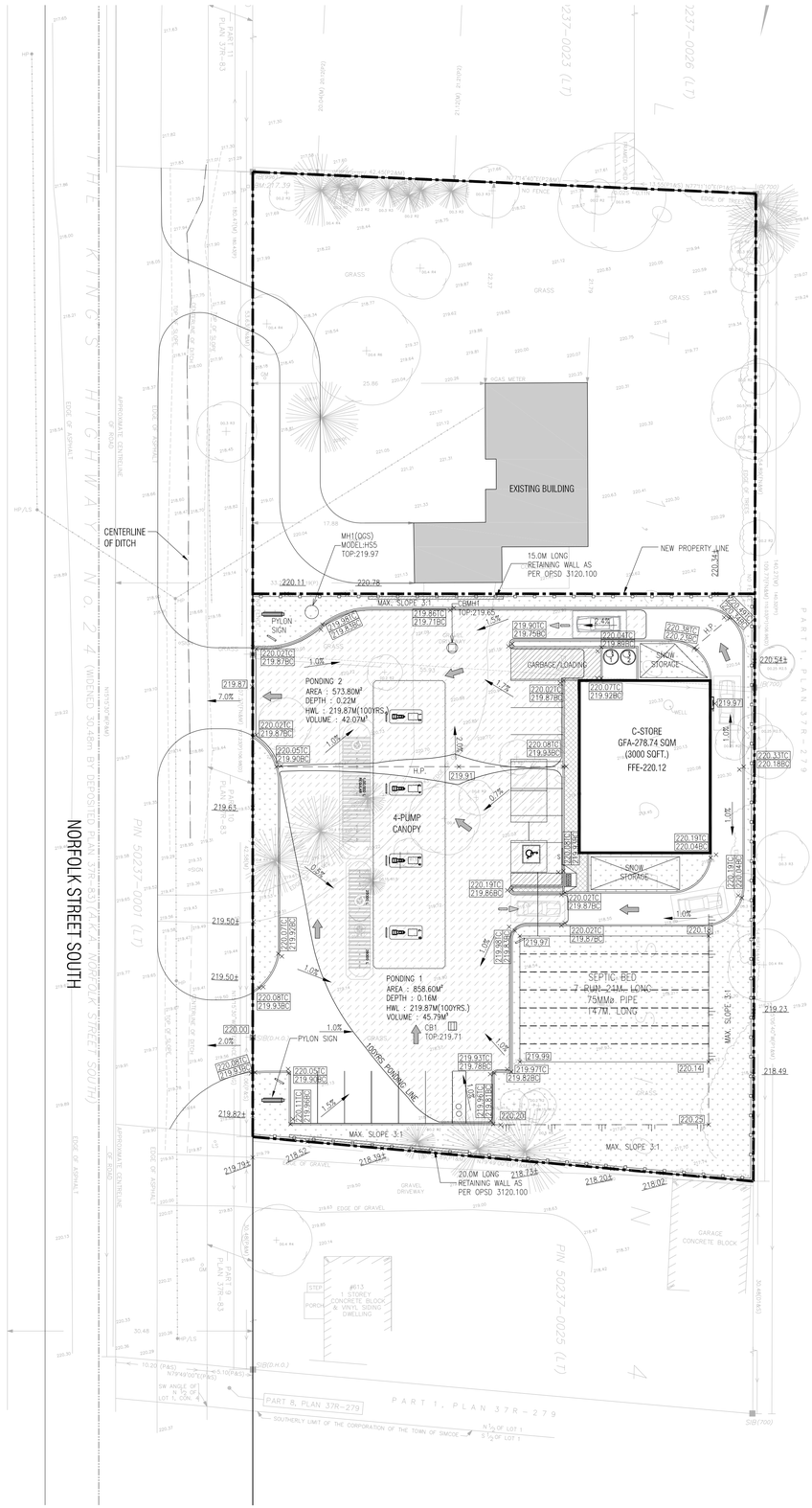
Dimensions in mm
N.T.S.

WARNING ! IMPROPER INSTALLATION ESPECIALLY IN UNSTABLE SOILS CAN RESULT IN THE STRUCTURAL FAILURE OF THIS PRODUCT

9 May, 2008

Appendix I

Proposed Plans



LEGAL DESCRIPTION

PART OF LOT 1 CONCESSION 4 FORMERLY IN THE TOWNSHIP OF WOODHOUSE NOW IN THE TOWN OF SIMCOE COUNTY OF NORFOLK

SURVEYOR INFORMATION

FARZAD SALEHI
ONTARIO LAND SURVEYORS

BENCH MARK NOTE

BEARINGS ARE ASTRONOMIC, AND ARE REFERRED TO THE EASTERLY LIMIT OF THE KING'S HIGHWAY NO. 24 AS SHOWN ON PLAN 37R-83, HAVING A BEARING OF N15°15'30"W. ELEVATIONS SHOWN HEREON ARE GEODETIC, AND ARE FROM REAL TIME NETWORK GPS READINGS PROVIDED BY CAN-NET AND TOTAL STATION, AND ARE IN GEOID MODEL CGG2013.

APPLICANT

n Engineering Inc
9120 Leslie Street, Suite-208,
Richmond Hill, Ontario. L4B 3J9
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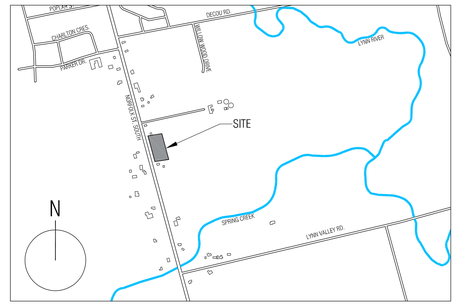
E: info@nengineering.com
www.narchitecture.com



KEY PLAN
SCALE: NTS

GENERAL NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL AND LANDSCAPING PLANS.
2. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE APPLICABLE HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
3. ALL WORK, MATERIALS AND CONSTRUCTION METHODS TO CONFORM WITH THE LATEST STANDARDS, SPECIFICATIONS, POLICIES, REGULATIONS, GUIDELINES AND LAWS FOR THE COUNTY, THE ONTARIO BUILDING CODE (OBC), MINISTRY OF THE ENVIRONMENT (MOE), ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS (OPSD AND OPSS), THE ENVIRONMENTAL PROTECTION ACT AND THE WATER RESOURCES ACT. THE MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
4. THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS COMPILED FROM LOCATES INFORMATION AND RECORD DRAWINGS FROM THE. THE INFORMATION IS SHOWN FOR GENERAL INFORMATION ONLY AND THE ACCURACY OR COMPLETENESS OF THE PROVIDED INFORMATION HAS NOT BEEN CONFIRMED. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTOR'S EXPENSE.
5. THIS PLAN SHOULD BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS' PLANS. ANY DISCREPANCIES SHALL BE CLARIFIED PRIOR TO CONSTRUCTION. INFORMATION RELATED TO DIMENSIONS FOR PRIVATE ROADS, PARKING, CURBING, BUILDING LOCATION AND SETBACKS SHALL BE TAKEN FROM THE SITE PLAN PREPARED BY THE ARCHITECT.
6. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.

INSPECTIONS:

7. ALL WORK IN THE MUNICIPAL RIGHT OF WAY AND EASEMENTS IS TO BE INSPECTED BY THE COUNTY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE COUNTY AS PER THE SITE PLAN AGREEMENT.
8. ALL DISTURBED GRASSED AREAS TO BE RESTORED WITH MINIMUM 200MM TOPSOIL AND NO. 1 NURSERY SOD.
9. THE CONTRACTOR AGREES NOT TO MAKE A MATERIAL CHANGE OR CAUSE A MATERIAL CHANGE TO BE MADE TO A PLAN, SPECIFICATION, DOCUMENT OR OTHER INFORMATION, ON THE BASIS OF WHICH THIS DRAWING WAS APPROVED BY THE COUNTY, WITHOUT NOTIFYING, FILING DETAILS WITH AND OBTAINING WRITTEN AUTHORIZATION OF THE MUNICIPAL AND PROJECT ENGINEER.
10. ALL STORMWATER MANAGEMENT WORK, WATER SERVICING WORK AND SANITARY SEWER WORK INSIDE THE BOUNDARY OF THE SITE IS TO BE INSPECTED BY N ENGINEERING INC PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY N ENGINEERING AS PER APPROVED PLANS BY THE COUNTY.

LEGEND

	PROPERTY LINE
	DEVELOPMENT LIMIT
	PROPOSED CONCRETE CURB
1M D/C	PROPOSED DEPRESSED CONCRETE CURB
	LANDSCAPED AREA
	CONCRETE WALKWAY/SIDEWALK
	PAINTED LINE
	BARRIER FREE PARKING
	MAIN ENTRANCE
	OVER HEAD DOOR
	RETAINING WALL / CONCRETE TOE WALL
FFE	FINISHED FLOOR ELEVATION
HP	EX. HYDRO POLE
UP	UTILITY POLE
EX.CB	EXISTING CATCH BASIN
CB	PROPOSED CATCH BASIN MANHOLE
CBMH	PROPOSED CATCH BASIN MANHOLE
EX.MH	EXISTING STORM MANHOLE
MH	PROPOSED STORM MANHOLE
EX.MH	EXISTING SANITARY MANHOLE
MH1A	PROPOSED SANITARY MANHOLE
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
EX.WV	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE
	OVERLAND FLOW ROUTE
173.52	EXISTING ELEVATION TO REMAIN
174.00	EXISTING ELEVATION
173.90TC	PROPOSED TOP/CURB ELEVATION
173.90	PROPOSED ELEVATION
2%	PROPOSED SURFACE SLOPE
H.P	HIGH POINT (DRAINAGE DIVIDE)
	100 YR. STORM HWL AREA

n Engineering Inc
9120 Leslie Street, Suite-208
Richmond Hill, Ontario. L4B 3J9
T : 4 1 6 . 2 5 6 . 9 7 4 1
E: info@narchitecture.com
www.narchitecture.com

LICENSED PROFESSIONAL ENGINEER
A.S.ZIAUDDIN
100233432
11APR.2022
PROVINCE OF ONTARIO

N
(GEODETIC NORTH)
PROJECT NORTH

No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	LU.

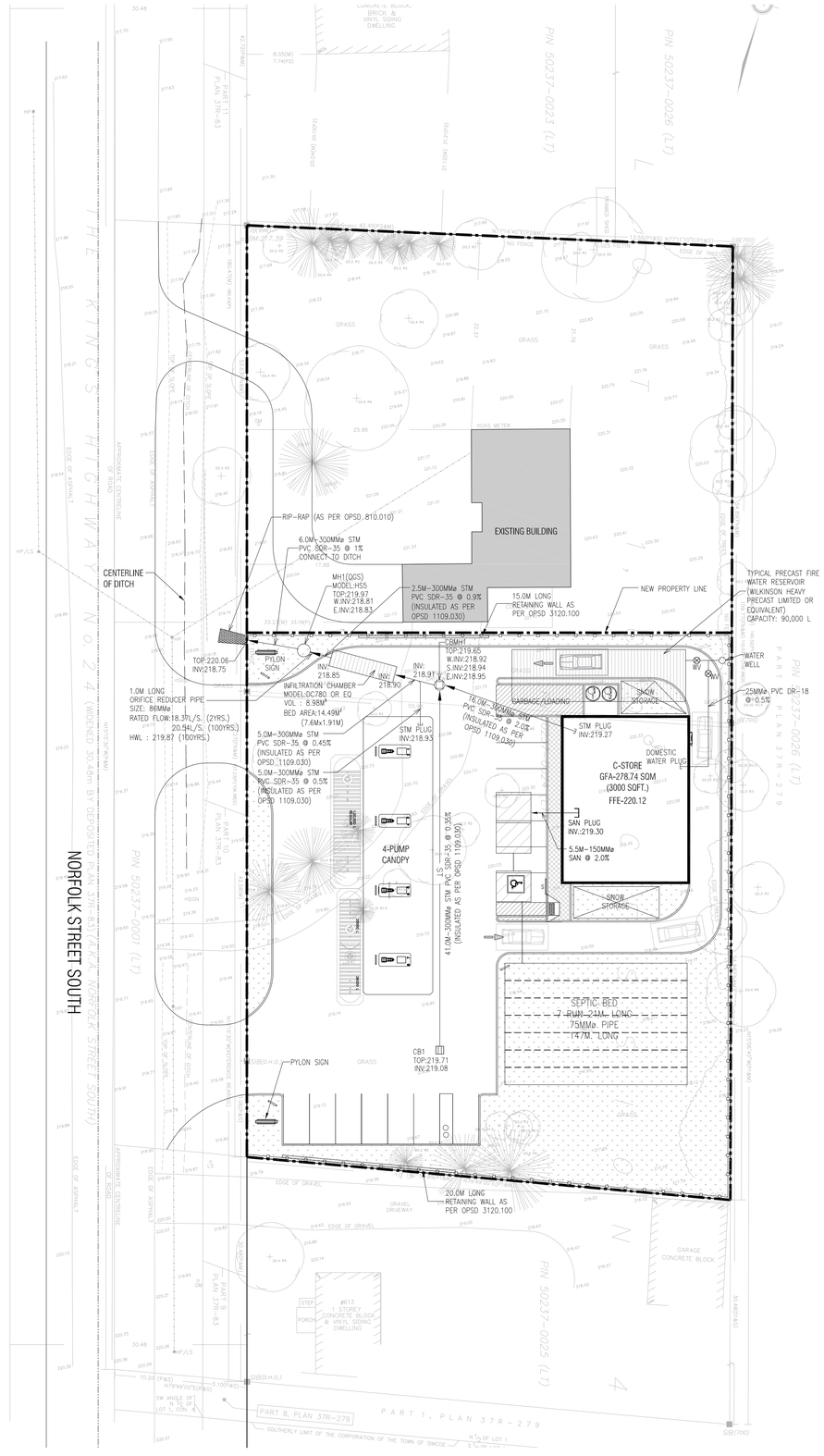
PROJECT:

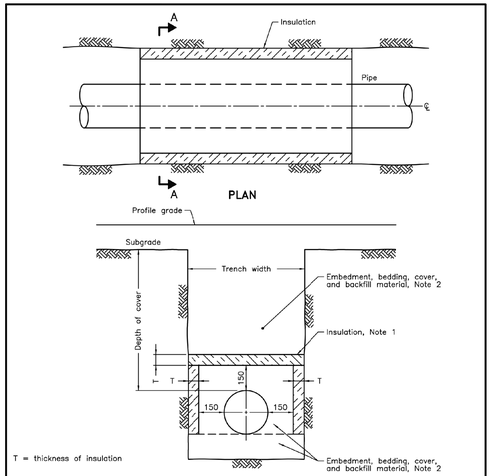
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

SITE GRADING PLAN

DRAWN BY: AZ	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: 21-54	DRAWING NO.: C1





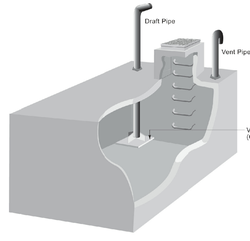
NOTES:
1 The insulation material shall be extruded polystyrene according to OPSS 1605 with a minimum compressive strength of 275 kPa.
2 Pipe embedment or bedding, cover, and backfill shall be according to:
a) Flexible OPSD 802.010, 802.013, 802.020, and 802.023.
b) Rigid – OPSD 802.030, 802.031, 802.032, 802.033, 802.050, 802.051, 802.052, and 802.053.
A Minimum insulation thickness shall be 50mm.
B Joints shall be staggered for multiple insulation sheets.
C This OPSD is to be read in conjunction with OPSD 3090.100 and 3090.101.
D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2020	Rev	1
INSULATION FOR SEWERS AND WATERMAINS IN SHALLOW TRENCHES			OPSD 1109.030

TYPICAL PRECAST FIRE WATER RESERVOIR

WILKINSON HEAVY PRECAST LIMITED
DUNDAS, ONTARIO 905-628-5611
www.wilkinsonheavyprecast.com

CONSTRUCTION DETAILS
Concrete: 35 MPa at 28 Days, 5 to 8% Air Entrainment.



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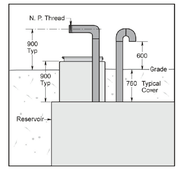

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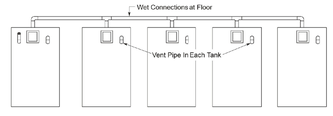

Dimensions in mm N.T.S.

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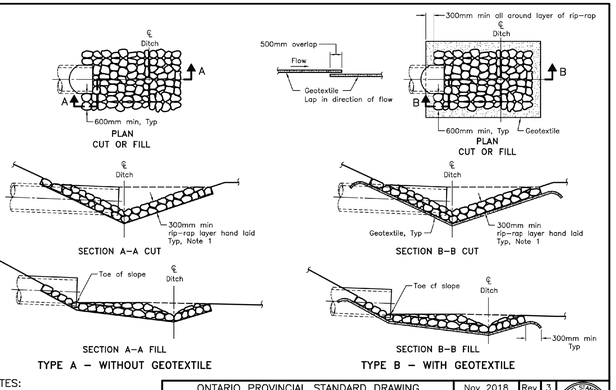
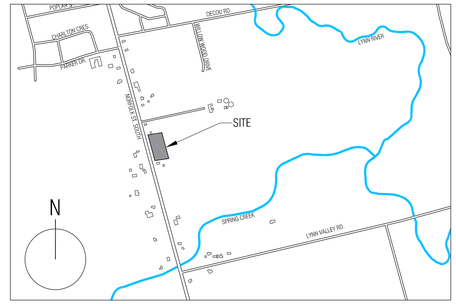
9 May, 2008



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

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev	3
GENERAL RIP–RAP LAYOUT FOR SEWER AND CULVERT OUTLETS			OPSD 810.010



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WV	PROPOSED WATER VALVE
DD	DOUBLE CHECK DETECTOR ASSEMBLY
M	WATER METER
B	BACK FLOW PREVENTER

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2. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE APPLICABLE HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
3. ALL WORK, MATERIALS AND CONSTRUCTION METHODS TO CONFORM WITH THE LATEST STANDARDS, SPECIFICATIONS, POLICIES, REGULATIONS, GUIDELINES AND LAWS FOR THE COUNTY, THE ONTARIO BUILDING CODE (OBC), MINISTRY OF THE ENVIRONMENT (MOE), ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS (OPSD AND OPSS), THE ENVIRONMENTAL PROTECTION ACT AND THE WATER RESOURCES ACT. THE MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
4. THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS COMPILED FROM LOCATES INFORMATION AND RECORD DRAWINGS FROM THE. THE INFORMATION IS SHOWN FOR GENERAL INFORMATION ONLY AND THE ACCURACY OR COMPLETENESS OF THE PROVIDED INFORMATION HAS NOT BEEN CONFIRMED. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTOR'S EXPENSE.
5. THIS PLAN SHOULD BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS' PLANS. ANY DISCREPANCIES SHALL BE CLARIFIED PRIOR TO CONSTRUCTION. INFORMATION RELATED TO DIMENSIONS FOR PRIVATE ROADS, PARKING, CURBING, BUILDING LOCATION AND SETBACKS SHALL BE TAKEN FROM THE SITE PLAN PREPARED BY THE ARCHITECT.
6. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.

INSPECTIONS:

7. ALL WORK IN THE MUNICIPAL RIGHT OF WAY AND EASEMENTS IS TO BE INSPECTED BY THE COUNTY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE COUNTY AS PER THE SITE PLAN AGREEMENT.
8. ALL DISTURBED GRASSED AREAS TO BE RESTORED WITH MINIMUM 200MM TOPSOIL AND NO. 1 NURSERY SOD.
9. THE CONTRACTOR AGREES NOT TO MAKE A MATERIAL CHANGE OR CAUSE A MATERIAL CHANGE TO BE MADE TO A PLAN, SPECIFICATION, DOCUMENT OR OTHER INFORMATION, ON THE BASIS OF WHICH THIS DRAWING WAS APPROVED BY THE COUNTY, WITHOUT NOTIFYING, FILING DETAILS WITH AND OBTAINING WRITTEN AUTHORIZATION OF THE MUNICIPAL AND PROJECT ENGINEER.
10. ALL STORMWATER MANAGEMENT WORK, WATER SERVICING WORK AND SANITARY SEWER WORK INSIDE THE BOUNDARY OF THE SITE IS TO BE INSPECTED BY N ENGINEERING INC PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY N ENGINEERING AS PER APPROVED PLANS BY THE COUNTY.

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LICENSED PROFESSIONAL ENGINEER
A.S.ZIAUDDIN
100233432
11APR.2022
PROVINCE OF ONTARIO

N
(GEODETIC NORTH)
PROJECT NORTH

No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	LU.

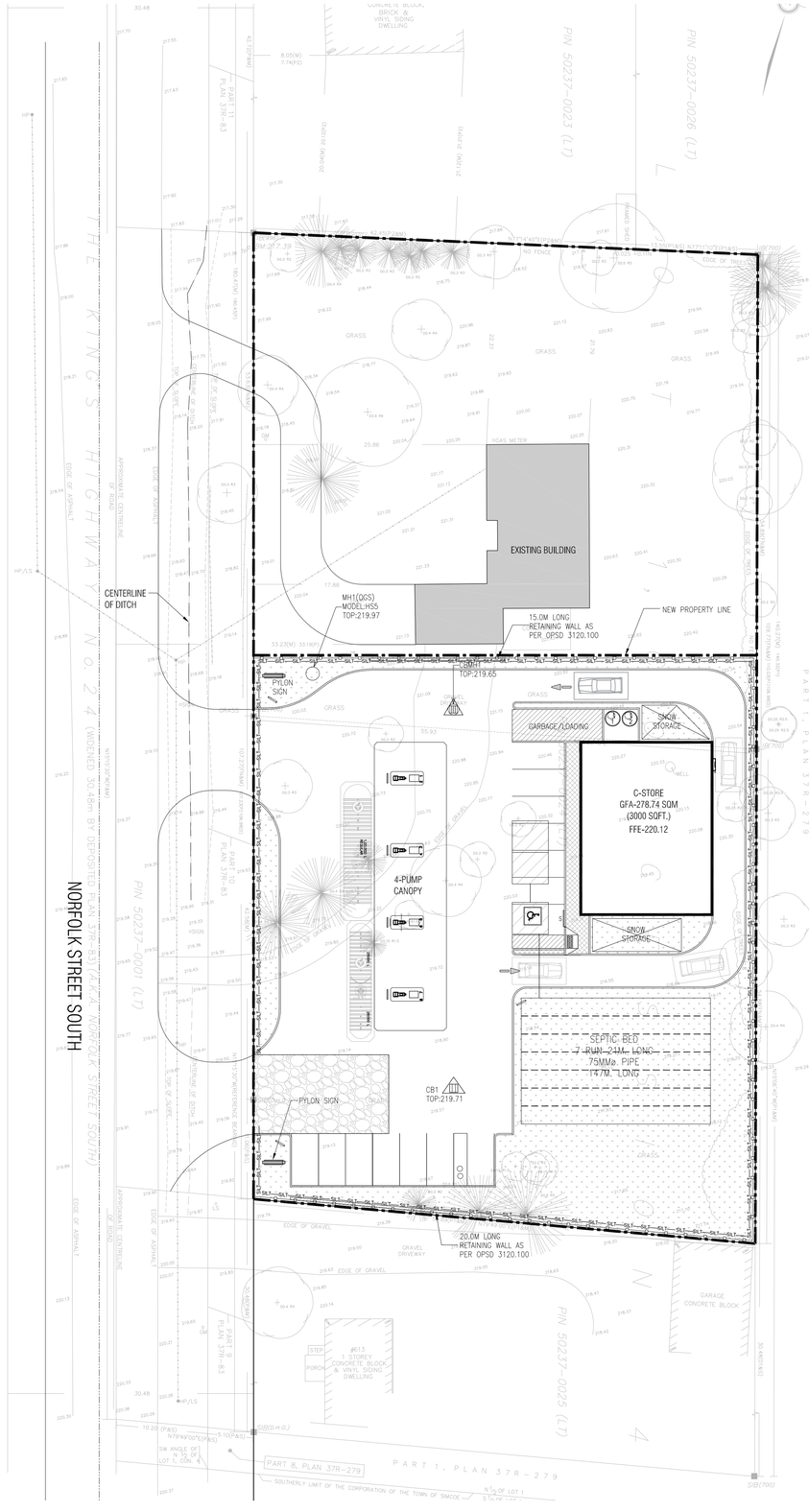
PROJECT:

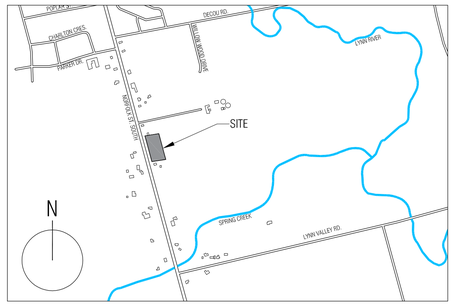
GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

SITE SERVICING PLAN

DRAWN BY: AZ	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: 21-54	DRAWING NO.: C2





KEY PLAN

SCALE: NTS

LEGAL DESCRIPTION

PART OF LOT 1 CONCESSION 4 FORMERLY IN THE TOWNSHIP OF WOODHOUSE NOW IN THE TOWN OF SIMCOE COUNTY OF NORFOLK

SURVEYOR INFORMATION

FARZAD SALEHI
ONTARIO LAND SURVEYORS

BENCH MARK NOTE

BEARINGS ARE ASTRONOMIC, AND ARE REFERRED TO THE EASTERLY LIMIT OF THE KING'S HIGHWAY NO. 24 AS SHOWN ON PLAN 37R-83, HAVING A BEARING OF N15°15'30"W. ELEVATIONS SHOWN HEREON ARE GEODETIC, AND ARE FROM REAL TIME NETWORK GPS READINGS PROVIDED BY CAN-NET AND TOTAL STATION, AND ARE IN GEOID MODEL CGG2013.

APPLICANT

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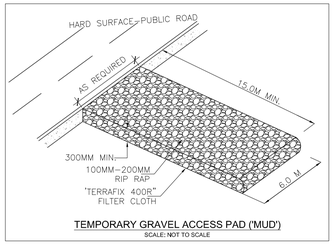
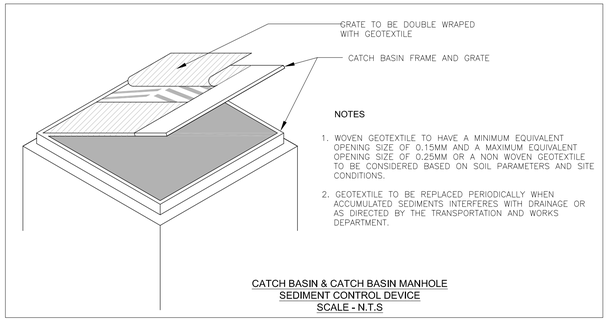
LEGEND

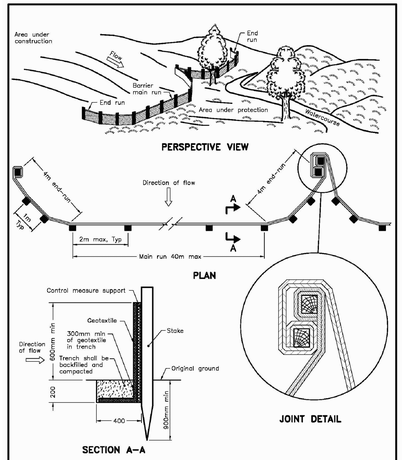
- PROPERTY LINE
- DEVELOPMENT LIMIT
- PROPOSED CONCRETE CURB
- 1M D/C — PROPOSED DEPRESSED CONCRETE CURB
- LANDSCAPED AREA
- CONCRETE WALKWAY/SIDEWALK
- PAINTED LINE
- BARRIER FREE PARKING
- MAIN ENTRANCE
- OVER HEAD DOOR
- RETAINING WALL / CONCRETE TOE WALL
- FFE — FINISHED FLOOR ELEVATION
- HP — EX. HYDRO POLE
- UP — UTILITY POLE
- EX.CB — EXISTING CATCH BASIN
- CB — PROPOSED CATCH BASIN MANHOLE
- CBMH — PROPOSED CATCH BASIN MANHOLE
- EX.MH — EXISTING STORM MANHOLE
- MH — PROPOSED STORM MANHOLE
- EX.MH — EXISTING SANITARY MANHOLE
- MH1A — PROPOSED SANITARY MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EX.WV — EXISTING WATER VALVE
- WV — PROPOSED WATER VALVE
- SILT — SILT FENCE BARRIER
- MUD MAT



TEMPORARY GRAVEL ACCESS PAD ('MUD')
SCALE: NOT TO SCALE



CATCH BASIN & CATCH BASIN MANHOLE
SEDIMENT CONTROL DEVICE
SCALE - N.T.S



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

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

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N
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PROJECT NORTH

No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	LU.

PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

EROSION & SEDIMENT CONTROL PLAN

DRAWN BY: AZ	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: 21-54	DRAWING NO.: C3

Appendix J
Limiting Condition of Assumptions

Statement of Limiting Conditions and Assumptions

1. This Report/Study (the "Work") has been prepared at the request of, and for the exclusive use of, the Owner, and its affiliates (the "Intended Users"). No one other then the intended users has the right to use and rely on the work without first obtaining the written authorization of n Engineering and its Owners.
2. The comments, recommendations and material in this report reflect n Engineering best judgment in light of the information available to it at the time of preparation of this report. It is not qualified to and is not providing legal or planning advice in this work.
3. n Engineering expressly excludes liability to any third party except the Intended Users for any use of, and/or reliance upon, the work.
4. n Engineering notes that the following assumptions were made in completing the work
   a) The land use description(s) supplied n Engineer Inc. is correct;
   b) The surveys and other data supplied to n Engineering by the Owner are accurate;
   c) Market timing, approval delivery and secondary information are within the control of parties other then n Engineering;
   d) There are no encroachments, leases, covenants, binding agreements, restrictions, pledges, charges, liens or special assessments outstanding, or encumbrances, which would significantly affect the use or servicing;
   Investigations have not carried out to verify these assumptions. n Engineering deems the sources of data and statistical information contained herein to be reliable, but we extend no guarantee of accuracy in these respect.
5. All the plans, photographs, and sketches prepared and presented in this report/study are included solely to aid the visualizing the location of the property, the boundaries of the site, and the relative position of the improvements on the said lands are based on information provided by Owner
6. n Engineering accepts no responsibility for legal interpretations, questions of survey, opinion of title, hidden or inconspicuous conditions of the property, toxic wastes or contaminated materials, soil or sub soil conditions, environmental, engineering or other factual and technical matters disclosed by the owner, the clients, or any public agency, which by their nature, may change the outcome of the work.
7. In the preparation of this report, n Engineering have made investigations from secondary sources as documented in the work, but did not checked compliance with by laws, codes, agency and government regulations, etc., unless specifically noted in the work.
8. The value of proposed improvements should apply only with regard to the purpose and function of the work, as outlined in the body of this work. Any cost estimated set out in the work based on construction averages and subject to change.
9. Neither possession of Work, nor a copy of it, carries the right of publication. All copyright in the work reserved to n Engineering and considered confidential by n Engineering. The Work shall not be disclosed, reproduced, quoted from, or referred to, in whole or in part, or published in any manner, without the express written consent of n Engineering and the Owner.
10. The work is only valid if it bears the Professional Engineer's seal and original signature of author, and if considered in its entity. Responsibility for unauthorized alteration to the Work is denied.

End of the Statement

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PROPOSED GAS STATION

601 NORFOLK STREET SOUTH,

SIMCOE, ON

TRAFFIC IMPACT STUDY

PROJECT No. n 2154

Prepared By:

n Engineering Inc

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https://www.narchitecture.com

April 11, 2022

Table of Contents

List of Figures

List of Tables

List of Appendices

Version History

Version Number	Reason for Issue	Issue Date
01	Issued for SPA I	2022-04-11

Abbreviations

LOS: Level of service

NBL: Northbound left

NBT: Northbound through

SBR: Southbound through

EBL: Eastbound left

EBR: Eastbound right

SBTRL: Southbound through right left

Dr.: Drive

Ave.: Avenue

Blvd.: Boulevard

St.: Street

TMC: Turning Movement Count

Veh: Vehicle

s: second

AM: Morning hours

PM: Afternoon hours

v/c: volume to capacity ratio

County: Norfolk County

HCM: Highway Capacity Manual

ITE: Institute of Transportation Engineers

GFA: Gross Floor Area

LUC: Land-use Code

ZBL: Zoning By-Law

1 Introduction

n Engineering Inc. (n Engineering) was pleased to provide traffic consulting services in support of the proposed commercial development. The subject site is at 601 Norfolk Street S, Simcoe, Ontario. The location is illustrated in **Figure 1**.

Figure 1 - Site Location

2 Proposed Development

As per the site plan, the proposed development includes a C-Store with a drive-thru that has a total gross floor area of 278.74 m^2, and a 4 pump gas bar. As per Zoning By-law, 1-Z-2014, Service Commercial Zone (CS) the minimum parking required is a total of 9 parking spaces for the development. The site is accessible via two full movement entrances on Norfolk Street South. This site is surrounded by commercial and residential land use. The site plan is shown in **Figure 2**.

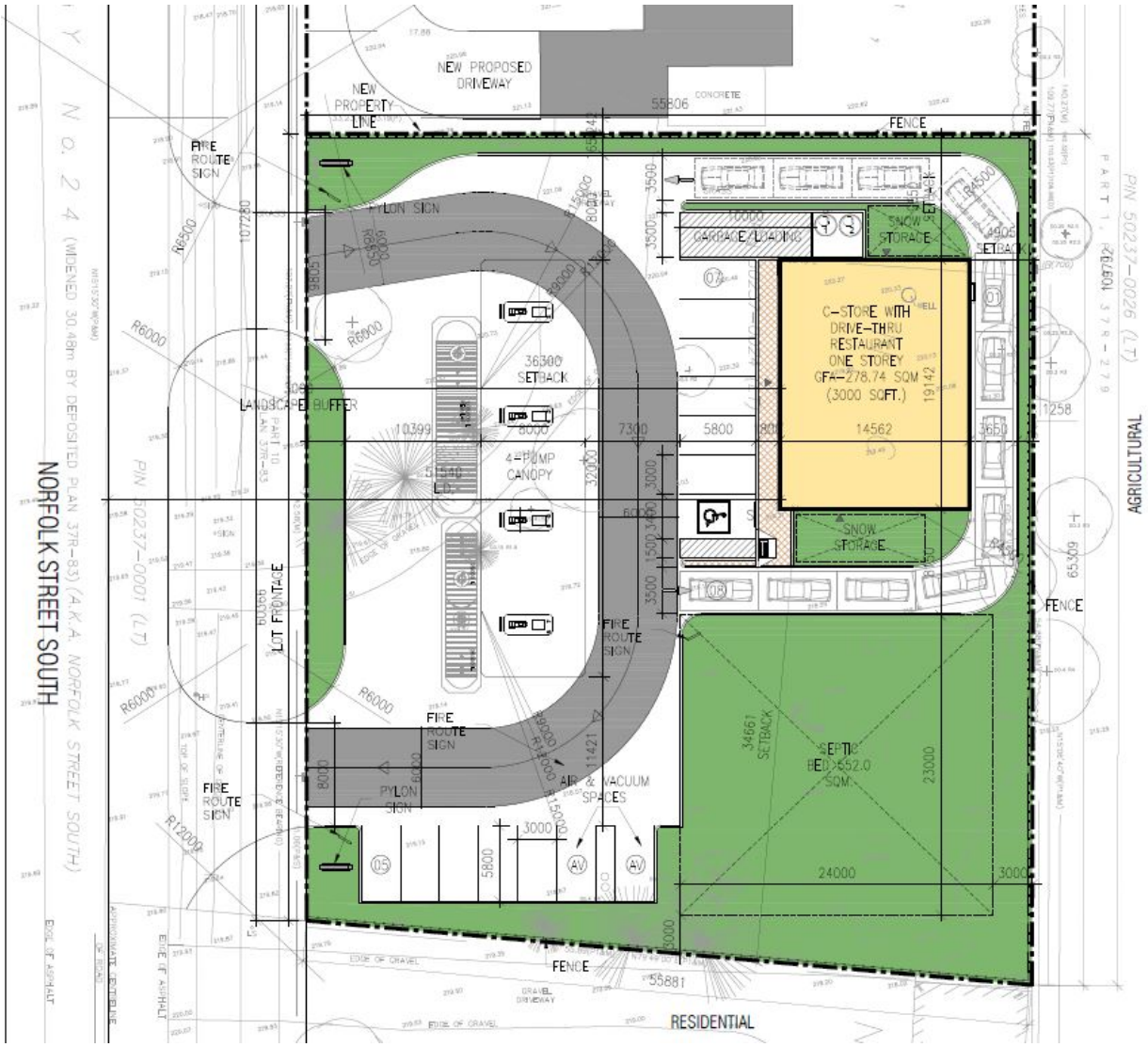

Figure 2 – Site Plan by n Architecture Inc., dated March 25th, 2022

3 Scope of Work

The study analyzes existing and future operations at the following intersections illustrated in **Figure 3**:

A. Norfolk Street S & Decou Road (Signalized)
B. Norfolk Street S & Parker Drive (Unsignalized)
C. Norfolk Street S & Lynn Valley Road (Unsignalized)
D. North Entrance 1 & Norfolk St (Unsignalized)
E. South Entrance 2 & Norfolk St (Unsignalized)

The time periods used for this study were at peak hours of Weekday AM and peak hours of Weekday PM. The study area and studied traffic periods were all confirmed with the staff at Norfolk County.

Figure 3 - Study Area

4 Study Methodology

Auto traffic operations at the study area intersections were analyzed based upon the Highway Capacity Manual 6 (HCM 6th Edition) using the Synchro (ver.11). SimTraffic was used to simulate traffic operations to achieve 95th percentile queue length. For all intersections, the volume to capacity (v/c) ratio, control delay (s/veh), level of service (LOS), and 95th percentile queue length were tabulated for each scenario. Level of service is based on average vehicle delay as per HCM which is illustrated in **Table 1**. Critical movements are highlighted in yellow for each intersection where:

- LOS is 'E' or worse (LOS as defined by delay or speed);
- v/c ratio is greater than 0.85 are considered to be critical movements;
- 95th percentile queue length exceeds the available storage.

Table 1 - HCM 6 LOS

LOS	Signalized Intersection Average Control Delay (s/veh)	Unsignalized Intersection Average Control Delay (s/veh)
A	>10	>10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

5 Existing Conditions

This section provides a comprehensive review of the current conditions that will be used to analyze for the future conditions.

5.1 Existing Street Network

Norfolk Street South also known as Highway No. 24 is located west of the site area and runs north to south. This is a two-way major collector road under the jurisdiction of the County with designated left turn lanes as drivers approach signalized intersections. There is a sidewalk on both sides of the road within the study area, near Parker Dr. The posted speed limit on Norfolk St S is 60km/h; the 50 km/h zone starts halfway back in towards Simcoe.

Decou Road is located north of the site area and runs east to west. This road is a two-way local road and has one wide lane in each direction. A cycling lane is provided on this road. It has one designated left turn to allow traffic to get onto Norfolk St S with ease. It connects residential

area to the county's major shopping mall. This road has a posted speed of 50 km/h in the study area.

Parker Drive is located north of the site area and runs east to west. This is a one lane in each direction street that connects to Norfolk St S. It is an unsignalized intersection when approaching Norfolk St S and uses a stop sign to control approaching traffic. This road connects to the community safety zone and has a posted speed of 40km/h.

Lynn Valley Road is located south of the site area and runs east to west. This is a two-lane collector road. This road connects to Norfolk St S with "T-legged" unsignalized intersection. The posted speed of this road is 50km/h.

5.2 Existing Traffic Volume

Turning movement counts at the identified intersections were collected by Accu – Traffic Inc. on Wednesday March 30th, 2022 from 9:00 – 10:00, and Wednesday March 30th, 2022 from 15:15 – 16:15. Refer to **Appendix A** for the TMC volumes.

The existing traffic volumes are shown in **Figure 4** and are utilized in the Intersection Capacity Analysis for the Existing Weekday PM & Weekday AM Peak Hours.

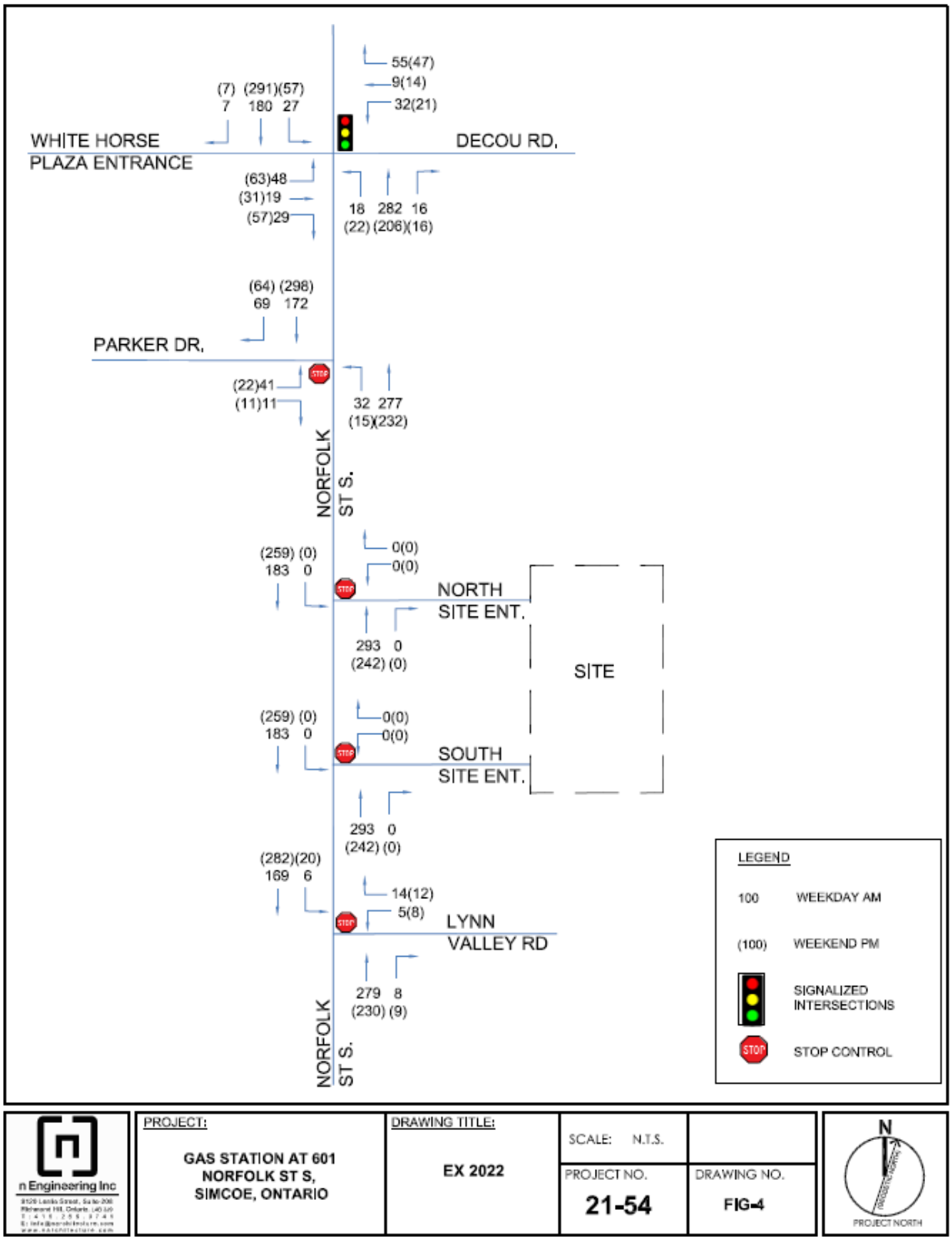

Figure 4 - Existing Conditions 2022

5.3 Intersection Capacity Analysis - Existing Condition (2022)

The Synchro analysis results under the existing conditions are summarized in **Table 2** and **Table 3** for the Signalized and Unsignalized intersections, respectively.

The Intersection Capacity Analysis was performed using Synchro 11, incorporating Highway Capacity Manual (HCM) 6 methodology. The Synchro parameters were inputted with reference to the *Norfolk County Integrated Sustainable Master Plan (ISMP): Appendix J TIS Guidelines*. The detailed existing condition Synchro reports are provided in **Appendix C**. The signal timing plans were obtained from the Transportation Department at Norfolk County at the intersection of Norfolk St S & Decou Rd. The signal timing reports from Synchro and signal timing plans are both provided in **Appendix B**.

Table 2 - Existing Conditions 2022 Signalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour				Existing Storage (m)
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)	
Norfolk St S & Decou Rd	Overall	-	**B**	12.6	-	-	**B**	12.8	-	
	EBLT	0.11	B	14.1	20.0	0.15	B	14.4	18.8	
	EBR	0.05	B	13.2	13.4	0.09	B	13.6	17.7	
	WBL	0.06	B	15.4	13.7	0.04	B	15.5	14.4	30.0
	WBTR	0.10	B	13.7	16.9	0.10	B	13.6	18.6	
	NBLT	0.21	B	12.2	26.9	0.16	B	11.8	20.7	
	NBTR	0.22	B	12.4	24.8	0.16	B	11.9	21.6	
	SBLT	0.15	B	11.7	29.6	0.24	B	12.5	42.8	
	SBTR	0.15	B	11.8	18.3	0.24	B	12.6	22.9	

Table 3 - Existing 2022 Conditions Unsignalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)
Norfolk St S & Parker Dr	EBLR	0.103	B	12.3	0.3	0.065	B	11.9	0.2
	NBLT	0.027	A	7.9	0.1	0.014	A	8.1	0
North Site Entrance & Norfolk St S	WBLR	-	A	0	-	-	A	0	-
	SBLT	-	A	0	0	-	A	0	0
South Site Entrance & Norfolk St S	WBLR	-	A	0	-	-	A	0	-
	SBLT	-	A	0	0	-	A	0	0
Norfolk St & Lynn Valley Rd	WBLR	0.031	B	10.7	0.1	0.036	B	11.2	0.1
	SBLT	0.005	A	7.9	0	0.017	A	7.8	0.1

As per the overall analysis, the signalized intersection is expected to operate with a good LOS level B for both Weekday AM and PM peak hours with residual capacity at all movements for existing conditions.

The v/c ratio and LOS are well below the town's threshold for all signalized movements. There is no 95th percentile queue that is greater than the storage length for any individual turning movements. Therefore, no recommendations are required for these existing conditions.

All movements for the unsignalized intersections are performing at a good LOS of level B or better. Therefore, no recommendations are required for these conditions.

6 Future Background Condition

This section provides a comprehensive analysis of the future background conditions for the intersections in the site area before the proposed development is built.

6.1 Corridor Growth

Norfolk County did not have any historical turning movement data for the intersections in the site area to determine a growth factor. n Engineering Inc. decided to hire Accu – Traffic Inc. to acquire most recent traffic counts at the specified intersections.

A 2% annual growth factor has been agreed upon with the County's staff and will be used for calculating future volumes. Furthermore, the Future Background conditions consider traffic

operations for a five-year and ten-year horizon period (year 2029 and 2034) from the expected date of occupancy for the proposed development (2024).

6.2 Background Development

The staffs at Norfolk County have informed n Engineering Inc. about one development in the vicinity. There is a current Residential subdivision which has been partially constructed and sitting vacant for several years on Decou Road approximately 300m east of Norfolk Street. Due to its age, this subdivision predates the requirements for a Traffic Impact Study. For background the current phase is proposed to have 57 Single Family Dwellings and is under new ownership which is attempting to start building by end of 2022 and be completely built out prior to end of 2024. Refer to **Appendix E** for the approved Terms of Reference describing this development.

The ITE Traffic Generation Manual has been used to estimate the trips generated for this background development, **Table 4** below shows these trips. These trips were split based on the existing traffic volumes and patterns.

Table 4 - Future Background Development Trips Generated

Single Family Detached Housing (210)	AM Peak Hour			PM Peak Hour		
	Average rate*	IN (%)	OUT (%)	Average rate*	IN (%)	OUT (%)
57 Units	0.74	25	75	0.99	63	37
New Trips	42	11	31	57	36	21
80% of Trips	**34**	9	25	**46**	29	17

**Weekday Peak Hour of Adjacent Street Traffic per Dwelling Unit*

As there is no TIS report for this future background development. An 80% to 20% split assumption has been applied to the trips generated from the single family detached houses. 80% of the trips will travel through the intersection of Norfolk St S & Decou Rd, while 20% travels eastwards through Ireland Rd & Decou Rd/Concession 5 Woodhouse Rd. However, this intersection is not a part of the study area.

Figure 5 below shows the future background development trips distributed through the operational analysis.

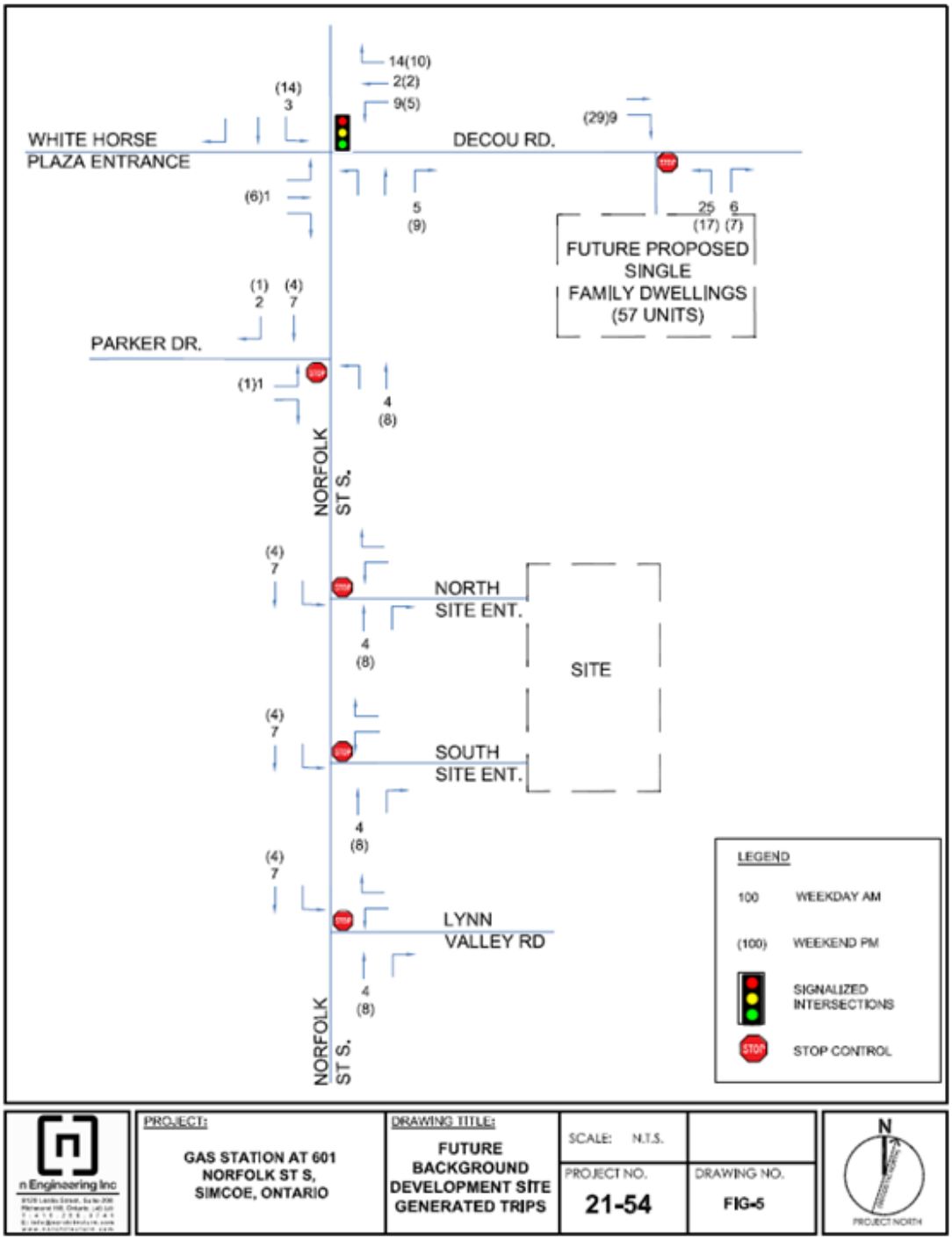

Figure 5 - Trips Generated by Background Development

6.3 Future Background 2029

The traffic volumes of the Future Background 2029 were generated by applying the growth rate to the Existing Conditions volumes and adding the trips generated by background development in the area. The Future Background TMC diagram is shown in **Figure 6.**

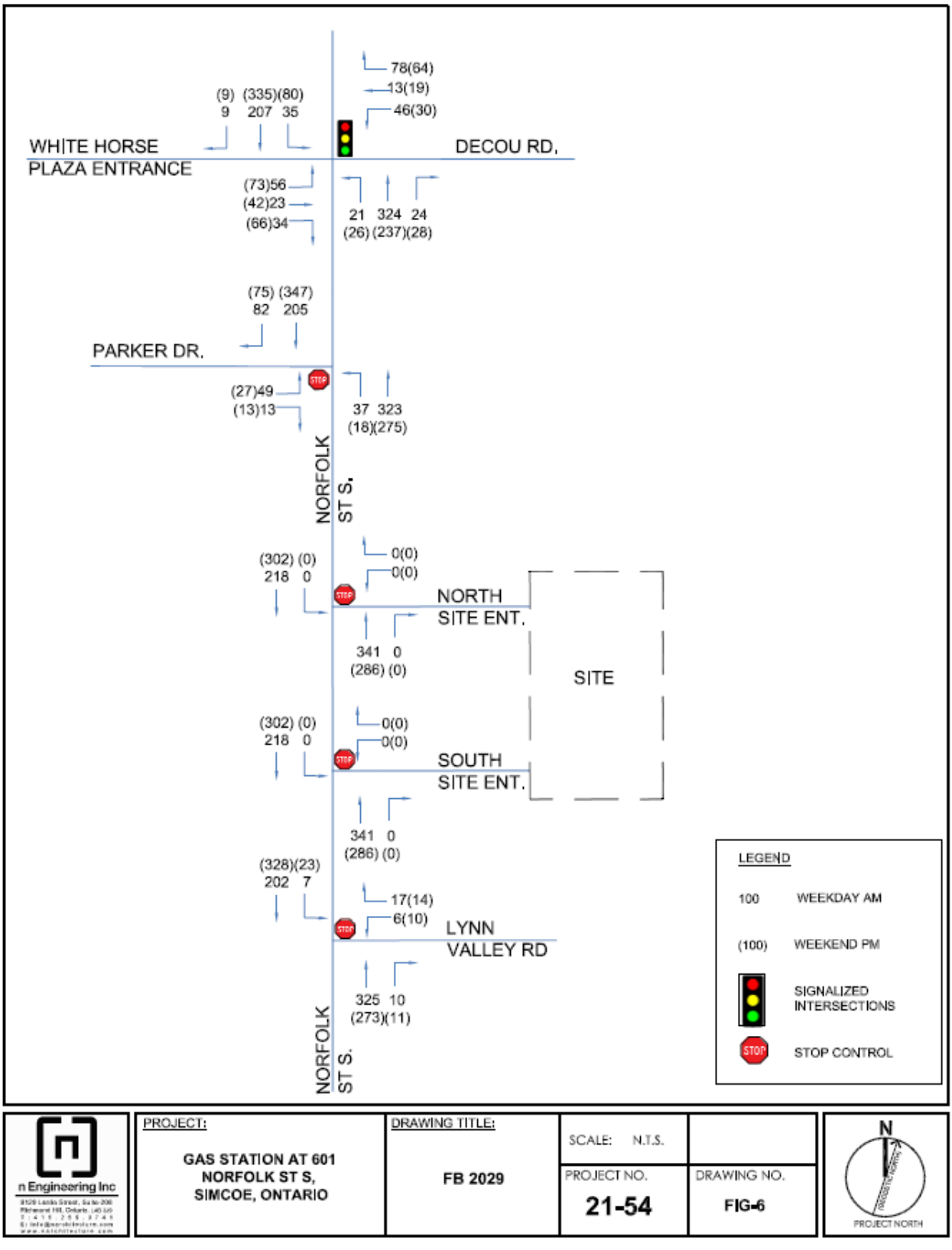

Figure 6 - Future Background 2029 Conditions

6.4 Intersection Capacity Analysis – Future Background Condition (2029)

The Future Background 2029 Intersection Capacity analysis for the Weekday PM and AM Peak Hours are summarized in **Table 5** and **Table 6** for Signalized and Unsignalized intersections, respectively.

The Intersection Capacity Analysis was performed using Synchro 11, incorporating Highway Capacity Manual (HCM) 6 methodology. The Synchro parameters were inputted with reference to the *Norfolk County Integrated Sustainable Master Plan (ISMP): Appendix J TIS Guidelines*. The detailed future background condition Synchro reports are provided in **Appendix C**. The signal timing plans were obtained from the Transportation Department at Norfolk County. The signal timing reports from Synchro and signal timing plans are both provided in **Appendix B**.

Table 5 - Future Background 2029 Signalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour				Existing Storage (m)
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)	
Norfolk St S & Decou Rd	Overall	-	**B**	13.0	-	-	**B**	13.3	-	
	EBLT	0.13	B	14.7	21.4	0.19	B	15.0	14.3	
	EBR	0.06	B	13.3	14	0.11	B	13.7	5.7	
	WBL	0.09	B	16.6	16.7	0.06	B	16.7	5.2	30.0
	WBTR	0.15	B	14.1	23.1	0.13	B	13.9	7.4	
	NBLT	0.24	B	12.6	27.6	0.19	B	12.1	12.8	
	NBTR	0.26	B	12.8	30.5	0.20	B	12.2	10.9	
	SBLT	0.18	B	12.0	33.7	0.30	B	13.3	31.5	
	SBTR	0.18	B	12.0	18.3	0.30	B	13.2	10.7	

Table 6 - Future Background 2029 Unsignalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)
Norfolk St S & Parker Dr	EBLR	0.138	B	13.5	0.5	0.089	B	13.0	0.3
	NBLT	0.032	A	8	0.1	0.018	A	8.3	0.1
North Site Entrance & Norfolk St S	WBLR	-	A	0	-	-	A	0	-
	SBLT	-	A	0	0	-	A	0	0
South Site Entrance & Norfolk St S	WBLR	-	A	0	-	-	A	0	-
	SBLT	-	A	0	0	-	A	0	0
Norfolk St & Lynn Valley Rd	WBLR	0.041	B	11.2	0.1	0.048	B	12	0.2
	SBLT	0.006	A	8	0	0.02	A	7.9	0.1

As per the overall analysis, the signalized intersection continues to operate with a good LOS level B for both Weekday AM and PM peak hours with residual capacity at all movements for future background conditions.

There continues to be no critical movements for both the signalized and unsignalized intersections as the v/c ratios and LOS are still well below the town's threshold for all movements. There is no 95th percentile queue that is greater than the storage length for any individual turning movements. The trips generated from the future proposed development and 2% annual inflation rate does not affect the traffic negatively in the site area. Therefore, there is no area of concern and no recommendations are required for this condition.

6.5 Future Background 2034

The traffic volumes of the Future Background 2034 were generated by applying the growth rate to the Existing Conditions volumes and adding the trips generated by background development in the area. The Future Background TMC diagram is shown in **Figure 7**.

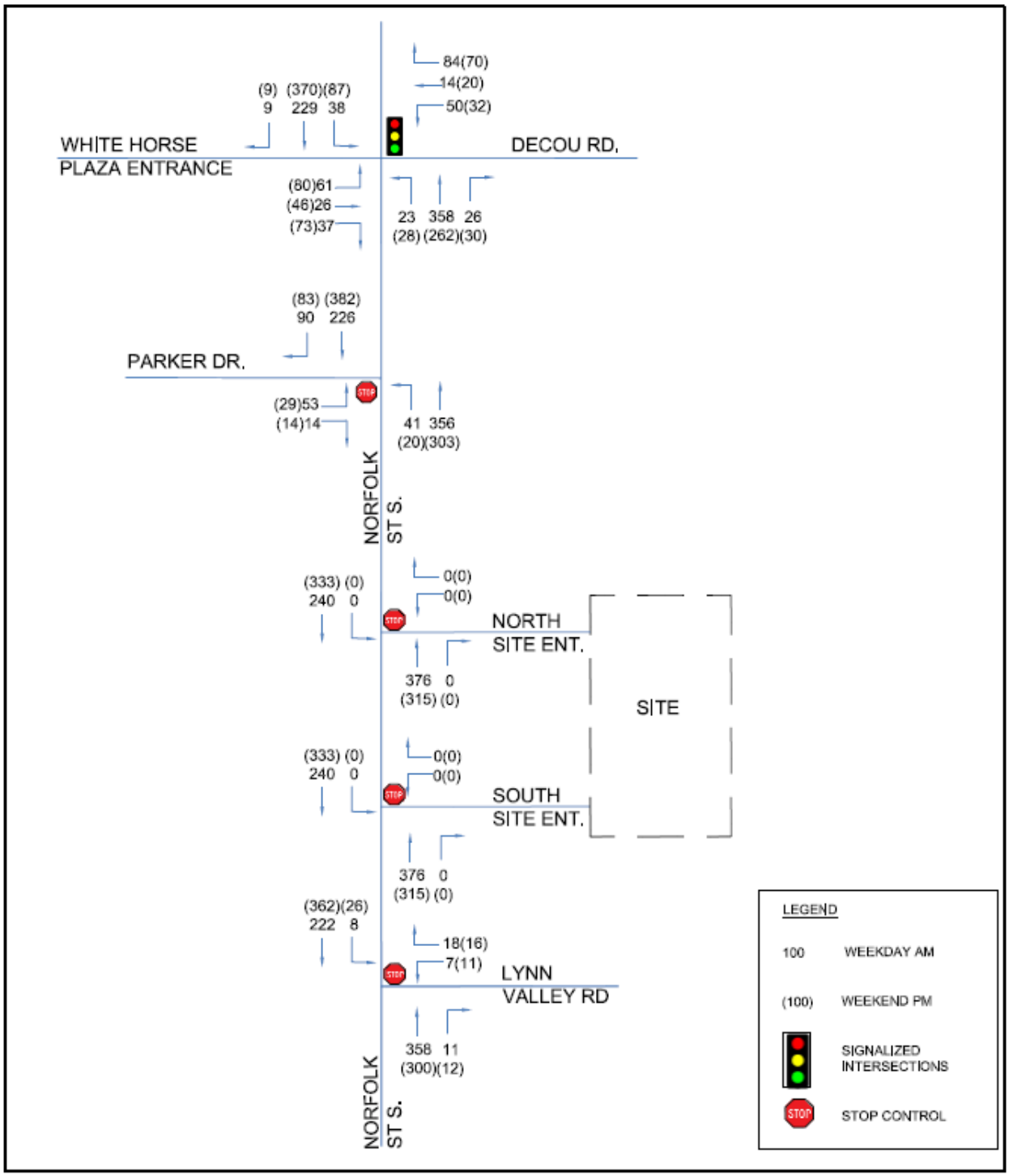

Figure 7 - Future Background 2034 Conditions

6.6 Intersection Capacity Analysis – Future Background Condition (2034)

The Future Background 2034 Intersection Capacity analysis for the Weekday PM and AM Peak Hours are summarized in **Table 7** and **Table 8** for Signalized and Unsignalized intersections, respectively.

The Intersection Capacity Analysis was performed using Synchro 11, incorporating Highway Capacity Manual (HCM) 6 methodology. The Synchro parameters were inputted with reference to the *Norfolk County Integrated Sustainable Master Plan (ISMP): Appendix J TIS Guidelines*. The detailed future background condition Synchro reports are provided in **Appendix C**. The signal timing plans were obtained from the Transportation Department at Norfolk County. The signal timing reports from Synchro and signal timing plans are both provided in **Appendix B**.

Table 7 - Future Background 2034 Signalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour				Existing Storage (m)
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)	
Norfolk St S & Decou Rd	Overall	-	**B**	13.3	-	-	**B**	13.7	-	
	EBLT	0.15	B	14.9	23.9	0.21	B	15.4	25.8	
	EBR	0.06	B	13.3	13.4	0.12	B	13.8	16.3	
	WBL	0.10	B	17.0	17.2	0.07	B	17.2	13.2	30.0
	WBTR	0.16	B	14.2	24.3	0.14	B	14.0	19.5	
	NBLT	0.27	B	12.8	32	0.21	B	12.2	26.1	
	NBTR	0.28	B	13.1	33.6	0.22	B	12.4	27.6	
	SBLT	0.20	B	12.1	36.4	0.34	B	13.9	54.1	
	SBTR	0.20	B	12.2	25.2	0.33	B	13.6	32.3	

Table 8 - Future Background 2034 Unsignalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)
Norfolk St S & Parker Dr	EBLR	0.161	B	14.5	0.6	0.103	B	13.9	0.3
	NBLT	0.037	A	8.1	0.1	0.021	A	8.5	0.1
North Site Entrance & Norfolk St S	WBLR	-	A	0	-	-	A	0	-
	SBLT	-	A	0	0	-	A	0	0
South Site Entrance & Norfolk St S	WBLR	-	A	0	-	-	A	0	-
	SBLT	-	A	0	0	-	A	0	0
Norfolk St & Lynn Valley Rd	WBLR	0.048	B	11.7	0.2	0.058	B	12.6	0.2
	SBLT	0.007	A	8.1	0	0.023	A	8	0.1

As per the overall analysis, the signalized intersection continues to operate with a good LOS level B for both Weekday AM and PM peak hours with residual capacity at all movements for future background conditions.

There continues to be no critical movements for both the signalized and unsignalized intersections as the v/c ratios and LOS are still well below the town's threshold for all movements. There is no 95th percentile queue that is greater than the storage length for any individual turning movements. The trips generated from the future proposed development and 2% annual inflation rate does not affect the traffic negatively in the site area. Therefore, there is no area of concern and no recommendations are required for this condition.

7 Trip Generation

The trip generation rates from the latest ITE Trip Generation Manual (10th Edition) were used for the Weekday PM and Weekday AM Peak Hour Periods of the proposed development.

- Land use codes for Gasoline/Service Station (LUC 944), and Take-Out Restaurant with a Drive Through (LUC 934) were used for the proposed development. The total estimated trips for this proposed land use were rounded up before applying the inbound and outbound directional split.

Table 9 below shows the necessary calculation required to generate trips for each property type.

Table 9 - ITE Trip Generation from Proposed Development

Gasoline/Service Station (LUC 944)	AM Peak Hour			PM Peak Hour		
	Average rate*	IN (%)	OUT (%)	Average rate*	IN (%)	OUT (%)
8 Fueling Positions	10.28	50	50	14.03	50	50
Trips	82	41	41	112	56	56
Take-Out Restaurant with Drive-Through Window (LUC 934)	**AM Peak Hour**			**PM Peak Hour**		
	Average rate*	IN (%)	OUT (%)	Average rate*	IN (%)	OUT (%)
842.06 sq. ft	32.67	52	48	40.19	51	49
Trips	28	15	13	34	17	17
Total Trips Generated	110	**56**	**54**	146	**73**	**73**

No modal split has been applied to these trips generated.

Pass-by trips are required for the proposed commercial developments. These are calculated using the ITE Manual as each property type has a percent of pass-by trips. **Table 10** below shows the pass-by split.

Table 10 - Pass-by Trips

Property	Land Use Code	ITE Pass-by Rate (Average)	AM Pass-by Trips	PM Pass-by Trips
Gasoline/Service Station	944	34%	14	24
Take-Out Restaurant with Drive-Through Window	934	42%	5	6
Total Pass-by Trips Generated			**19**	**30**

These pass-by trips are reduced from the site generated trips. Two separate trip assignments have been completed one for pass-by trips and one for new trips. The sum of these two produce the total trips generated for the proposed development.

Table 11 below shows the new site generated trips with the reduction of pass-by trips

Table 11 - Site Generated Trips

Property	AM Peak Hour		PM Peak Hour	
Gasoline/Service Station (LUC 944)	IN	OUT	IN	OUT
	27	27	32	32
Take-Out Restaurant with Drive-Through Window (LUC 934)	IN	OUT	IN	OUT
	10	8	11	11
Total Trips Generated	**37**	**35**	**43**	**43**

7.1 Trip Distribution and Assignment

Trip distribution of site generated traffic was based on the orientation of the site with respect to road network; existing traffic volumes split percentages; and travel patterns. **Table 12** below shows the percent of trips based on the direction of travel for AM and PM peak hours. **Table 13** below shows the trip assignment at turning movements for new site generated trips.

Table 12 - Trip Distribution for AM Peak Hours

Direction of Travel	IN (%)	OUT (%)
Northbound on Norfolk St S	36.84	50.00
Southbound on Norfolk St South	26.32	38.89
Eastbound on Decou Rd	13.16	2.78
Westbound on Decou Rd	13.16	2.78
Westbound on Parker Dr	7.89	5.56
Eastbound on Lynn Valley Rd	2.63	0.00
Total	100	100

Table 13 - Trip Distribution for PM Peak Hours

Direction of Travel	IN (%)	OUT (%)
Northbound on Norfolk St S	28.57	38.64
Southbound on Norfolk St South	40.48	50.00
Eastbound on Decou Rd	9.52	2.27
Westbound on Decou Rd	16.67	4.55
Westbound on Parker Dr	2.38	2.27
Eastbound on Lynn Valley Rd	2.38	2.27
Total	100	100

Table 14 below shows the number of trips assigned in the all directions entering and exiting the proposed site development.

Table 14 - Trip Assignment

Direction of Travel	AM		PM	
	IN	OUT	IN	OUT
Northbound on Norfolk St S	14	18	12	17
Southbound on Norfolk St South	10	14	17	22
Eastbound on Decou Rd	5	1	4	1
Westbound on Decou Rd	5	1	7	2
Eastbound on Parker Dr	3	2	1	1
Westbound on Lynn Valley Rd	1	0	1	1
Total	**38**	**36**	**42**	**44**

The site generated trips are distributed and shown in **Figure 8**.

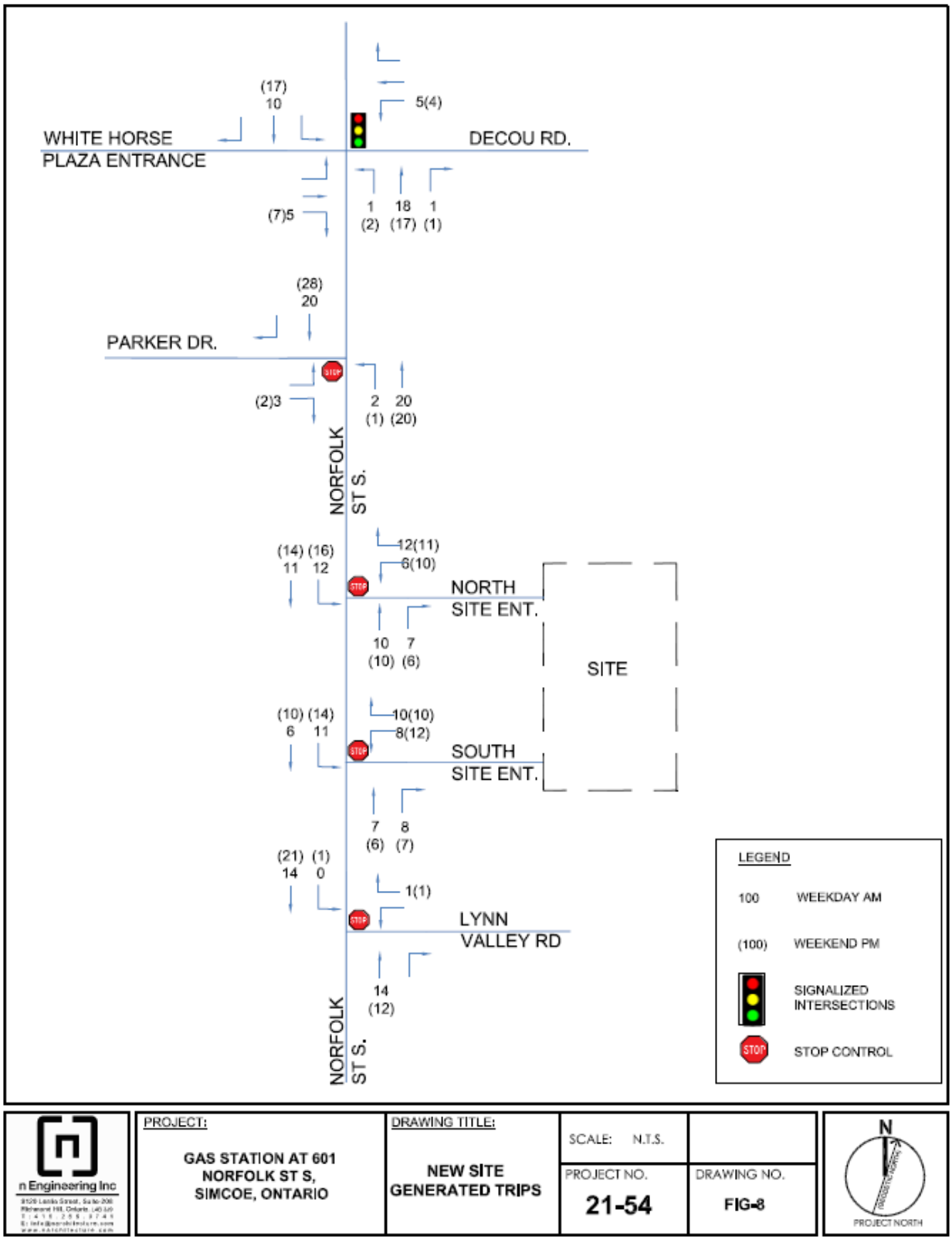

Figure 8 - Trip Generations from the Proposed Development

Trip distribution of pass-by trips reflect the predominant commuting travel patterns on adjacent and nearby roadways. The pass-by trips are distributed and shown in **Figure 9**.

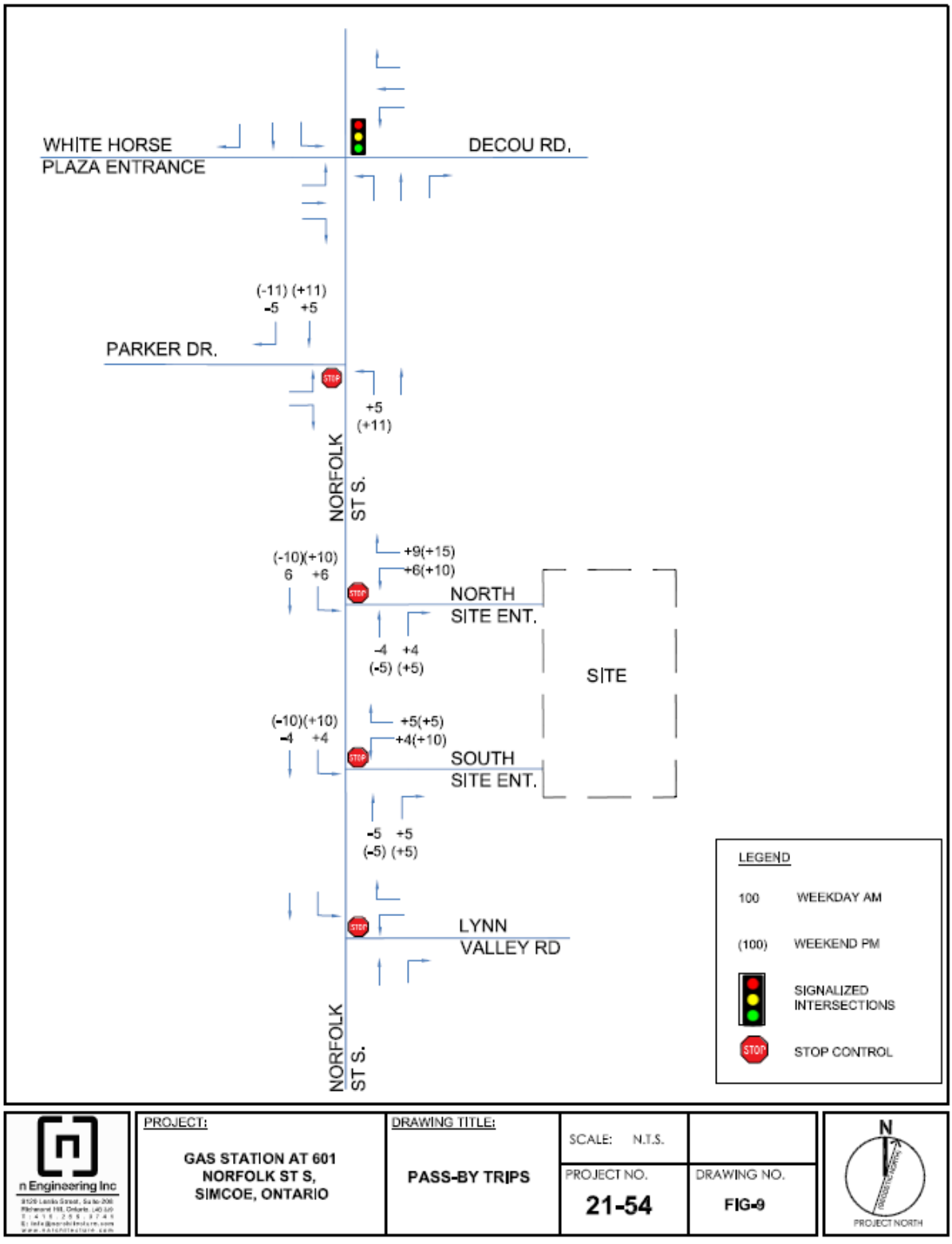

Figure 9 - Passy-By Trips

8 Future Total Condition

This section provides a comprehensive analysis of the future total conditions for the intersections in the site area after the proposed development is built out and takes occupancy. The impact on the traffic in the area due to the development is analyzed.

8.1 Future Total 2029

The Future Total traffic volumes for 2029 were generated by adding the site generated trips to the Future Background 2029 traffic volumes. The sum of this produces the Future Total traffic volumes as shown in **Figure 10**.

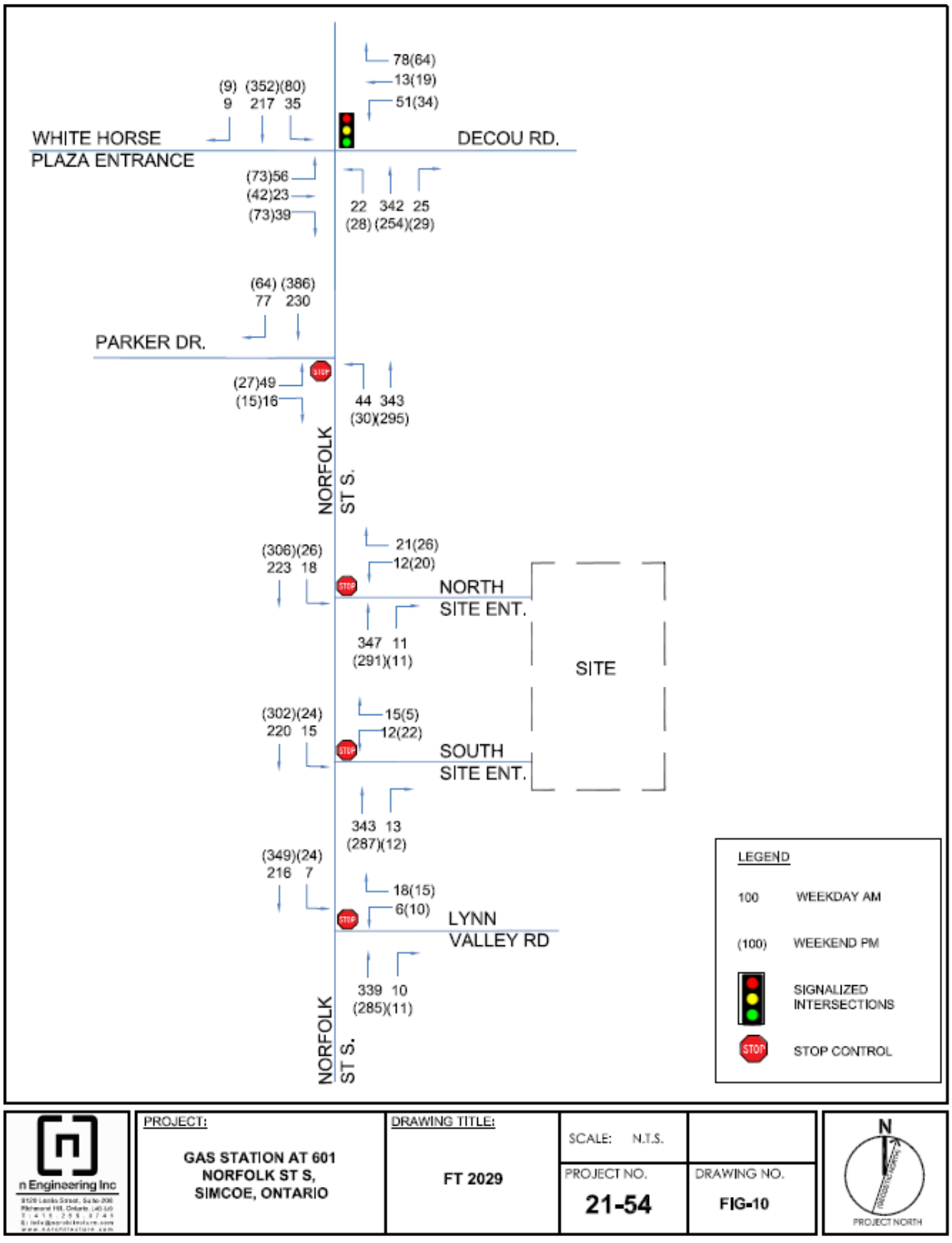

Figure 10 - Future Total 2029 Conditions

8.2 Intersection Capacity Analysis – Future Total Condition (2029)

The Future Total 2029 Intersection Capacity analysis for the Weekday PM and AM peak hour periods are summarized in **Table 15** and **Table 16** for Signalized and Unsignalized intersections, respectively.

The Intersection Capacity Analysis was performed using Synchro 11, incorporating Highway Capacity Manual (HCM) 6 methodology. The Synchro parameters were inputted with reference to the *Norfolk County Integrated Sustainable Master Plan (ISMP): Appendix J TIS Guidelines*. The detailed future total condition Synchro reports are provided in **Appendix C**. The signal timing plans were obtained from the Transportation Department at Norfolk County. The signal timing reports from Synchro and signal timing plans are both provided in **Appendix B**.

Table 15 - Future Total 2029 Signalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour				Existing Storage (m)
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)	
Norfolk St S & Decou Rd	Overall	-	**B**	13.1	-	-	**B**	13.4	-	
	EBLT	0.13	B	14.7	21.9	0.19	B	15.0	27.3	
	EBR	0.06	B	13.3	12.7	0.12	B	13.8	17.4	
	WBL	0.10	B	16.7	18.0	0.07	B	16.8	13.2	30.0
	WBTR	0.15	B	14.1	23.0	0.13	B	13.9	20.1	
	NBLT	0.26	B	12.7	30.5	0.21	B	12.2	24.7	
	NBTR	0.27	B	12.9	32.5	0.21	B	12.3	24.7	
	SBLT	0.19	B	12.0	37.8	0.31	B	13.5	54.1	
	SBTR	0.19	B	12.1	22.5	0.31	B	13.4	39.9	

Table 16 - Future Total 2029 Unsignalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)
Norfolk St S & Parker Dr	EBLR	0.153	B	14.2	0.5	0.101	B	13.9	0.3
	NBLT	0.039	A	8.1	0.1	0.03	A	8.5	0.1
North Site Entrance & Norfolk St S	WBLR	0.066	B	12.1	0.2	0.095	B	12.6	0.3
	SBLT	0.017	A	8.1	0.1	0.023	A	8	0.1
South Site Entrance & Norfolk St S	WBLR	0.055	B	12.1	0.2	0.083	B	13.1	0.3
	SBLT	0.014	A	8.1	0	0.021	A	8	0.1
Norfolk St & Lynn Valley Rd	WBLR	0.044	B	11.4	0.1	0.052	B	12.2	0.2
	SBLT	0.006	A	8.1	0	0.021	A	8	0.1

As per the overall analysis, the signalized intersection continues to operate with a good LOS B or better for both Weekday AM and PM peak hours with residual capacity at all movements for future total conditions.

There continues to be no critical movements for the signalized intersection as the v/c ratio and LOS are still well below the town's threshold for all movements. There is no 95th percentile queue that is greater than the storage length for any individual turning movements.

With the addition of the proposed site generated trips and pass-by trips, all movements for the unsignalized intersections remain to perform at a good LOS of level B or better. Therefore, no recommendations are required for these conditions.

The Intersection Capacity Analysis indicates that the road conditions do not worsen or negatively impact traffic in the area with the addition of the proposed development.

8.3 Future Total Condition (2034)

The Future Total traffic volumes for 2034 were generated by adding the site generated trips to the Future Background 2034 traffic volumes. The sum of this produces the Future Total traffic volumes as shown in **Figure 11**.

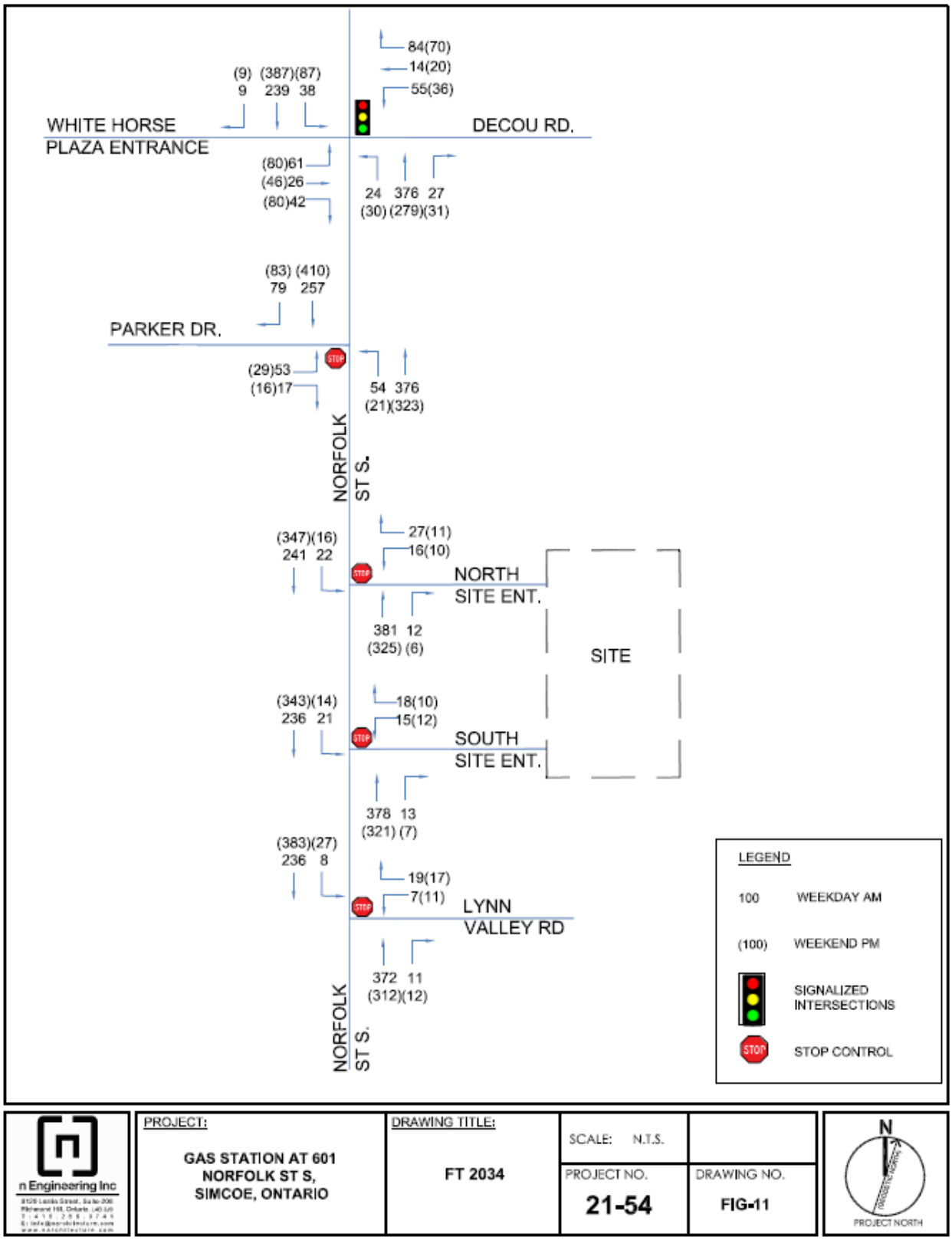

Figure 11 - Future Total 2034 Conditions

8.4 Intersection Capacity Analysis – Future Total Condition (2034)

The Future Total 2034 Intersection Capacity analysis for the Weekday PM and AM peak hour periods are summarized in **Table 17** and **Table 18** for Signalized and Unsignalized intersections, respectively.

The Intersection Capacity Analysis was performed using Synchro 11, incorporating Highway Capacity Manual (HCM) 6 methodology. The Synchro parameters were inputted with reference to the *Norfolk County Integrated Sustainable Master Plan (ISMP): Appendix J TIS Guidelines*. The detailed future total condition Synchro reports are provided in **Appendix C**. The signal timing plans were obtained from the Transportation Department at Norfolk County. The signal timing reports from Synchro and signal timing plans are both provided in **Appendix B**.

Table 17 - Future Total 2034 Signalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour				Existing Storage (m)
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)	
Norfolk St S & Decou Rd	Overall	-	**B**	13.4	-	-	**B**	13.8	-	
	EBLT	0.15	B	14.9	24.4	0.21	B	15.4	32.1	
	EBR	0.07	B	13.4	14.5	0.13	B	14.0	18.8	
	WBL	0.11	B	17.2	18.0	0.08	B	17.3	16.1	30.0
	WBTR	0.16	B	14.2	19.0	0.14	B	14.0	18.4	
	NBLT	0.28	B	13.0	32.8	0.23	B	12.4	24.6	
	NBTR	0.30	B	13.2	36.5	0.23	B	12.6	22.0	
	SBLT	0.21	B	12.2	34.7	0.35	B	14.1	53.7	
	SBTR	0.21	B	12.3	21.4	0.34	B	13.7	38.0	

Table 18 - Future Total 2034 Unsignalized Intersection Capacity Analysis

Signalized Intersection	Turning Movement/ Approach	AM Peak Hour				PM Peak Hour			
		V/C	LOS	Delay (s/veh)	95th% Queue (m)	V/C	LOS	Delay (s/veh)	95th% Queue (m)
Norfolk St S & Parker Dr	EBLR	0.184	C	15.6	0.7	0.112	B	14.3	0.4
	NBLT	0.05	A	8.2	0.2	0.022	A	8.6	0.1
North Site Entrance & Norfolk St S	WBLR	0.092	B	12.8	0.3	0.047	B	12.8	0.1
	SBLT	0.021	A	8.2	0.1	0.015	A	8	0
South Site Entrance & Norfolk St S	WBLR	0.073	B	12.9	0.2	0.051	B	13.1	0.2
	SBLT	0.02	A	8.2	0.1	0.013	A	8	0
Norfolk St & Lynn Valley Rd	WBLR	0.051	B	11.9	0.2	0.062	B	12.9	0.2
	SBLT	0.008	A	8.2	0	0.024	A	8.1	0.1

As per the overall analysis, the signalized intersection continues to operate with a good LOS B or better for both Weekday AM and PM peak hours with residual capacity at all movements for future total conditions.

There continues to be no critical movements for the signalized intersection as the v/c ratio and LOS are still well below the town's threshold for all movements. There is no 95th percentile queue that is greater than the storage length for any individual turning movements.

The addition of the proposed site generated trips and pass-by trips have worsened the EBL turn movement LOS for the unsignalized intersection of Norfolk St S & Parker Dr from level B to C for AM peak hours. However, the v/c ratio and 95th percentile queue change is minor compared to the future background 2034 conditions. Therefore, no recommendation is required for this condition.

The Intersection Capacity Analysis indicates that the road conditions do not worsen or negatively impact traffic in the area with the addition of the proposed development.

9 Internal Site Circulation

Detailed vehicle maneuvering diagrams (VMD) for a fueling truck has been provided in **Appendix D,** Drawing A-1.1 to illustrate that site/turning movements for design vehicles are accommodated for based on the proposed site geometry.

The internal site circulation review confirms no projected concerns or conflicts for design vehicles within the proposed development.

10 Parking Review

As per the Norfolk County Zoning By-law 1-Z-2014, the proposed development requires 9 parking spaces based the parking rates for the Zoning Category CS.

Parking calculations provided by n Architecture Inc. dated March 25th, 2022 are shown in **Table 19** exhibits that 12 (including 1 handicap) parking spots have been provided.

Table 19 - Parking Statistics

PARKING REQUIREMENTS

	REQUIRED	PROPOSED
C–STORE – 1/30 SQM. (3.0M X 5.8M)	09	11
ACCESSIBLE PARKING – TYPE A (3.4M X 5.8M)	01	01
TOTAL PARKING	9 (INCL. 1BF)	12 (INCL. 1BF)

As 9 parking spaces are required based on the ZBL and n Architecture Inc. is providing 12 parking spaces including barrier free. The minimum parking requirements have been met and no further review is required.

We trust that this explanation will provide appropriate information regarding parking demand for the future development.

11 Summary and Recommendations

This Traffic Impact Study (TIS) evaluates the traffic impact of the commercial development at 601 Norfolk St S, Simcoe, Ontario. The proposed development consists of a C-Store with a drive thru with a gross floor area of 278.74 m^2, and a 4 pump gas bar.

One signalized intersection and four unsignalized intersections were analysed at Weekday AM and PM peak hours under Existing Condition (2022), Future Background Condition (2029 and 2034) and Future Total Condition (2029 and 2034). Synchro 11 was utilized with HCM 6 and SimTraffic was applied to analyze intersections in the study area. Level of service, v/c ratio, control delay and 95th percentile queue were evaluated as per *Norfolk County (ISMP): Appendix J TIS Guidelines.*

Based on the Synchro analysis results under Existing and Future conditions, the overall LOS analysis for the signalized intersections operates under an acceptable LOS B or better. As per the Synchro analysis, there was an output of no critical movements in both signalized and unsignalized intersections. This indicates that the road conditions do not negatively impact traffic in the area with the addition of the proposed development.

The vehicle manoeuvring diagram(s) requested by the town has been provided and meets its specific standards.

As per Zoning By-law, 9 parking spaces are required for the proposed development. In total, the site plan shows that 12 parking spaces are provided.

We trust that this study adequately addresses the requirements for the Norfolk County. Should you have any questions, please contact the undersigned.

Respectfully submitted,

(Report Prepared by)

Gurminder Jagjait EIT, B. Eng.
Transportation Analyst
n Engineering Inc.

(Report Reviewed by)

Abu S Ziauddin P. Eng. M.Eng
Project Manager
n Engineering Inc.

LICENSED PROFESSIONAL ENGINEER
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April 11, 2022
PROVINCE OF ONTARIO

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Appendix A
TMC Data 2022 Collected by Accu-Traffic Inc.

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Norfolk
Site #: 2204400001
Intersection: Norfolk St S & Decou Rd
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

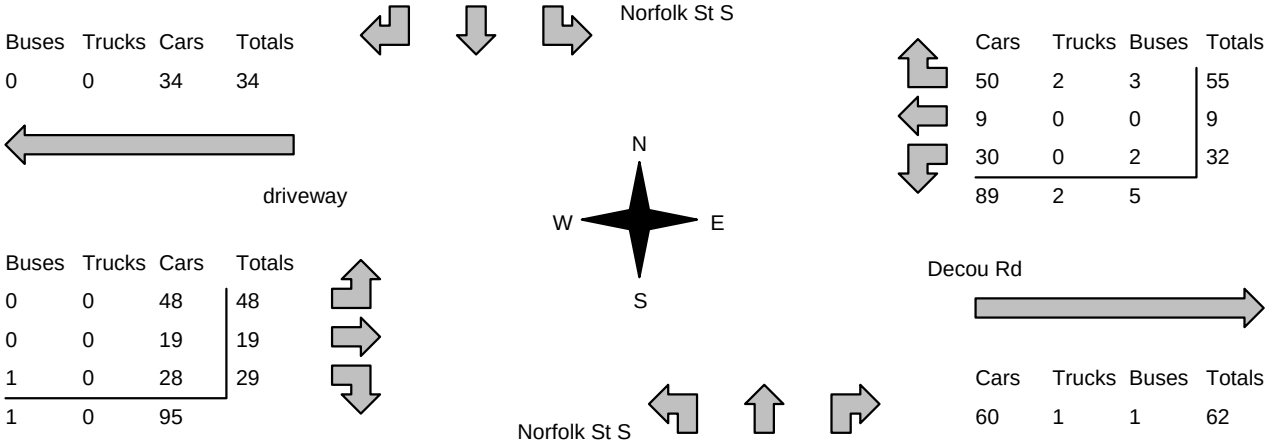
Major Road: Norfolk St S runs N/S

North Leg Total: 599
North Entering: 214
North Peds: 2
Peds Cross: ⋈

Buses	0	10	0	10
Trucks	0	5	0	5
Cars	7	165	27	199
Totals	7	180	27	

Buses	13
Trucks	9
Cars	363
Totals	385

East Leg Total: 158
East Entering: 96
East Peds: 0
Peds Cross: ⧗



Buses	Trucks	Cars	Totals
0	0	34	34

Cars	Trucks	Buses	Totals
50	2	3	55
9	0	0	9
30	0	2	32
89	2	5	

Buses	Trucks	Cars	Totals
0	0	48	48
0	0	19	19
1	0	28	29
1	0	95	

Cars	Trucks	Buses	Totals
60	1	1	62

Peds Cross: ⧗
West Peds: 7
West Entering: 96
West Leg Total: 130

Cars	223			
Trucks	5			
Buses	13			
Totals	241			

Cars	18	265	14	297
Trucks	0	7	1	8
Buses	0	10	1	11
Totals	18	282	16	

Peds Cross: ⋈
South Peds: 0
South Entering: 316
South Leg Total: 557

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Norfolk
Site #: 2204400001
Intersection: Norfolk St S & Decou Rd
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Norfolk St S runs N/S

North Leg Total: 671
North Entering: 355
North Peds: 1
Peds Cross: ⋈

Buses	0	0	0	0
Trucks	0	2	0	2
Cars	7	289	57	353
Totals	7	291	57	

Buses	0
Trucks	2
Cars	314
Totals	316

East Leg Total: 186
East Entering: 82
East Peds: 1
Peds Cross: ⧗

Norfolk St S

Buses	Trucks	Cars	Totals
0	1	42	43

driveway

Cars	Trucks	Buses	Totals
47	0	0	47
13	1	0	14
20	0	1	21
80	1	1	

N
W E
S

Buses	Trucks	Cars	Totals
0	0	63	63
0	0	31	31
0	0	57	57
0	0	151	

Decou Rd

Cars	Trucks	Buses	Totals
104	0	0	104

Norfolk St S

Peds Cross: ⧗
West Peds: 0
West Entering: 151
West Leg Total: 194

Cars	366			
Trucks	2			
Buses	1			
Totals	369			

Cars	22	204	16	242
Trucks	0	2	0	2
Buses	0	0	0	0
Totals	22	206	16	

Peds Cross: ⋈
South Peds: 2
South Entering: 244
South Leg Total: 613

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Total Count Diagram

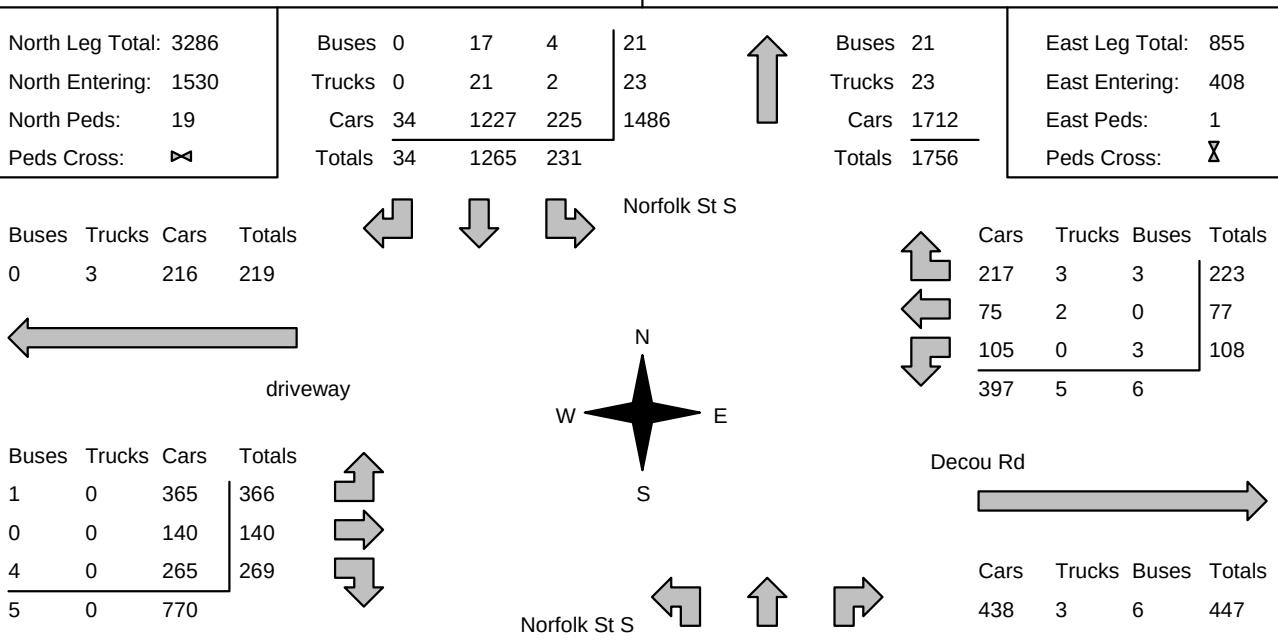
Municipality: Norfolk
Site #: 2204400001
Intersection: Norfolk St S & Decou Rd
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Norfolk St S runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Traffic Count Summary

Intersection: Norfolk St S & Decou Rd | **Count Date:** 30-Mar-22 | **Municipality:** Norfolk

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	19	130	5	154	1
9:00:00	27	180	7	214	2
10:00:00	25	157	4	186	2
15:00:00	0	0	0	0	0
16:00:00	61	265	9	335	10
17:00:00	54	292	5	351	2
18:00:00	45	241	4	290	2
Totals:	231	1265	34	1530	19

North/South Total Approaches: 2881

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	8	138	5	151	0
9:00:00	18	282	16	316	0
10:00:00	21	159	14	194	0
15:00:00	0	0	0	0	0
16:00:00	15	188	11	214	1
17:00:00	19	219	15	253	1
18:00:00	27	181	15	223	1
S Totals:	108	1167	76	1351	3

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	17	8	21	46	0
9:00:00	32	9	55	96	0
10:00:00	12	13	24	49	0
15:00:00	0	0	0	0	0
16:00:00	14	16	39	69	0
17:00:00	22	18	46	86	0
18:00:00	11	13	38	62	1
Totals:	108	77	223	408	1

East/West Total Approaches: 1183

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	55	13	33	101	2
9:00:00	48	19	29	96	7
10:00:00	61	17	42	120	1
15:00:00	0	0	0	0	0
16:00:00	85	36	58	179	10
17:00:00	57	28	52	137	0
18:00:00	60	27	55	142	1
W Totals:	366	140	269	775	21

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	15:00	16:00	17:00	18:00
Crossing Values:	0	86	101	92	0	146	110	101

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Buses - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	24	24	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	5	3	48	24	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:45:00	11	6	90	42	3	1	0	0	3	2	0	0	0	0	0	0	0	0	1	1
8:00:00	18	7	124	34	5	2	1	1	5	2	0	0	0	0	1	1	0	0	1	0
8:15:00	21	3	150	26	6	1	1	0	7	2	0	0	0	0	2	1	0	0	1	0
8:30:00	26	5	192	42	8	2	1	0	8	1	0	0	0	0	3	1	0	0	1	0
8:45:00	32	6	239	47	10	2	1	0	9	1	0	0	0	0	7	4	0	0	2	1
9:00:00	45	13	289	50	12	2	1	0	10	1	0	0	0	0	11	4	0	0	3	1
9:15:00	50	5	325	36	13	1	1	0	11	1	0	0	0	0	11	0	0	0	4	1
9:30:00	57	7	360	35	13	0	1	0	12	1	0	0	0	0	11	0	0	0	4	0
9:45:00	63	6	407	47	15	2	2	1	12	0	0	0	0	0	12	1	0	0	4	0
10:00:00	69	6	443	36	16	1	2	0	12	0	0	0	0	0	12	0	0	0	5	1
10:15:00	69	0	443	0	16	0	2	0	12	0	0	0	0	0	12	0	0	0	5	0
15:00:00	69	0	443	0	16	0	2	0	12	0	0	0	0	0	12	0	0	0	5	0
15:15:00	86	17	513	70	20	4	2	0	14	2	0	0	3	3	16	4	0	0	5	0
15:30:00	102	16	573	60	20	0	2	0	16	2	0	0	4	1	17	1	0	0	15	10
15:45:00	118	16	637	64	22	2	2	0	17	1	0	0	4	0	17	0	0	0	15	0
16:00:00	126	8	697	60	25	3	2	0	18	1	0	0	4	0	17	0	0	0	15	0
16:15:00	140	14	774	77	26	1	2	0	18	0	0	0	4	0	17	0	0	0	16	1
16:30:00	157	17	844	70	26	0	2	0	18	0	0	0	4	0	17	0	0	0	16	0
16:45:00	168	11	922	78	28	2	2	0	20	2	0	0	4	0	17	0	0	0	16	0
17:00:00	180	12	987	65	30	2	2	0	20	0	0	0	4	0	17	0	0	0	17	1
17:15:00	197	17	1063	76	33	3	2	0	20	0	0	0	4	0	17	0	0	0	17	0
17:30:00	207	10	1120	57	34	1	2	0	21	1	0	0	4	0	17	0	0	0	18	1
17:45:00	214	7	1182	62	34	0	2	0	21	0	0	0	4	0	17	0	0	0	19	1
18:00:00	225	11	1227	45	34	0	2	0	21	0	0	0	4	0	17	0	0	0	19	0
18:15:00	225	0	1227	0	34	0	2	0	21	0	0	0	4	0	17	0	0	0	19	0
18:15:15	225	0	1227	0	34	0	2	0	21	0	0	0	4	0	17	0	0	0	19	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Buses - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	5	3	1	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	12	7	3	2	16	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	17	5	8	5	20	4	0	0	0	0	1	1	0	0	0	0	0	0	0	0
8:15:00	24	7	9	1	31	11	0	0	0	0	1	0	1	1	0	0	0	0	0	0
8:30:00	31	7	12	3	51	20	0	0	0	0	2	1	1	0	0	0	1	1	0	0
8:45:00	42	11	15	3	61	10	0	0	0	0	2	0	2	1	0	0	3	2	0	0
9:00:00	47	5	17	2	70	9	0	0	0	0	3	1	2	0	0	0	3	0	0	0
9:15:00	52	5	19	2	78	8	0	0	0	0	3	0	2	0	0	0	3	0	0	0
9:30:00	55	3	24	5	81	3	0	0	1	1	3	0	2	0	0	0	3	0	0	0
9:45:00	57	2	26	2	89	8	0	0	1	0	3	0	2	0	0	0	3	0	0	0
10:00:00	59	2	29	3	94	5	0	0	1	0	3	0	2	0	0	0	3	0	0	0
10:15:00	59	0	29	0	94	0	0	0	1	0	3	0	2	0	0	0	3	0	0	0
15:00:00	59	0	29	0	94	0	0	0	1	0	3	0	2	0	0	0	3	0	0	0
15:15:00	65	6	31	2	101	7	0	0	1	0	3	0	2	0	0	0	3	0	0	0
15:30:00	68	3	35	4	112	11	0	0	1	0	3	0	2	0	0	0	3	0	0	0
15:45:00	70	2	38	3	122	10	0	0	1	0	3	0	2	0	0	0	3	0	0	0
16:00:00	73	3	45	7	133	11	0	0	1	0	3	0	2	0	0	0	3	0	0	0
16:15:00	78	5	53	8	146	13	0	0	1	0	3	0	2	0	0	0	3	0	0	0
16:30:00	84	6	57	4	154	8	0	0	1	0	3	0	3	1	0	0	3	0	0	0
16:45:00	88	4	60	3	159	5	0	0	1	0	3	0	3	0	0	0	3	0	0	0
17:00:00	94	6	62	2	179	20	0	0	2	1	3	0	3	0	0	0	3	0	0	0
17:15:00	98	4	66	4	193	14	0	0	2	0	3	0	3	0	0	0	3	0	1	1
17:30:00	101	3	70	4	202	9	0	0	2	0	3	0	3	0	0	0	3	0	1	0
17:45:00	104	3	75	5	206	4	0	0	2	0	3	0	3	0	0	0	3	0	1	0
18:00:00	105	1	75	0	217	11	0	0	2	0	3	0	3	0	0	0	3	0	1	0
18:15:00	105	0	75	0	217	0	0	0	2	0	3	0	3	0	0	0	3	0	1	0
18:15:15	105	0	75	0	217	0	0	0	2	0	3	0	3	0	0	0	3	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Buses - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	25	25	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	2	2	51	26	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	6	4	84	33	4	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0
8:00:00	7	1	136	52	5	1	1	0	0	0	0	0	0	0	2	1	0	0	0	0
8:15:00	12	5	190	54	7	2	1	0	3	3	0	0	0	0	4	2	0	0	0	0
8:30:00	14	2	255	65	10	3	1	0	4	1	1	1	0	0	4	0	1	1	0	0
8:45:00	18	4	322	67	16	6	1	0	5	1	1	0	0	0	12	8	1	0	0	0
9:00:00	25	7	401	79	19	3	1	0	7	2	1	0	0	0	12	0	1	0	0	0
9:15:00	26	1	437	36	23	4	1	0	9	2	1	0	0	0	12	0	1	0	0	0
9:30:00	31	5	477	40	26	3	1	0	10	1	1	0	0	0	12	0	1	0	0	0
9:45:00	37	6	520	43	29	3	1	0	14	4	1	0	0	0	12	0	1	0	0	0
10:00:00	46	9	553	33	33	4	1	0	14	0	1	0	0	0	12	0	1	0	0	0
10:15:00	46	0	553	0	33	0	1	0	14	0	1	0	0	0	12	0	1	0	0	0
15:00:00	46	0	553	0	33	0	1	0	14	0	1	0	0	0	12	0	1	0	0	0
15:15:00	50	4	590	37	33	0	1	0	14	0	1	0	0	0	12	0	1	0	0	0
15:30:00	54	4	633	43	38	5	1	0	14	0	1	0	0	0	15	3	2	1	0	0
15:45:00	57	3	689	56	43	5	1	0	15	1	1	0	0	0	15	0	2	0	0	0
16:00:00	61	4	735	46	43	0	1	0	15	0	1	0	0	0	17	2	2	0	1	1
16:15:00	67	6	797	62	48	5	1	0	17	2	1	0	0	0	17	0	2	0	1	0
16:30:00	73	6	853	56	50	2	1	0	17	0	1	0	0	0	17	0	2	0	2	1
16:45:00	73	0	897	44	53	3	1	0	17	0	1	0	0	0	17	0	2	0	2	0
17:00:00	80	7	951	54	58	5	1	0	18	1	1	0	0	0	17	0	2	0	2	0
17:15:00	89	9	1001	50	64	6	1	0	19	1	1	0	0	0	17	0	2	0	3	1
17:30:00	99	10	1064	63	67	3	1	0	19	0	1	0	0	0	17	0	2	0	3	0
17:45:00	102	3	1099	35	71	4	1	0	20	1	1	0	0	0	17	0	2	0	3	0
18:00:00	107	5	1130	31	73	2	1	0	20	0	1	0	0	0	17	0	2	0	3	0
18:15:00	107	0	1130	0	73	0	1	0	20	0	1	0	0	0	17	0	2	0	3	0
18:15:15	107	0	1130	0	73	0	1	0	20	0	1	0	0	0	17	0	2	0	3	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Buses - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	13	13	3	3	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	18	5	5	2	19	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	35	17	8	3	28	9	0	0	0	0	0	0	0	0	0	0	0	0	2	2
8:00:00	55	20	13	5	33	5	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:15:00	64	9	15	2	37	4	0	0	0	0	0	0	0	0	0	0	1	1	2	0
8:30:00	78	14	22	7	43	6	0	0	0	0	0	0	0	0	0	0	1	0	2	0
8:45:00	87	9	28	6	52	9	0	0	0	0	0	0	0	0	0	0	1	0	5	3
9:00:00	103	16	32	4	61	9	0	0	0	0	0	0	0	0	0	0	1	0	9	4
9:15:00	116	13	38	6	71	10	0	0	0	0	0	0	0	0	0	0	2	1	9	0
9:30:00	131	15	41	3	83	12	0	0	0	0	0	0	1	1	0	0	2	0	9	0
9:45:00	144	13	47	6	92	9	0	0	0	0	0	0	1	0	0	0	2	0	9	0
10:00:00	163	19	49	2	102	10	0	0	0	0	0	0	1	0	0	0	2	0	10	1
10:15:00	163	0	49	0	102	0	0	0	0	0	0	0	1	0	0	0	2	0	10	0
15:00:00	163	0	49	0	102	0	0	0	0	0	0	0	1	0	0	0	2	0	10	0
15:15:00	179	16	57	8	121	19	0	0	0	0	0	0	1	0	0	0	2	0	10	0
15:30:00	205	26	65	8	133	12	0	0	0	0	0	0	1	0	0	0	3	1	18	8
15:45:00	231	26	77	12	144	11	0	0	0	0	0	0	1	0	0	0	3	0	20	2
16:00:00	248	17	85	8	159	15	0	0	0	0	0	0	1	0	0	0	3	0	20	0
16:15:00	261	13	92	7	167	8	0	0	0	0	0	0	1	0	0	0	3	0	20	0
16:30:00	277	16	98	6	184	17	0	0	0	0	0	0	1	0	0	0	3	0	20	0
16:45:00	294	17	111	13	199	15	0	0	0	0	0	0	1	0	0	0	3	0	20	0
17:00:00	305	11	113	2	211	12	0	0	0	0	0	0	1	0	0	0	3	0	20	0
17:15:00	324	19	123	10	224	13	0	0	0	0	0	0	1	0	0	0	3	0	20	0
17:30:00	338	14	131	8	242	18	0	0	0	0	0	0	1	0	0	0	3	0	20	0
17:45:00	351	13	133	2	253	11	0	0	0	0	0	0	1	0	0	0	3	0	21	1
18:00:00	365	14	140	7	265	12	0	0	0	0	0	0	1	0	0	0	4	1	21	0
18:15:00	365	0	140	0	265	0	0	0	0	0	0	0	1	0	0	0	4	0	21	0
18:15:15	365	0	140	0	265	0	0	0	0	0	0	0	1	0	0	0	4	0	21	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

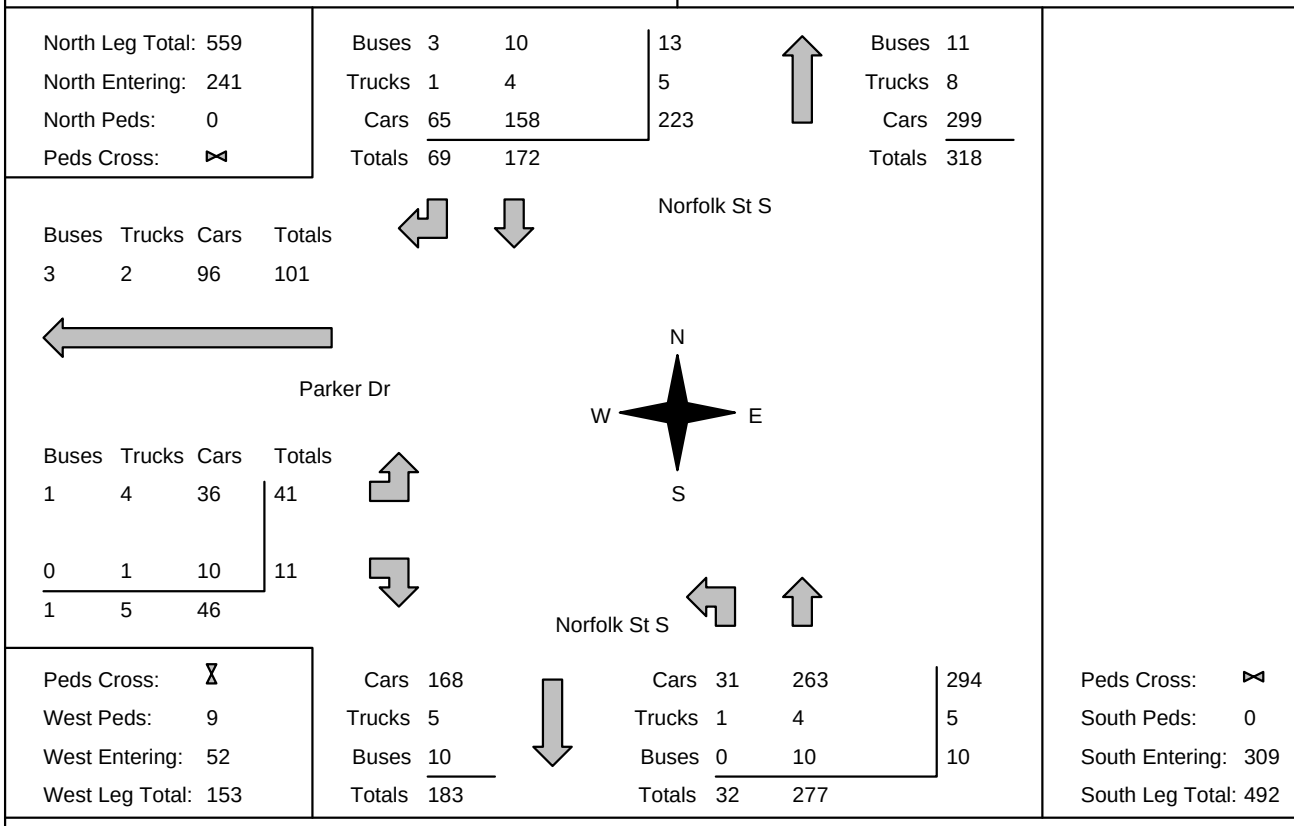
Municipality: Norfolk
Site #: 2204400002
Intersection: Norfolk St S & Parker Dr
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Norfolk St S runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

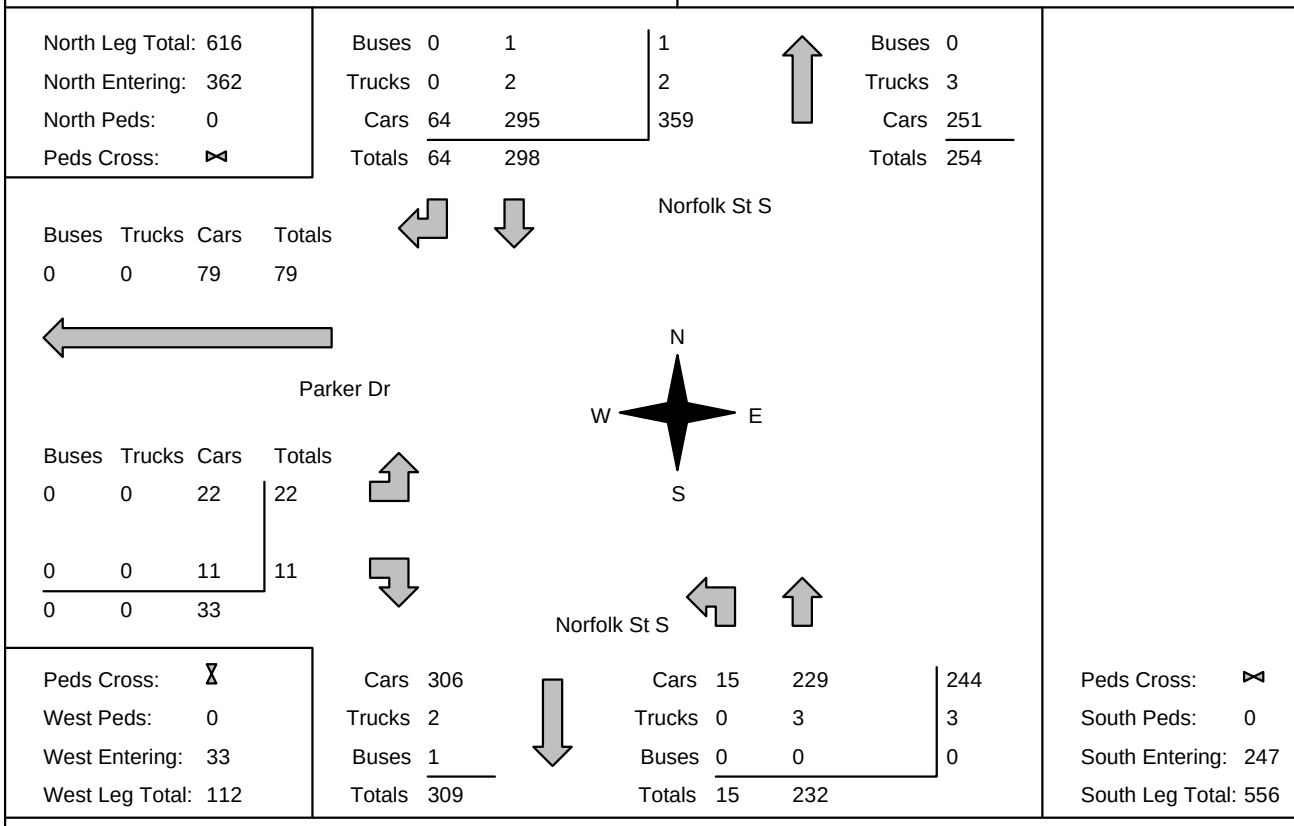
Municipality: Norfolk
Site #: 2204400002
Intersection: Norfolk St S & Parker Dr
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Norfolk St S runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Total Count Diagram

Municipality: Norfolk
Site #: 2204400002
Intersection: Norfolk St S & Parker Dr
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Norfolk St S runs N/S

North Leg Total: 2990
North Entering: 1639
North Peds: 0
Peds Cross: ⋈

Buses	6	18	24
Trucks	3	18	21
Cars	359	1235	1594
Totals	368	1271	

Buses	19
Trucks	22
Cars	1310
Totals	1351

Norfolk St S

Buses	Trucks	Cars	Totals
6	4	497	507

Parker Dr

N
W E
S

Buses	Trucks	Cars	Totals
5	4	130	139
1	1	49	51
6	5	179	

Norfolk St S

Peds Cross: ⧖
West Peds: 25
West Entering: 190
West Leg Total: 697

Cars	1284		
Trucks	19		
Buses	19		
Totals	1322		

Cars	138	1180	1318
Trucks	1	18	19
Buses	0	14	14
Totals	139	1212	

Peds Cross: ⋈
South Peds: 1
South Entering: 1351
South Leg Total: 2673

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Traffic Count Summary

Intersection: Norfolk St S & Parker Dr | **Count Date:** 30-Mar-22 | **Municipality:** Norfolk

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	130	51	181	0
9:00:00	0	172	69	241	0
10:00:00	0	142	69	211	0
15:00:00	0	0	0	0	0
16:00:00	0	263	74	337	0
17:00:00	0	298	64	362	0
18:00:00	0	266	41	307	0
Totals:	0	1271	368	1639	0

North/South Total Approaches: 2990

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	35	142	0	177	0
9:00:00	32	277	0	309	0
10:00:00	21	167	0	188	0
15:00:00	0	0	0	0	0
16:00:00	18	186	0	204	0
17:00:00	15	232	0	247	0
18:00:00	18	208	0	226	1
S Totals:	139	1212	0	1351	1

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0
10:00:00	0	0	0	0	0
15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	0
Totals:	0	0	0	0	0

East/West Total Approaches: 190

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	9	0	8	17	4
9:00:00	41	0	11	52	9
10:00:00	24	0	7	31	1
15:00:00	0	0	0	0	0
16:00:00	29	0	12	41	8
17:00:00	22	0	11	33	0
18:00:00	14	0	2	16	3
W Totals:	139	0	51	190	25

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	15:00	16:00	17:00	18:00
Crossing Values:	0	9	41	24	0	29	22	15

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Buses - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	23	23	9	9	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	50	27	22	13	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	95	45	34	12	0	0	2	1	1	1	0	0	0	0	0	0	0	0
8:00:00	0	0	126	31	49	15	0	0	3	1	2	1	0	0	1	1	0	0	0	0
8:15:00	0	0	153	27	59	10	0	0	4	1	3	1	0	0	2	1	2	2	0	0
8:30:00	0	0	193	40	73	14	0	0	5	1	3	0	0	0	3	1	2	0	0	0
8:45:00	0	0	242	49	91	18	0	0	6	1	3	0	0	0	7	4	3	1	0	0
9:00:00	0	0	284	42	114	23	0	0	7	1	3	0	0	0	11	4	3	0	0	0
9:15:00	0	0	318	34	131	17	0	0	8	1	3	0	0	0	11	0	4	1	0	0
9:30:00	0	0	355	37	144	13	0	0	9	1	3	0	0	0	11	0	4	0	0	0
9:45:00	0	0	386	31	171	27	0	0	9	0	3	0	0	0	12	1	4	0	0	0
10:00:00	0	0	423	37	182	11	0	0	9	0	3	0	0	0	12	0	4	0	0	0
10:15:00	0	0	423	0	182	0	0	0	9	0	3	0	0	0	12	0	4	0	0	0
15:00:00	0	0	423	0	182	0	0	0	9	0	3	0	0	0	12	0	4	0	0	0
15:15:00	0	0	493	70	208	26	0	0	11	2	3	0	0	0	16	4	4	0	0	0
15:30:00	0	0	545	52	229	21	0	0	13	2	3	0	0	0	17	1	5	1	0	0
15:45:00	0	0	606	61	245	16	0	0	14	1	3	0	0	0	17	0	5	0	0	0
16:00:00	0	0	675	69	255	10	0	0	15	1	3	0	0	0	17	0	5	0	0	0
16:15:00	0	0	749	74	271	16	0	0	15	0	3	0	0	0	17	0	5	0	0	0
16:30:00	0	0	824	75	288	17	0	0	15	0	3	0	0	0	18	1	5	0	0	0
16:45:00	0	0	905	81	303	15	0	0	17	2	3	0	0	0	18	0	5	0	0	0
17:00:00	0	0	970	65	319	16	0	0	17	0	3	0	0	0	18	0	5	0	0	0
17:15:00	0	0	1053	83	330	11	0	0	17	0	3	0	0	0	18	0	5	0	0	0
17:30:00	0	0	1119	66	342	12	0	0	18	1	3	0	0	0	18	0	5	0	0	0
17:45:00	0	0	1187	68	350	8	0	0	18	0	3	0	0	0	18	0	5	0	0	0
18:00:00	0	0	1235	48	359	9	0	0	18	0	3	0	0	0	18	0	6	1	0	0
18:15:00	0	0	1235	0	359	0	0	0	18	0	3	0	0	0	18	0	6	0	0	0
18:15:15	0	0	1235	0	359	0	0	0	18	0	3	0	0	0	18	0	6	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Buses - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Buses - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	6	6	24	24	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	16	10	51	27	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:45:00	18	2	87	36	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0
8:00:00	35	17	139	52	0	0	0	0	1	0	0	0	0	0	2	1	0	0	0	0
8:15:00	44	9	199	60	0	0	0	0	2	1	0	0	0	0	4	2	0	0	0	0
8:30:00	52	8	267	68	0	0	1	1	3	1	0	0	0	0	5	1	0	0	0	0
8:45:00	58	6	331	64	0	0	1	0	4	1	0	0	0	0	12	7	0	0	0	0
9:00:00	66	8	402	71	0	0	1	0	5	1	0	0	0	0	12	0	0	0	0	0
9:15:00	69	3	435	33	0	0	1	0	7	2	0	0	0	0	12	0	0	0	0	0
9:30:00	76	7	479	44	0	0	1	0	8	1	0	0	0	0	12	0	0	0	0	0
9:45:00	81	5	522	43	0	0	1	0	12	4	0	0	0	0	12	0	0	0	0	0
10:00:00	87	6	562	40	0	0	1	0	12	0	0	0	0	0	12	0	0	0	0	0
10:15:00	87	0	562	0	0	0	1	0	12	0	0	0	0	0	12	0	0	0	0	0
15:00:00	87	0	562	0	0	0	1	0	12	0	0	0	0	0	12	0	0	0	0	0
15:15:00	93	6	599	37	0	0	1	0	12	0	0	0	0	0	12	0	0	0	0	0
15:30:00	97	4	643	44	0	0	1	0	12	0	0	0	0	0	12	0	0	0	0	0
15:45:00	101	4	699	56	0	0	1	0	13	1	0	0	0	0	12	0	0	0	0	0
16:00:00	105	4	745	46	0	0	1	0	13	0	0	0	0	0	14	2	0	0	0	0
16:15:00	111	6	808	63	0	0	1	0	15	2	0	0	0	0	14	0	0	0	0	0
16:30:00	113	2	865	57	0	0	1	0	15	0	0	0	0	0	14	0	0	0	0	0
16:45:00	116	3	911	46	0	0	1	0	15	0	0	0	0	0	14	0	0	0	0	0
17:00:00	120	4	974	63	0	0	1	0	16	1	0	0	0	0	14	0	0	0	0	0
17:15:00	126	6	1038	64	0	0	1	0	17	1	0	0	0	0	14	0	0	0	0	0
17:30:00	130	4	1106	68	0	0	1	0	17	0	0	0	0	0	14	0	0	0	0	0
17:45:00	135	5	1147	41	0	0	1	0	18	1	0	0	0	0	14	0	0	0	1	1
18:00:00	138	3	1180	33	0	0	1	0	18	0	0	0	0	0	14	0	0	0	1	0
18:15:00	138	0	1180	0	0	0	1	0	18	0	0	0	0	0	14	0	0	0	1	0
18:15:15	138	0	1180	0	0	0	1	0	18	0	0	0	0	0	14	0	0	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Buses - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	6	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	8	2	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	3	3
8:00:00	9	1	0	0	8	4	0	0	0	0	0	0	0	0	0	0	0	0	4	1
8:15:00	10	1	0	0	9	1	2	2	0	0	0	0	0	0	0	0	0	0	4	0
8:30:00	11	1	0	0	14	5	3	1	0	0	0	0	0	0	0	0	0	0	4	0
8:45:00	26	15	0	0	17	3	3	0	0	0	1	1	1	1	0	0	0	0	10	6
9:00:00	45	19	0	0	18	1	4	1	0	0	1	0	1	0	0	0	0	0	13	3
9:15:00	52	7	0	0	21	3	4	0	0	0	1	0	1	0	0	0	0	0	13	0
9:30:00	55	3	0	0	22	1	4	0	0	0	1	0	1	0	0	0	0	0	13	0
9:45:00	63	8	0	0	23	1	4	0	0	0	1	0	1	0	0	0	0	0	13	0
10:00:00	69	6	0	0	25	2	4	0	0	0	1	0	1	0	0	0	0	0	14	1
10:15:00	69	0	0	0	25	0	4	0	0	0	1	0	1	0	0	0	0	0	14	0
15:00:00	69	0	0	0	25	0	4	0	0	0	1	0	1	0	0	0	0	0	14	0
15:15:00	74	5	0	0	25	0	4	0	0	0	1	0	1	0	0	0	0	0	14	0
15:30:00	82	8	0	0	30	5	4	0	0	0	1	0	5	4	0	0	1	1	22	8
15:45:00	90	8	0	0	32	2	4	0	0	0	1	0	5	0	0	0	1	0	22	0
16:00:00	94	4	0	0	36	4	4	0	0	0	1	0	5	0	0	0	1	0	22	0
16:15:00	105	11	0	0	40	4	4	0	0	0	1	0	5	0	0	0	1	0	22	0
16:30:00	111	6	0	0	42	2	4	0	0	0	1	0	5	0	0	0	1	0	22	0
16:45:00	113	2	0	0	45	3	4	0	0	0	1	0	5	0	0	0	1	0	22	0
17:00:00	116	3	0	0	47	2	4	0	0	0	1	0	5	0	0	0	1	0	22	0
17:15:00	118	2	0	0	48	1	4	0	0	0	1	0	5	0	0	0	1	0	23	1
17:30:00	124	6	0	0	49	1	4	0	0	0	1	0	5	0	0	0	1	0	23	0
17:45:00	127	3	0	0	49	0	4	0	0	0	1	0	5	0	0	0	1	0	24	1
18:00:00	130	3	0	0	49	0	4	0	0	0	1	0	5	0	0	0	1	0	25	1
18:15:00	130	0	0	0	49	0	4	0	0	0	1	0	5	0	0	0	1	0	25	0
18:15:15	130	0	0	0	49	0	4	0	0	0	1	0	5	0	0	0	1	0	25	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Norfolk
Site #: 2204400003
Intersection: Norfolk St S & Lynn Valley Rd
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Norfolk St S runs N/S

North Leg Total: 468
North Entering: 175
North Peds: 0
Peds Cross: ⋈

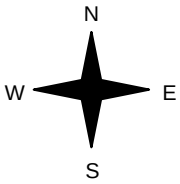
Buses	9	0	9
Trucks	8	0	8
Cars	152	6	158
Totals	169	6	

Buses	10
Trucks	7
Cars	276
Totals	293

East Leg Total: 33
East Entering: 19
East Peds: 0
Peds Cross: ⋈

Norfolk St S

Cars	Trucks	Buses	Totals
13	0	1	14
5	0	0	5
18	0	1	

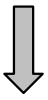


Lynn Valley Rd

Cars	Trucks	Buses	Totals
14	0	0	14

Norfolk St S

Cars	157
Trucks	8
Buses	9
Totals	174



Cars	263	8	271
Trucks	7	0	7
Buses	9	0	9
Totals	279	8	

Peds Cross: ⋈
South Peds: 0
South Entering: 287
South Leg Total: 461

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Norfolk
Site #: 2204400003
Intersection: Norfolk St S & Lynn Valley Rd
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

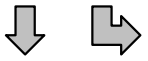
Major Road: Norfolk St S runs N/S

North Leg Total: 544
North Entering: 302
North Peds: 0
Peds Cross: ⋈

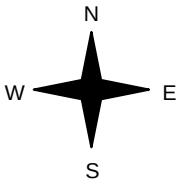
Buses	0	0	0
Trucks	4	0	4
Cars	278	20	298
Totals	282	20	

Buses	0
Trucks	3
Cars	239
Totals	242

East Leg Total: 49
East Entering: 20
East Peds: 0
Peds Cross: ⧗



Cars	Trucks	Buses	Totals
12	0	0	12
8	0	0	8
20	0	0	



Lynn Valley Rd

Cars	Trucks	Buses	Totals
29	0	0	29

Norfolk St S

Cars	286		
Trucks	4		
Buses	0		
Totals	290		

Cars	227	9	236
Trucks	3	0	3
Buses	0	0	0
Totals	230	9	

Peds Cross: ⋈
South Peds: 0
South Entering: 239
South Leg Total: 529

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Total Count Diagram

Municipality: Norfolk
Site #: 2204400003
Intersection: Norfolk St S & Lynn Valley Rd
TFR File #: 1
Count date: 30-Mar-22

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Norfolk St S runs N/S

North Leg Total: 2530
North Entering: 1247
North Peds: 0
Peds Cross: ⋈

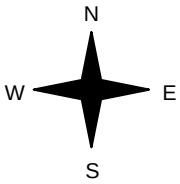
Buses	17	1	18
Trucks	26	0	26
Cars	1144	59	1203
Totals	1187	60	

Buses	13
Trucks	32
Cars	1238
Totals	1283

East Leg Total: 190
East Entering: 99
East Peds: 0
Peds Cross: ⋈

Norfolk St S

Cars	Trucks	Buses	Totals
59	0	2	61
36	0	2	38
95	0	4	

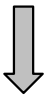


Lynn Valley Rd

Cars	Trucks	Buses	Totals
88	1	2	91

Norfolk St S

Cars	1180	Cars	1179	29	1208
Trucks	26	Trucks	32	1	33
Buses	19	Buses	11	1	12
Totals	1225	Totals	1222	31	



Peds Cross: ⋈
South Peds: 0
South Entering: 1253
South Leg Total: 2478

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Traffic Count Summary

Intersection: Norfolk St S & Lynn Valley Rd | **Count Date:** 30-Mar-22 | **Municipality:** Norfolk

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	6	114	0	120	0
9:00:00	6	169	0	175	0
10:00:00	4	128	0	132	0
15:00:00	0	0	0	0	0
16:00:00	10	253	0	263	0
17:00:00	21	273	0	294	0
18:00:00	13	250	0	263	0
Totals:	60	1187	0	1247	0

North/South Total Approaches: 2500

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	154	7	161	0
9:00:00	0	279	8	287	0
10:00:00	0	175	1	176	0
15:00:00	0	0	0	0	0
16:00:00	0	194	4	198	0
17:00:00	0	222	9	231	0
18:00:00	0	198	2	200	0
S Totals:	0	1222	31	1253	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	5	0	12	17	0
9:00:00	5	0	14	19	0
10:00:00	3	0	7	10	0
15:00:00	0	0	0	0	0
16:00:00	11	0	7	18	0
17:00:00	10	0	12	22	0
18:00:00	4	0	9	13	0
Totals:	38	0	61	99	0

East/West Total Approaches: 99

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0
10:00:00	0	0	0	0	0
15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	0
W Totals:	0	0	0	0	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	15:00	16:00	17:00	18:00
Crossing Values:	0	5	5	3	0	11	10	4

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Buses - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	20	20	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	3	2	43	23	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:45:00	4	1	80	37	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8:00:00	6	2	108	28	0	0	0	0	4	3	0	0	0	0	2	2	0	0	0	0
8:15:00	7	1	130	22	0	0	0	0	6	2	0	0	0	0	3	1	0	0	0	0
8:30:00	8	1	170	40	0	0	0	0	8	2	0	0	0	0	3	0	0	0	0	0
8:45:00	10	2	215	45	0	0	0	0	9	1	0	0	0	0	5	2	0	0	0	0
9:00:00	12	2	260	45	0	0	0	0	12	3	0	0	0	0	11	6	0	0	0	0
9:15:00	13	1	286	26	0	0	0	0	13	1	0	0	0	0	11	0	0	0	0	0
9:30:00	14	1	323	37	0	0	0	0	15	2	0	0	0	0	11	0	0	0	0	0
9:45:00	16	2	352	29	0	0	0	0	15	0	0	0	0	0	12	1	0	0	0	0
10:00:00	16	0	384	32	0	0	0	0	15	0	0	0	0	0	12	0	0	0	0	0
10:15:00	16	0	384	0	0	0	0	0	15	0	0	0	0	0	12	0	0	0	0	0
15:00:00	16	0	384	0	0	0	0	0	15	0	0	0	0	0	12	0	0	0	0	0
15:15:00	19	3	445	61	0	0	0	0	18	3	0	0	0	0	16	4	0	0	0	0
15:30:00	20	1	500	55	0	0	0	0	20	2	0	0	1	1	17	1	0	0	0	0
15:45:00	23	3	556	56	0	0	0	0	21	1	0	0	1	0	17	0	0	0	0	0
16:00:00	25	2	625	69	0	0	0	0	22	1	0	0	1	0	17	0	0	0	0	0
16:15:00	29	4	694	69	0	0	0	0	22	0	0	0	1	0	17	0	0	0	0	0
16:30:00	34	5	757	63	0	0	0	0	22	0	0	0	1	0	17	0	0	0	0	0
16:45:00	40	6	839	82	0	0	0	0	23	1	0	0	1	0	17	0	0	0	0	0
17:00:00	46	6	896	57	0	0	0	0	24	1	0	0	1	0	17	0	0	0	0	0
17:15:00	51	5	976	80	0	0	0	0	24	0	0	0	1	0	17	0	0	0	0	0
17:30:00	54	3	1035	59	0	0	0	0	26	2	0	0	1	0	17	0	0	0	0	0
17:45:00	58	4	1100	65	0	0	0	0	26	0	0	0	1	0	17	0	0	0	0	0
18:00:00	59	1	1144	44	0	0	0	0	26	0	0	0	1	0	17	0	0	0	0	0
18:15:00	59	0	1144	0	0	0	0	0	26	0	0	0	1	0	17	0	0	0	0	0
18:15:15	59	0	1144	0	0	0	0	0	26	0	0	0	1	0	17	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Buses - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	3	2	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	4	1	0	0	11	8	0	0	0	0	0	0	1	1	0	0	1	1	0	0
8:15:00	5	1	0	0	12	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0
8:30:00	7	2	0	0	16	4	0	0	0	0	0	0	1	0	0	0	1	0	0	0
8:45:00	9	2	0	0	21	5	0	0	0	0	0	0	1	0	0	0	2	1	0	0
9:00:00	9	0	0	0	24	3	0	0	0	0	0	0	1	0	0	0	2	0	0	0
9:15:00	10	1	0	0	26	2	0	0	0	0	0	0	1	0	0	0	2	0	0	0
9:30:00	11	1	0	0	30	4	0	0	0	0	0	0	1	0	0	0	2	0	0	0
9:45:00	12	1	0	0	30	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0
10:00:00	12	0	0	0	31	1	0	0	0	0	0	0	1	0	0	0	2	0	0	0
10:15:00	12	0	0	0	31	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0
15:00:00	12	0	0	0	31	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0
15:15:00	14	2	0	0	34	3	0	0	0	0	0	0	1	0	0	0	2	0	0	0
15:30:00	15	1	0	0	35	1	0	0	0	0	0	0	1	0	0	0	2	0	0	0
15:45:00	17	2	0	0	36	1	0	0	0	0	0	0	2	1	0	0	2	0	0	0
16:00:00	22	5	0	0	38	2	0	0	0	0	0	0	2	0	0	0	2	0	0	0
16:15:00	24	2	0	0	43	5	0	0	0	0	0	0	2	0	0	0	2	0	0	0
16:30:00	27	3	0	0	43	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0
16:45:00	30	3	0	0	46	3	0	0	0	0	0	0	2	0	0	0	2	0	0	0
17:00:00	32	2	0	0	50	4	0	0	0	0	0	0	2	0	0	0	2	0	0	0
17:15:00	34	2	0	0	52	2	0	0	0	0	0	0	2	0	0	0	2	0	0	0
17:30:00	35	1	0	0	55	3	0	0	0	0	0	0	2	0	0	0	2	0	0	0
17:45:00	35	0	0	0	57	2	0	0	0	0	0	0	2	0	0	0	2	0	0	0
18:00:00	36	1	0	0	59	2	0	0	0	0	0	0	2	0	0	0	2	0	0	0
18:15:00	36	0	0	0	59	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0
18:15:15	36	0	0	0	59	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Buses - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	26	26	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	57	31	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	99	42	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	153	54	5	4	0	0	1	0	1	1	0	0	0	0	1	1	0	0
8:15:00	0	0	222	69	8	3	0	0	2	1	1	0	0	0	2	2	1	0	0	0
8:30:00	0	0	285	63	10	2	0	0	5	3	1	0	0	0	3	1	1	0	0	0
8:45:00	0	0	357	72	11	1	0	0	7	2	1	0	0	0	9	6	1	0	0	0
9:00:00	0	0	416	59	13	2	0	0	8	1	1	0	0	0	9	0	1	0	0	0
9:15:00	0	0	450	34	13	0	0	0	11	3	1	0	0	0	9	0	1	0	0	0
9:30:00	0	0	494	44	13	0	0	0	13	2	1	0	0	0	9	0	1	0	0	0
9:45:00	0	0	537	43	14	1	0	0	18	5	1	0	0	0	9	0	1	0	0	0
10:00:00	0	0	580	43	14	0	0	0	19	1	1	0	0	0	9	0	1	0	0	0
10:15:00	0	0	580	0	14	0	0	0	19	0	1	0	0	0	9	0	1	0	0	0
15:00:00	0	0	580	0	14	0	0	0	19	0	1	0	0	0	9	0	1	0	0	0
15:15:00	0	0	617	37	14	0	0	0	20	1	1	0	0	0	9	0	1	0	0	0
15:30:00	0	0	662	45	14	0	0	0	21	1	1	0	0	0	9	0	1	0	0	0
15:45:00	0	0	725	63	16	2	0	0	24	3	1	0	0	0	10	1	1	0	0	0
16:00:00	0	0	767	42	18	2	0	0	24	0	1	0	0	0	11	1	1	0	0	0
16:15:00	0	0	830	63	19	1	0	0	28	4	1	0	0	0	11	0	1	0	0	0
16:30:00	0	0	875	45	20	1	0	0	28	0	1	0	0	0	11	0	1	0	0	0
16:45:00	0	0	917	42	25	5	0	0	29	1	1	0	0	0	11	0	1	0	0	0
17:00:00	0	0	983	66	27	2	0	0	30	1	1	0	0	0	11	0	1	0	0	0
17:15:00	0	0	1043	60	29	2	0	0	31	1	1	0	0	0	11	0	1	0	0	0
17:30:00	0	0	1102	59	29	0	0	0	31	0	1	0	0	0	11	0	1	0	0	0
17:45:00	0	0	1144	42	29	0	0	0	32	1	1	0	0	0	11	0	1	0	0	0
18:00:00	0	0	1179	35	29	0	0	0	32	0	1	0	0	0	11	0	1	0	0	0
18:15:00	0	0	1179	0	29	0	0	0	32	0	1	0	0	0	11	0	1	0	0	0
18:15:15	0	0	1179	0	29	0	0	0	32	0	1	0	0	0	11	0	1	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Count Date: 30-Mar-22 Site #: 2204400003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Buses - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX B
Signal Timing Plan & Synchro Timing Reports

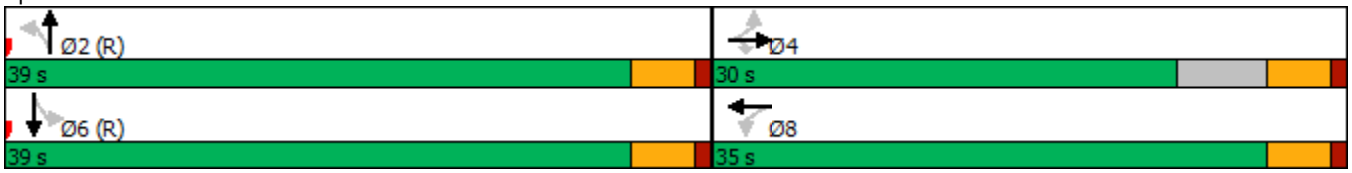
PHASE	1	2	3	4	5	6	7	8
MIN. GREEN	5	33	5	15	5	33	0	15
WALK		23	0	13	0	23	0	5
PED CLEAR	7	10	7	7	0	10	7	7
VEH EXT	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
MAX EXT	0	4	0	0	0	0	0	0
MAX 1	10	39	35	20	10	39	35	35
MAX 2		40	40	40	40	40	40	40

DARNELL – TIMINGS FOR DECOU AND HWY AND HWY #24

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	48	19	29	32	9	18	282	27	180
Future Volume (vph)	48	19	29	32	9	18	282	27	180
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	15.0	15.0	15.0	5.0	5.0	33.0	33.0	33.0	33.0
Minimum Split (s)	24.5	24.5	24.5	22.5	22.5	37.5	37.5	37.5	37.5
Total Split (s)	30.0	30.0	30.0	35.0	35.0	39.0	39.0	39.0	39.0
Total Split (%)	40.5%	40.5%	40.5%	47.3%	47.3%	52.7%	52.7%	52.7%	52.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		30.5	30.5	30.5	30.5		34.5		34.5
Actuated g/C Ratio		0.41	0.41	0.41	0.41		0.47		0.47
v/c Ratio		0.12	0.05	0.07	0.10		0.23		0.17
Control Delay		14.1	5.4	13.7	5.4		12.0		11.5
Queue Delay		0.0	0.0	0.0	0.0		0.0		0.0
Total Delay		14.1	5.4	13.7	5.4		12.0		11.5
LOS		B	A	B	A		B		B
Approach Delay		11.5			8.2		12.0		11.5
Approach LOS		B			A		B		B

Intersection Summary	
Cycle Length: 74	
Actuated Cycle Length: 74	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 11.3	Intersection LOS: B
Intersection Capacity Utilization 55.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S



APPENDIX C

Synchro Analysis Reports

Intersection Capacity Analysis Output

- Existing Traffic Conditions 2022
- Future Background Conditions 2029 & 2034
- Future Total Conditions 2029 & 2034

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	19	29	32	9	55	18	282	16	27	180	7
Future Volume (veh/h)	48	19	29	32	9	55	18	282	16	27	180	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1856	1811	1885	1767	1885	1811	1707	1885	1781	1885
Adj Flow Rate, veh/h	52	21	32	35	10	60	20	307	17	29	196	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	3	6	1	9	1	6	13	1	8	1
Cap, veh/h	485	183	648	579	96	577	107	1437	78	199	1278	53
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	975	444	1572	1308	233	1400	113	3082	167	298	2741	113
Grp Volume(v), veh/h	73	0	32	35	0	70	180	0	164	120	0	113
Grp Sat Flow(s),veh/h/ln	1419	0	1572	1308	0	1633	1745	0	1618	1552	0	1601
Q Serve(g_s), s	1.3	0.0	0.9	1.3	0.0	1.9	0.0	0.0	4.5	0.0	0.0	3.0
Cycle Q Clear(g_c), s	3.2	0.0	0.9	4.5	0.0	1.9	4.4	0.0	4.5	2.8	0.0	3.0
Prop In Lane	0.71		1.00	1.00		0.86	0.11		0.10	0.24		0.07
Lane Grp Cap(c), veh/h	668	0	648	579	0	673	867	0	754	784	0	746
V/C Ratio(X)	0.11	0.00	0.05	0.06	0.00	0.10	0.21	0.00	0.22	0.15	0.00	0.15
Avail Cap(c_a), veh/h	668	0	648	579	0	673	867	0	754	784	0	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	13.1	15.2	0.0	13.4	11.7	0.0	11.7	11.3	0.0	11.3
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.2	0.0	0.3	0.5	0.0	0.7	0.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.2	0.2	0.0	0.4	0.7	0.0	0.7	0.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	13.2	15.4	0.0	13.7	12.2	0.0	12.4	11.7	0.0	11.8
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		105			105			344			233	
Approach Delay, s/veh		13.8			14.2			12.3			11.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		6.5		5.2		5.0		6.5				
Green Ext Time (p_c), s		4.6		0.9		3.1		1.0				

Intersection Summary												
HCM 6th Ctrl Delay			12.6									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	16.6	9.6	10.6	15.1	24.8	21.7	24.6	15.1
Average Queue (m)	9.3	5.1	5.5	6.7	14.3	12.6	15.7	7.8
95th Queue (m)	20.0	13.4	13.7	16.9	26.9	24.8	29.6	18.3
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	11	32	277	172	69
Future Vol, veh/h	41	11	32	277	172	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	9	3	5	8	6
Mvmt Flow	45	12	35	301	187	75

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	446	131	262	0	-	0
Stage 1	225	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Critical Hdwy	7.04	7.08	4.16	-	-	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.62	3.39	2.23	-	-	-
Pot Cap-1 Maneuver	516	872	1292	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	499	872	1292	-	-	-
Mov Cap-2 Maneuver	499	-	-	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1292	-	549	-	-
HCM Lane V/C Ratio	0.027	-	0.103	-	-
HCM Control Delay (s)	7.9	0.1	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	293	0	0	183
Future Vol, veh/h	0	0	293	0	0	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	0	0	318	0	0	199

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	517	318	0	0	318	0
Stage 1	318	-	-	-	-	-
Stage 2	199	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	518	723	-	-	1242	-
Stage 1	738	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	518	723	-	-	1242	-
Mov Cap-2 Maneuver	518	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	835	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1242	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	293	0	0	183
Future Vol, veh/h	0	0	293	0	0	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	0	0	318	0	0	199

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	517	318	0	0	318	0
Stage 1	318	-	-	-	-	-
Stage 2	199	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	518	723	-	-	1242	-
Stage 1	738	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	518	723	-	-	1242	-
Mov Cap-2 Maneuver	518	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	835	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1242	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	14	279	8	6	169
Future Vol, veh/h	5	14	279	8	6	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	7	6	1	1	10
Mvmt Flow	5	15	303	9	7	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	506	308	0	0	312	0
Stage 1	308	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.41	6.27	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.363	-	-	2.209	-
Pot Cap-1 Maneuver	528	720	-	-	1254	-
Stage 1	748	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	525	720	-	-	1254	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	833	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	656	1254	-
HCM Lane V/C Ratio	-	-	0.031	0.005	-
HCM Control Delay (s)	-	-	10.7	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	31	57	21	14	47	22	206	16	57	291	7
Future Volume (veh/h)	63	31	57	21	14	47	22	206	16	57	291	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	34	62	23	15	51	24	224	17	62	316	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	216	653	566	154	523	156	1369	103	266	1295	33
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	925	524	1585	1300	373	1269	212	2936	221	433	2778	71
Grp Volume(v), veh/h	102	0	62	23	0	66	137	0	128	195	0	191
Grp Sat Flow(s),veh/h/ln	1449	0	1585	1300	0	1642	1707	0	1662	1592	0	1689
Q Serve(g_s), s	2.0	0.0	1.8	0.9	0.0	1.8	0.0	0.0	3.3	0.4	0.0	5.0
Cycle Q Clear(g_c), s	3.8	0.0	1.8	4.7	0.0	1.8	3.1	0.0	3.3	4.7	0.0	5.0
Prop In Lane	0.67		1.00	1.00		0.77	0.17		0.13	0.32		0.04
Lane Grp Cap(c), veh/h	678	0	653	566	0	677	853	0	775	807	0	788
V/C Ratio(X)	0.15	0.00	0.09	0.04	0.00	0.10	0.16	0.00	0.16	0.24	0.00	0.24
Avail Cap(c_a), veh/h	678	0	653	566	0	677	853	0	775	807	0	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	13.3	15.4	0.0	13.3	11.4	0.0	11.4	11.8	0.0	11.9
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.1	0.0	0.3	0.4	0.0	0.5	0.7	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.3	0.1	0.0	0.3	0.5	0.0	0.5	0.8	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.4	0.0	13.6	15.5	0.0	13.6	11.8	0.0	11.9	12.5	0.0	12.6
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		164			89			265			386	
Approach Delay, s/veh		14.1			14.1			11.8			12.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		5.3		5.8		7.0		6.7				
Green Ext Time (p_c), s		3.5		1.5		5.2		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			12.8									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	16.0	14.4	12.7	16.0	18.3	18.0	36.2	20.1
Average Queue (m)	10.2	6.9	4.7	7.2	11.6	10.1	26.1	9.7
95th Queue (m)	18.8	17.7	14.4	18.6	20.7	21.6	42.8	22.9
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	11	15	232	298	64
Future Vol, veh/h	22	11	15	232	298	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	12	16	252	324	70

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	517	197	394	0	-	0
Stage 1	359	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	488	811	1161	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	854	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	480	811	1161	-	-	-
Mov Cap-2 Maneuver	480	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	854	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1161	-	556	-	-
HCM Lane V/C Ratio	0.014	-	0.065	-	-
HCM Control Delay (s)	8.1	0.1	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	242	0	0	259
Future Vol, veh/h	0	0	242	0	0	259
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	263	0	0	282

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	545	263	0	0	263	0
Stage 1	263	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	499	776	-	-	1301	-
Stage 1	781	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	499	776	-	-	1301	-
Mov Cap-2 Maneuver	499	-	-	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	766	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1301	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	242	0	0	259
Future Vol, veh/h	0	0	242	0	0	259
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	263	0	0	282

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	545	263	0	0	263	0
Stage 1	263	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	499	776	-	-	1301	-
Stage 1	781	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	499	776	-	-	1301	-
Mov Cap-2 Maneuver	499	-	-	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	766	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1301	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

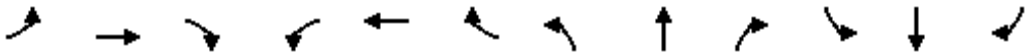
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	12	230	9	20	282
Future Vol, veh/h	8	12	230	9	20	282
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	13	250	10	22	307

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	606	255	0	0	260	0
Stage 1	255	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	460	784	-	-	1304	-
Stage 1	788	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	451	784	-	-	1304	-
Mov Cap-2 Maneuver	451	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	605	1304	-
HCM Lane V/C Ratio	-	-	0.036	0.017	-
HCM Control Delay (s)	-	-	11.2	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	23	34	46	13	78	21	324	24	35	207	9
Future Volume (veh/h)	56	23	34	46	13	78	21	324	24	35	207	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1856	1811	1885	1767	1885	1811	1707	1885	1781	1885
Adj Flow Rate, veh/h	61	25	37	50	14	85	23	352	26	38	225	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	3	6	1	9	1	6	13	1	8	1
Cap, veh/h	464	177	648	551	95	578	105	1409	102	218	1230	56
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	924	429	1572	1298	231	1402	110	3021	219	334	2638	119
Grp Volume(v), veh/h	86	0	37	50	0	99	210	0	191	139	0	134
Grp Sat Flow(s),veh/h/ln	1353	0	1572	1298	0	1633	1741	0	1609	1491	0	1600
Q Serve(g_s), s	1.8	0.0	1.0	1.9	0.0	2.8	0.0	0.0	5.3	0.0	0.0	3.6
Cycle Q Clear(g_c), s	4.6	0.0	1.0	6.5	0.0	2.8	5.2	0.0	5.3	5.3	0.0	3.6
Prop In Lane	0.71		1.00	1.00		0.86	0.11		0.14	0.27		0.07
Lane Grp Cap(c), veh/h	641	0	648	551	0	673	866	0	750	757	0	746
V/C Ratio(X)	0.13	0.00	0.06	0.09	0.00	0.15	0.24	0.00	0.26	0.18	0.00	0.18
Avail Cap(c_a), veh/h	641	0	648	551	0	673	866	0	750	757	0	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	13.1	16.3	0.0	13.6	11.9	0.0	12.0	11.4	0.0	11.5
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.3	0.0	0.5	0.7	0.0	0.8	0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.2	0.3	0.0	0.5	0.9	0.0	0.8	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	0.0	13.3	16.6	0.0	14.1	12.6	0.0	12.8	12.0	0.0	12.0
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		123			149			401			273	
Approach Delay, s/veh		14.3			14.9			12.7			12.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		7.3		6.6		7.3		8.5				
Green Ext Time (p_c), s		5.4		1.1		3.6		1.5				

Intersection Summary												
HCM 6th Ctrl Delay			13.0									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	17.6	12.2	13.9	19.5	24.3	26.7	28.4	15.4
Average Queue (m)	10.2	5.0	6.9	10.8	14.8	16.5	18.1	7.4
95th Queue (m)	21.4	14.0	16.7	23.1	27.6	30.5	33.7	18.3
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	13	37	323	205	82
Future Vol, veh/h	49	13	37	323	205	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	9	3	5	8	6
Mvmt Flow	53	14	40	351	223	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	524	156	312	0	-	0
Stage 1	268	-	-	-	-	-
Stage 2	256	-	-	-	-	-
Critical Hdwy	7.04	7.08	4.16	-	-	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.62	3.39	2.23	-	-	-
Pot Cap-1 Maneuver	459	840	1238	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	441	840	1238	-	-	-
Mov Cap-2 Maneuver	441	-	-	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1238	-	490	-	-
HCM Lane V/C Ratio	0.032	-	0.138	-	-
HCM Control Delay (s)	8	0.1	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	341	0	0	218
Future Vol, veh/h	0	0	341	0	0	218
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	0	0	371	0	0	237

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	608	371	0	0	371	0
Stage 1	371	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	459	675	-	-	1188	-
Stage 1	698	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	459	675	-	-	1188	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1188	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	341	0	0	218
Future Vol, veh/h	0	0	341	0	0	218
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	0	0	371	0	0	237

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	608	371	0	0	371	0
Stage 1	371	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	459	675	-	-	1188	-
Stage 1	698	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	459	675	-	-	1188	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1188	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	17	325	10	7	202
Future Vol, veh/h	6	17	325	10	7	202
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	7	6	1	1	10
Mvmt Flow	7	18	353	11	8	220

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	595	359	0	0	364	0
Stage 1	359	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.41	6.27	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.363	-	-	2.209	-
Pot Cap-1 Maneuver	469	674	-	-	1200	-
Stage 1	709	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	465	674	-	-	1200	-
Mov Cap-2 Maneuver	465	-	-	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	800	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	603	1200	-
HCM Lane V/C Ratio	-	-	0.041	0.006	-
HCM Control Delay (s)	-	-	11.2	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	42	66	30	19	64	26	237	28	80	335	9
Future Volume (veh/h)	73	42	66	30	19	64	26	237	28	80	335	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	46	72	33	21	70	28	258	30	87	364	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	430	234	653	533	156	521	152	1311	151	299	1207	34
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	851	567	1585	1274	379	1264	204	2812	323	498	2589	72
Grp Volume(v), veh/h	125	0	72	33	0	91	164	0	152	226	0	235
Grp Sat Flow(s),veh/h/ln	1417	0	1585	1274	0	1643	1696	0	1644	1470	0	1689
Q Serve(g_s), s	2.7	0.0	2.1	1.3	0.0	2.6	0.0	0.0	4.0	3.1	0.0	6.4
Cycle Q Clear(g_c), s	5.2	0.0	2.1	6.5	0.0	2.6	3.8	0.0	4.0	7.2	0.0	6.4
Prop In Lane	0.63		1.00	1.00		0.77	0.17		0.20	0.38		0.04
Lane Grp Cap(c), veh/h	664	0	653	533	0	677	848	0	766	753	0	787
V/C Ratio(X)	0.19	0.00	0.11	0.06	0.00	0.13	0.19	0.00	0.20	0.30	0.00	0.30
Avail Cap(c_a), veh/h	664	0	653	533	0	677	848	0	766	753	0	787
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	13.4	16.5	0.0	13.5	11.6	0.0	11.6	12.3	0.0	12.2
Incr Delay (d2), s/veh	0.6	0.0	0.3	0.2	0.0	0.4	0.5	0.0	0.6	1.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	0.2	0.0	0.5	0.7	0.0	0.6	1.0	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	0.0	13.7	16.7	0.0	13.9	12.1	0.0	12.2	13.3	0.0	13.2
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		197			124			316			461	
Approach Delay, s/veh		14.5			14.7			12.1			13.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		6.0		7.2		9.2		8.5				
Green Ext Time (p_c), s		4.3		1.9		6.3		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			13.3									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	21.5	10.9	10.2	12.5	20.5	19.1	45.3	22.6
Average Queue (m)	14.3	5.7	5.2	7.4	12.8	10.9	31.5	10.7
95th Queue (m)	26.2	14.0	13.6	15.6	24.0	21.6	48.0	26.7
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	13	18	275	347	75
Future Vol, veh/h	27	13	18	275	347	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	14	20	299	377	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	608	230	459	0	-	0
Stage 1	418	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	427	772	1098	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	418	772	1098	-	-	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	823	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1098	-	491	-	-
HCM Lane V/C Ratio	0.018	-	0.089	-	-
HCM Control Delay (s)	8.3	0.1	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	286	0	0	302
Future Vol, veh/h	0	0	286	0	0	302
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	311	0	0	328

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	639	311	0	0	311	0
Stage 1	311	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	440	729	-	-	1249	-
Stage 1	743	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	440	729	-	-	1249	-
Mov Cap-2 Maneuver	440	-	-	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	730	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1249	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	286	0	0	302
Future Vol, veh/h	0	0	286	0	0	302
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	311	0	0	328

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	639	311	0	0	311	0
Stage 1	311	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	440	729	-	-	1249	-
Stage 1	743	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	440	729	-	-	1249	-
Mov Cap-2 Maneuver	440	-	-	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	730	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1249	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

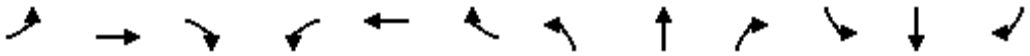
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	14	273	11	23	328
Future Vol, veh/h	10	14	273	11	23	328
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	15	297	12	25	357

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	710	303	0	0	309	0
Stage 1	303	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	400	737	-	-	1252	-
Stage 1	749	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	390	737	-	-	1252	-
Mov Cap-2 Maneuver	390	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	655	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	538	1252	-
HCM Lane V/C Ratio	-	-	0.048	0.02	-
HCM Control Delay (s)	-	-	12	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	26	37	50	14	84	23	358	26	38	229	9
Future Volume (veh/h)	61	26	37	50	14	84	23	358	26	38	229	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1856	1811	1885	1767	1885	1811	1707	1885	1781	1885
Adj Flow Rate, veh/h	66	28	40	54	15	91	25	389	28	41	249	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	3	6	1	9	1	6	13	1	8	1
Cap, veh/h	456	180	648	540	95	578	104	1411	100	211	1224	50
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	905	436	1572	1291	231	1402	108	3028	213	320	2626	107
Grp Volume(v), veh/h	94	0	40	54	0	106	231	0	211	151	0	149
Grp Sat Flow(s),veh/h/ln	1342	0	1572	1291	0	1633	1739	0	1610	1452	0	1602
Q Serve(g_s), s	2.1	0.0	1.1	2.1	0.0	3.0	0.0	0.0	6.0	0.1	0.0	4.1
Cycle Q Clear(g_c), s	5.1	0.0	1.1	7.2	0.0	3.0	5.8	0.0	6.0	6.0	0.0	4.1
Prop In Lane	0.70		1.00	1.00		0.86	0.11		0.13	0.27		0.07
Lane Grp Cap(c), veh/h	636	0	648	540	0	673	865	0	750	739	0	747
V/C Ratio(X)	0.15	0.00	0.06	0.10	0.00	0.16	0.27	0.00	0.28	0.20	0.00	0.20
Avail Cap(c_a), veh/h	636	0	648	540	0	673	865	0	750	739	0	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	13.1	16.7	0.0	13.7	12.1	0.0	12.1	11.5	0.0	11.6
Incr Delay (d2), s/veh	0.5	0.0	0.2	0.4	0.0	0.5	0.8	0.0	0.9	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.2	0.4	0.0	0.6	1.0	0.0	0.9	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	13.3	17.0	0.0	14.2	12.8	0.0	13.1	12.1	0.0	12.2
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		134			160			442			300	
Approach Delay, s/veh		14.4			15.1			12.9			12.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		8.0		7.1		8.0		9.2				
Green Ext Time (p_c), s		6.0		1.2		4.0		1.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.3									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	21.5	9.7	15.1	18.6	28.8	30.1	30.7	20.8
Average Queue (m)	11.4	5.1	7.2	10.1	19.0	17.0	19.6	9.8
95th Queue (m)	23.9	13.4	17.2	24.3	32.0	33.6	36.4	25.2
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)				1				
Queuing Penalty (veh)				0				

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	14	41	356	226	90
Future Vol, veh/h	53	14	41	356	226	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	9	3	5	8	6
Mvmt Flow	58	15	45	387	246	98

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	579	172	344	0	-	0
Stage 1	295	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	7.04	7.08	4.16	-	-	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.62	3.39	2.23	-	-	-
Pot Cap-1 Maneuver	423	820	1205	-	-	-
Stage 1	701	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	403	820	1205	-	-	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1205	-	451	-	-
HCM Lane V/C Ratio	0.037	-	0.161	-	-
HCM Control Delay (s)	8.1	0.2	14.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	376	0	0	240
Future Vol, veh/h	0	0	376	0	0	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	0	0	409	0	0	261

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	670	409	0	0	409	0
Stage 1	409	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	422	642	-	-	1150	-
Stage 1	671	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	422	642	-	-	1150	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1150	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	376	0	0	240
Future Vol, veh/h	0	0	376	0	0	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	0	0	409	0	0	261

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	670	409	0	0	409	0
Stage 1	409	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	422	642	-	-	1150	-
Stage 1	671	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	422	642	-	-	1150	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1150	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

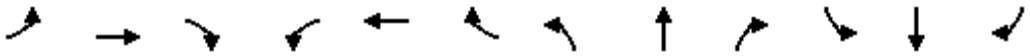
Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	18	358	11	8	222
Future Vol, veh/h	7	18	358	11	8	222
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	7	6	1	1	10
Mvmt Flow	8	20	389	12	9	241

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	654	395	0	0	401	0
Stage 1	395	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.41	6.27	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.363	-	-	2.209	-
Pot Cap-1 Maneuver	433	643	-	-	1163	-
Stage 1	683	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	429	643	-	-	1163	-
Mov Cap-2 Maneuver	429	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	780	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	564	1163	-
HCM Lane V/C Ratio	-	-	0.048	0.007	-
HCM Control Delay (s)	-	-	11.7	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	46	73	32	20	70	28	262	30	87	370	9
Future Volume (veh/h)	80	46	73	32	20	70	28	262	30	87	370	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	50	79	35	22	76	30	285	33	95	402	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	427	229	653	516	152	525	148	1313	150	293	1198	30
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	844	555	1585	1261	368	1273	196	2816	322	485	2570	65
Grp Volume(v), veh/h	137	0	79	35	0	98	180	0	168	246	0	261
Grp Sat Flow(s),veh/h/ln	1399	0	1585	1261	0	1641	1690	0	1644	1429	0	1690
Q Serve(g_s), s	3.2	0.0	2.3	1.4	0.0	2.8	0.0	0.0	4.5	4.1	0.0	7.2
Cycle Q Clear(g_c), s	5.9	0.0	2.3	7.3	0.0	2.8	4.2	0.0	4.5	8.6	0.0	7.2
Prop In Lane	0.64		1.00	1.00		0.78	0.17		0.20	0.39		0.04
Lane Grp Cap(c), veh/h	656	0	653	516	0	676	845	0	766	734	0	788
V/C Ratio(X)	0.21	0.00	0.12	0.07	0.00	0.14	0.21	0.00	0.22	0.34	0.00	0.33
Avail Cap(c_a), veh/h	656	0	653	516	0	676	845	0	766	734	0	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	13.5	17.0	0.0	13.6	11.7	0.0	11.7	12.7	0.0	12.5
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.3	0.0	0.5	0.6	0.0	0.7	1.2	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	0.2	0.0	0.5	0.7	0.0	0.7	1.1	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	0.0	13.8	17.2	0.0	14.0	12.2	0.0	12.4	13.9	0.0	13.6
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		216			133			348			507	
Approach Delay, s/veh		14.8			14.9			12.3			13.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		6.5		7.9		10.6		9.3				
Green Ext Time (p_c), s		4.7		2.0		6.8		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			13.7									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	21.9	12.5	10.8	16.2	21.8	23.9	48.1	28.1
Average Queue (m)	15.0	7.6	5.3	9.0	15.3	14.3	34.0	12.6
95th Queue (m)	25.8	16.3	13.2	19.5	26.1	27.6	54.1	32.3
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	14	20	303	382	83
Future Vol, veh/h	29	14	20	303	382	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	15	22	329	415	90

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	669	253	505	0	-	0
Stage 1	460	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	391	746	1056	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	381	746	1056	-	-	-
Mov Cap-2 Maneuver	381	-	-	-	-	-
Stage 1	587	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1056	-	453	-	-
HCM Lane V/C Ratio	0.021	-	0.103	-	-
HCM Control Delay (s)	8.5	0.1	13.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	315	0	0	333
Future Vol, veh/h	0	0	315	0	0	333
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	342	0	0	362

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	704	342	0	0	342	0
Stage 1	342	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	403	701	-	-	1217	-
Stage 1	719	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	403	701	-	-	1217	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1217	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	315	0	0	333
Future Vol, veh/h	0	0	315	0	0	333
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	342	0	0	362

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	704	342	0	0	342	0
Stage 1	342	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	403	701	-	-	1217	-
Stage 1	719	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	403	701	-	-	1217	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1217	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

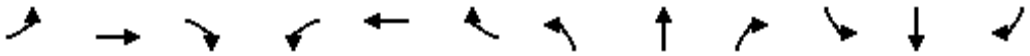
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	16	300	12	26	362
Future Vol, veh/h	11	16	300	12	26	362
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	17	326	13	28	393

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	782	333	0	0	339	0
Stage 1	333	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	363	709	-	-	1220	-
Stage 1	726	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	352	709	-	-	1220	-
Mov Cap-2 Maneuver	352	-	-	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	502	1220	-
HCM Lane V/C Ratio	-	-	0.058	0.023	-
HCM Control Delay (s)	-	-	12.6	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	23	39	51	13	78	22	342	25	35	217	9
Future Volume (veh/h)	56	23	39	51	13	78	22	342	25	35	217	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1856	1811	1885	1767	1885	1811	1707	1885	1781	1885
Adj Flow Rate, veh/h	61	25	42	55	14	85	24	372	27	38	236	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	3	6	1	9	1	6	13	1	8	1
Cap, veh/h	464	177	648	549	95	578	104	1411	100	210	1239	53
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	924	429	1572	1292	231	1402	108	3027	215	318	2659	114
Grp Volume(v), veh/h	86	0	42	55	0	99	221	0	202	144	0	140
Grp Sat Flow(s),veh/h/ln	1353	0	1572	1292	0	1633	1741	0	1609	1490	0	1601
Q Serve(g_s), s	1.8	0.0	1.2	2.1	0.0	2.8	0.0	0.0	5.7	0.0	0.0	3.8
Cycle Q Clear(g_c), s	4.6	0.0	1.2	6.8	0.0	2.8	5.5	0.0	5.7	5.7	0.0	3.8
Prop In Lane	0.71		1.00	1.00		0.86	0.11		0.13	0.26		0.07
Lane Grp Cap(c), veh/h	641	0	648	549	0	673	865	0	750	756	0	746
V/C Ratio(X)	0.13	0.00	0.06	0.10	0.00	0.15	0.26	0.00	0.27	0.19	0.00	0.19
Avail Cap(c_a), veh/h	641	0	648	549	0	673	865	0	750	756	0	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	13.1	16.3	0.0	13.6	12.0	0.0	12.1	11.5	0.0	11.6
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.4	0.0	0.5	0.7	0.0	0.9	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.2	0.4	0.0	0.5	0.9	0.0	0.9	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	0.0	13.3	16.7	0.0	14.1	12.7	0.0	12.9	12.0	0.0	12.1
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		128			154			423			284	
Approach Delay, s/veh		14.2			15.0			12.8			12.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		7.7		6.6		7.7		8.8				
Green Ext Time (p_c), s		5.7		1.1		3.8		1.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.1									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	18.1	9.6	15.3	20.8	27.1	27.9	31.5	19.4
Average Queue (m)	10.1	3.9	7.1	10.0	16.5	16.5	19.6	8.8
95th Queue (m)	21.9	12.7	18.0	23.0	30.5	32.5	37.8	22.5
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	16	44	343	230	77
Future Vol, veh/h	49	16	44	343	230	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	9	3	5	8	6
Mvmt Flow	53	17	48	373	250	84

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	575	167	334	0	-	0
Stage 1	292	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	7.04	7.08	4.16	-	-	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.62	3.39	2.23	-	-	-
Pot Cap-1 Maneuver	425	826	1215	-	-	-
Stage 1	703	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	404	826	1215	-	-	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1215	-	462	-	-
HCM Lane V/C Ratio	0.039	-	0.153	-	-
HCM Control Delay (s)	8.1	0.2	14.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	21	347	11	18	223
Future Vol, veh/h	12	21	347	11	18	223
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	13	23	377	12	20	242

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	665	383	0	0	389	0
Stage 1	383	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	425	664	-	-	1170	-
Stage 1	689	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	417	664	-	-	1170	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	751	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	546	1170	-
HCM Lane V/C Ratio	-	-	0.066	0.017	-
HCM Control Delay (s)	-	-	12.1	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	15	343	13	15	220
Future Vol, veh/h	12	15	343	13	15	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	13	16	373	14	16	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	651	380	0	0	387	0
Stage 1	380	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	433	667	-	-	1171	-
Stage 1	691	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	426	667	-	-	1171	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	763	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	533	1171	-
HCM Lane V/C Ratio	-	-	0.055	0.014	-
HCM Control Delay (s)	-	-	12.1	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

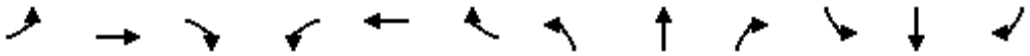
Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	18	339	10	7	216
Future Vol, veh/h	6	18	339	10	7	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	7	6	1	1	10
Mvmt Flow	7	20	368	11	8	235

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	625	374	0	0	379	0
Stage 1	374	-	-	-	-	-
Stage 2	251	-	-	-	-	-
Critical Hdwy	6.41	6.27	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.363	-	-	2.209	-
Pot Cap-1 Maneuver	450	661	-	-	1185	-
Stage 1	698	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	661	-	-	1185	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	787	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	590	1185	-
HCM Lane V/C Ratio	-	-	0.044	0.006	-
HCM Control Delay (s)	-	-	11.4	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	42	73	34	19	64	28	254	29	80	352	9
Future Volume (veh/h)	73	42	73	34	19	64	28	254	29	80	352	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	46	79	37	21	70	30	276	32	87	383	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	430	234	653	530	156	521	152	1309	150	288	1218	32
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	851	567	1585	1266	379	1264	204	2808	322	474	2612	69
Grp Volume(v), veh/h	125	0	79	37	0	91	175	0	163	235	0	245
Grp Sat Flow(s),veh/h/ln	1417	0	1585	1266	0	1643	1689	0	1644	1465	0	1690
Q Serve(g_s), s	2.7	0.0	2.3	1.5	0.0	2.6	0.0	0.0	4.4	3.2	0.0	6.7
Cycle Q Clear(g_c), s	5.2	0.0	2.3	6.7	0.0	2.6	4.1	0.0	4.4	7.6	0.0	6.7
Prop In Lane	0.63		1.00	1.00		0.77	0.17		0.20	0.37		0.04
Lane Grp Cap(c), veh/h	664	0	653	530	0	677	845	0	767	750	0	788
V/C Ratio(X)	0.19	0.00	0.12	0.07	0.00	0.13	0.21	0.00	0.21	0.31	0.00	0.31
Avail Cap(c_a), veh/h	664	0	653	530	0	677	845	0	767	750	0	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	13.5	16.5	0.0	13.5	11.6	0.0	11.7	12.4	0.0	12.3
Incr Delay (d2), s/veh	0.6	0.0	0.4	0.3	0.0	0.4	0.6	0.0	0.6	1.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	0.3	0.0	0.5	0.7	0.0	0.7	1.0	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	0.0	13.8	16.8	0.0	13.9	12.2	0.0	12.3	13.5	0.0	13.4
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		204			128			338			480	
Approach Delay, s/veh		14.6			14.8			12.3			13.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		6.4		7.2		9.6		8.7				
Green Ext Time (p_c), s		4.6		1.9		6.5		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			13.4									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	24.5	14.7	10.0	17.0	21.8	20.6	51.1	38.4
Average Queue (m)	15.5	7.8	5.3	9.4	13.7	12.9	34.4	16.0
95th Queue (m)	27.3	17.4	13.2	20.1	24.7	24.7	54.1	39.9
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	15	30	295	386	64
Future Vol, veh/h	27	15	30	295	386	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	16	33	321	420	70

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	682	245	490	0	-	0
Stage 1	455	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	384	755	1070	-	-	-
Stage 1	606	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	369	755	1070	-	-	-
Mov Cap-2 Maneuver	369	-	-	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1070	-	451	-	-
HCM Lane V/C Ratio	0.03	-	0.101	-	-
HCM Control Delay (s)	8.5	0.1	13.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	26	291	11	26	306
Future Vol, veh/h	20	26	291	11	26	306
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	28	316	12	28	333

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	711	322	0	0	328	0
Stage 1	322	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	400	719	-	-	1232	-
Stage 1	735	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	389	719	-	-	1232	-
Mov Cap-2 Maneuver	389	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	525	1232	-
HCM Lane V/C Ratio	-	-	0.095	0.023	-
HCM Control Delay (s)	-	-	12.6	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	15	287	12	24	302
Future Vol, veh/h	22	15	287	12	24	302
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	16	312	13	26	328

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	699	319	0	0	325	0
Stage 1	319	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	406	722	-	-	1235	-
Stage 1	737	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	395	722	-	-	1235	-
Mov Cap-2 Maneuver	395	-	-	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	673	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	484	1235	-
HCM Lane V/C Ratio	-	-	0.083	0.021	-
HCM Control Delay (s)	-	-	13.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

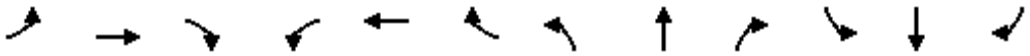
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	15	285	11	24	349
Future Vol, veh/h	10	15	285	11	24	349
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	310	12	26	379

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	747	316	0	0	322	0
Stage 1	316	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	381	724	-	-	1238	-
Stage 1	739	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	371	724	-	-	1238	-
Mov Cap-2 Maneuver	371	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	524	1238	-
HCM Lane V/C Ratio	-	-	0.052	0.021	-
HCM Control Delay (s)	-	-	12.2	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	26	42	55	14	84	24	376	27	38	239	9
Future Volume (veh/h)	61	26	42	55	14	84	24	376	27	38	239	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1856	1811	1885	1767	1885	1811	1707	1885	1781	1885
Adj Flow Rate, veh/h	66	28	46	60	15	91	26	409	29	41	260	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	3	6	1	9	1	6	13	1	8	1
Cap, veh/h	456	180	648	538	95	578	103	1413	98	204	1232	48
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	905	436	1572	1284	231	1402	106	3032	211	305	2643	103
Grp Volume(v), veh/h	94	0	46	60	0	106	242	0	222	156	0	155
Grp Sat Flow(s),veh/h/ln	1342	0	1572	1284	0	1633	1738	0	1610	1449	0	1603
Q Serve(g_s), s	2.1	0.0	1.3	2.4	0.0	3.0	0.0	0.0	6.3	0.1	0.0	4.2
Cycle Q Clear(g_c), s	5.1	0.0	1.3	7.5	0.0	3.0	6.1	0.0	6.3	6.4	0.0	4.2
Prop In Lane	0.70		1.00	1.00		0.86	0.11		0.13	0.26		0.06
Lane Grp Cap(c), veh/h	636	0	648	538	0	673	864	0	751	737	0	747
V/C Ratio(X)	0.15	0.00	0.07	0.11	0.00	0.16	0.28	0.00	0.30	0.21	0.00	0.21
Avail Cap(c_a), veh/h	636	0	648	538	0	673	864	0	751	737	0	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	13.2	16.7	0.0	13.7	12.2	0.0	12.2	11.6	0.0	11.7
Incr Delay (d2), s/veh	0.5	0.0	0.2	0.4	0.0	0.5	0.8	0.0	1.0	0.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.2	0.4	0.0	0.6	1.0	0.0	1.0	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	13.4	17.2	0.0	14.2	13.0	0.0	13.2	12.2	0.0	12.3
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		140			166			464			311	
Approach Delay, s/veh		14.4			15.3			13.1			12.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		8.3		7.1		8.4		9.5				
Green Ext Time (p_c), s		6.3		1.2		4.1		1.7				

Intersection Summary												
HCM 6th Ctrl Delay			13.4									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	21.4	11.8	15.2	17.5	28.8	34.6	30.2	17.3
Average Queue (m)	11.3	6.4	8.1	9.9	17.8	18.2	20.5	9.1
95th Queue (m)	24.4	14.5	18.0	19.0	32.8	36.5	34.7	21.4
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)					0	0		
Queuing Penalty (veh)					1	0		
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)			0	0				
Queuing Penalty (veh)			0	0				

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	17	54	376	257	79
Future Vol, veh/h	53	17	54	376	257	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	9	3	5	8	6
Mvmt Flow	58	18	59	409	279	86

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	645	183	365	0	-	0
Stage 1	322	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Critical Hdwy	7.04	7.08	4.16	-	-	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.62	3.39	2.23	-	-	-
Pot Cap-1 Maneuver	383	807	1183	-	-	-
Stage 1	678	-	-	-	-	-
Stage 2	677	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	358	807	1183	-	-	-
Mov Cap-2 Maneuver	358	-	-	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	677	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1183	-	414	-	-
HCM Lane V/C Ratio	0.05	-	0.184	-	-
HCM Control Delay (s)	8.2	0.2	15.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	27	381	12	22	241
Future Vol, veh/h	16	27	381	12	22	241
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	17	29	414	13	24	262

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	731	421	0	0	427	0
Stage 1	421	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	389	632	-	-	1132	-
Stage 1	662	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	379	632	-	-	1132	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	725	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	506	1132	-
HCM Lane V/C Ratio	-	-	0.092	0.021	-
HCM Control Delay (s)	-	-	12.8	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	18	378	13	21	236
Future Vol, veh/h	15	18	378	13	21	236
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	5	2	2	8
Mvmt Flow	16	20	411	14	23	257

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	721	418	0	0	425	0
Stage 1	418	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	394	635	-	-	1134	-
Stage 1	664	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	385	635	-	-	1134	-
Mov Cap-2 Maneuver	385	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	490	1134	-
HCM Lane V/C Ratio	-	-	0.073	0.02	-
HCM Control Delay (s)	-	-	12.9	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

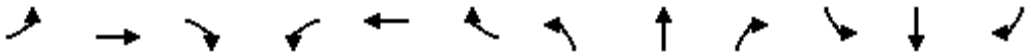
Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	19	372	11	8	236
Future Vol, veh/h	7	19	372	11	8	236
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	7	6	1	1	10
Mvmt Flow	8	21	404	12	9	257

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	685	410	0	0	416	0
Stage 1	410	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.41	6.27	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.363	-	-	2.209	-
Pot Cap-1 Maneuver	415	631	-	-	1148	-
Stage 1	672	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	411	631	-	-	1148	-
Mov Cap-2 Maneuver	411	-	-	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	767	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	552	1148	-
HCM Lane V/C Ratio	-	-	0.051	0.008	-
HCM Control Delay (s)	-	-	11.9	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	46	80	36	20	70	30	279	31	87	387	9
Future Volume (veh/h)	80	46	80	36	20	70	30	279	31	87	387	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	50	87	39	22	76	33	303	34	95	421	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	427	229	653	513	152	525	152	1308	145	283	1207	29
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	844	555	1585	1252	368	1273	204	2806	311	463	2589	62
Grp Volume(v), veh/h	137	0	87	39	0	98	190	0	180	255	0	271
Grp Sat Flow(s),veh/h/ln	1399	0	1585	1252	0	1641	1675	0	1646	1423	0	1691
Q Serve(g_s), s	3.2	0.0	2.5	1.6	0.0	2.8	0.0	0.0	4.8	4.2	0.0	7.5
Cycle Q Clear(g_c), s	5.9	0.0	2.5	7.5	0.0	2.8	4.5	0.0	4.8	9.1	0.0	7.5
Prop In Lane	0.64		1.00	1.00		0.78	0.17		0.19	0.37		0.04
Lane Grp Cap(c), veh/h	656	0	653	513	0	676	838	0	767	730	0	788
V/C Ratio(X)	0.21	0.00	0.13	0.08	0.00	0.14	0.23	0.00	0.23	0.35	0.00	0.34
Avail Cap(c_a), veh/h	656	0	653	513	0	676	838	0	767	730	0	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	13.5	17.0	0.0	13.6	11.7	0.0	11.8	12.8	0.0	12.6
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.3	0.0	0.5	0.6	0.0	0.7	1.3	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.5	0.3	0.0	0.5	0.8	0.0	0.8	1.2	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	0.0	14.0	17.3	0.0	14.0	12.4	0.0	12.6	14.1	0.0	13.7
LnGrp LOS	B	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		224			137			370			526	
Approach Delay, s/veh		14.8			15.0			12.5			13.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		35.0		39.0		35.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		34.5		25.5		34.5		30.5				
Max Q Clear Time (g_c+I1), s		6.8		7.9		11.1		9.5				
Green Ext Time (p_c), s		5.1		2.1		7.0		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			13.8									
HCM 6th LOS			B									

Intersection: 1: White Horse Plaza Entrance/Decou Rd & Norfolk St S

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	TR	LT	TR
Maximum Queue (m)	28.8	15.2	13.9	16.4	21.2	18.6	47.9	31.0
Average Queue (m)	17.9	8.2	6.2	8.6	12.9	11.5	35.8	17.4
95th Queue (m)	32.1	18.8	16.1	18.4	24.6	22.0	53.7	38.0
Link Distance (m)	62.4	62.4		233.7	46.6	46.6	137.9	137.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0					
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	16	21	323	410	83
Future Vol, veh/h	29	16	21	323	410	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	17	23	351	446	90

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	713	268	536	0	-	0
Stage 1	491	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	366	730	1028	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	356	730	1028	-	-	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1028	-	435	-	-
HCM Lane V/C Ratio	0.022	-	0.112	-	-
HCM Control Delay (s)	8.6	0.1	14.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	11	325	6	16	347
Future Vol, veh/h	10	11	325	6	16	347
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	12	353	7	17	377

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	768	357	0	0	360	0
Stage 1	357	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	370	687	-	-	1199	-
Stage 1	708	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	363	687	-	-	1199	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	657	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	482	1199	-
HCM Lane V/C Ratio	-	-	0.047	0.015	-
HCM Control Delay (s)	-	-	12.8	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	10	321	7	14	343
Future Vol, veh/h	12	10	321	7	14	343
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	11	349	8	15	373

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	756	353	0	0	357	0
Stage 1	353	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	376	691	-	-	1202	-
Stage 1	711	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	370	691	-	-	1202	-
Mov Cap-2 Maneuver	370	-	-	-	-	-
Stage 1	711	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	469	1202	-
HCM Lane V/C Ratio	-	-	0.051	0.013	-
HCM Control Delay (s)	-	-	13.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.7

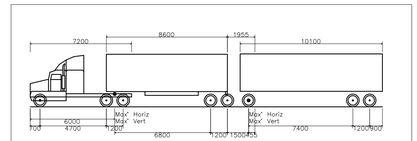
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	17	312	12	27	383
Future Vol, veh/h	11	17	312	12	27	383
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	18	339	13	29	416

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	820	346	0	0	352	0
Stage 1	346	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	345	697	-	-	1207	-
Stage 1	716	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	334	697	-	-	1207	-
Mov Cap-2 Maneuver	334	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.5
HCM LOS	B		

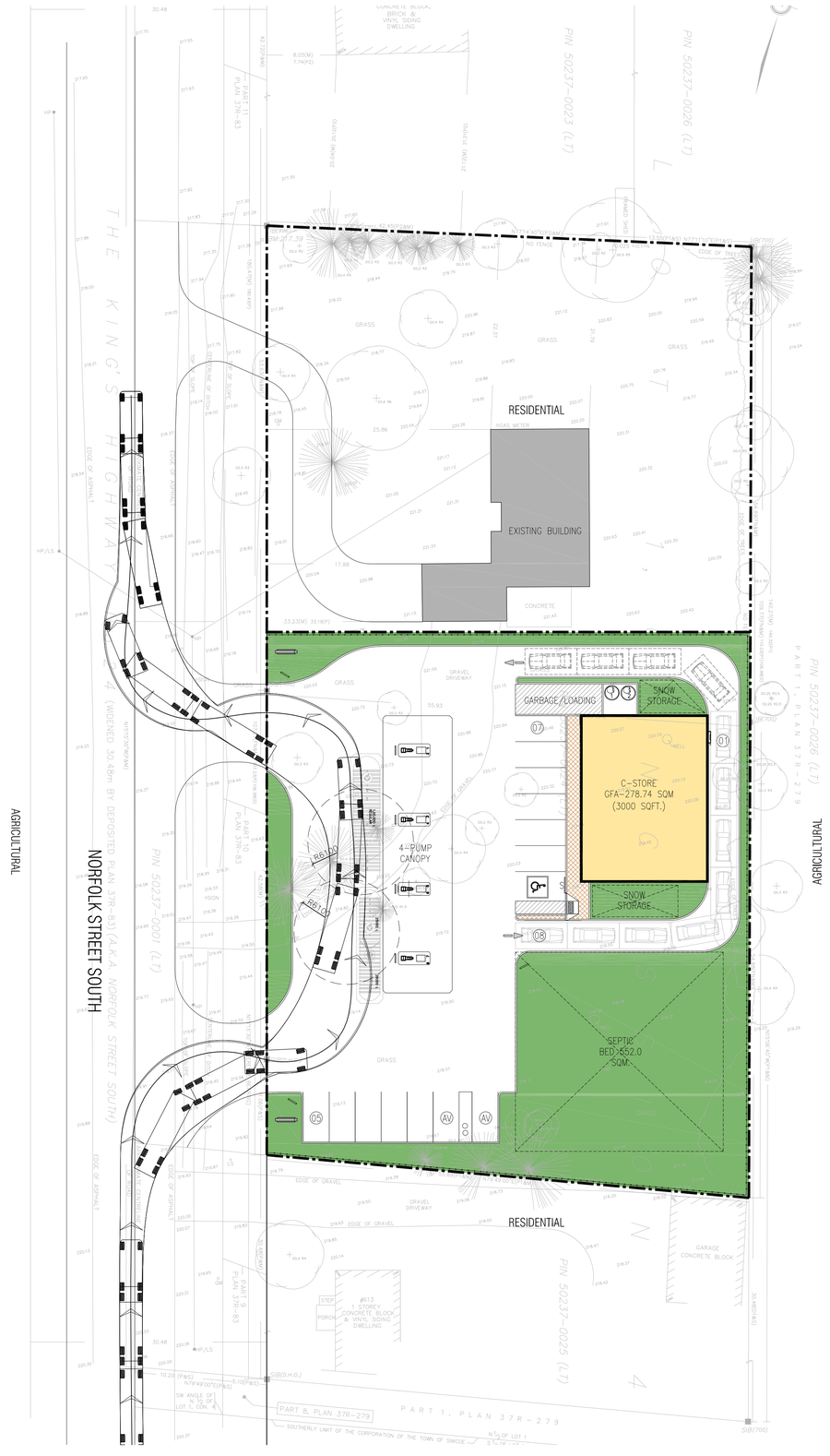
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	488	1207	-
HCM Lane V/C Ratio	-	-	0.062	0.024	-
HCM Control Delay (s)	-	-	12.9	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

APPENDIX D
Design Vehicle Turning Movement Diagrams



WB-23 – Double Trailer Combination

Overall Length	25000mm
Overall Width	2600mm
Overall Body Height	3755mm
Min Body Ground Clearance	435mm
Track Width	2600mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	12200mm



1 / A-1.1 **FUEL TRUCK TURNING MOVEMENT PLAN**
SCALE 1:300

n Architecture Inc
PRINCIPAL: NITIN MALHOTRA, ARCHITECT.
9120 Leslie Street, Suite-208
Richmond Hill, Ontario. L4B 3J9
T : 4 1 6 . 2 5 6 . 9 7 4 1
E: info@narchitecture.com
www.narchitecture.com

N (DEGREE TO NORTH) 2°
PROJECT NORTH

25th MARCH 2022
ISSUED FOR SPA
NOT FOR CONSTRUCTION

No.	Date	Version	Dwn.
1.	12 MAR. 2022	ISSUED FOR SPA	NG.

PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

FUEL TRUCK TURNING MOVEMENT PLAN

DRAWN BY: NG	DATE: 17 AUG. 2021
CHECKED BY: NM	SCALE: AS NOTED
PROJECT NO.: **21-54**	DRAWING NO.: **A-1.1**

Appendix E
Approved Terms of Reference from County Staff

From:	Stephen Gradish
To:	"gj@nengineering.com"
Cc:	Mohammad Alam; Zeel Joshi
Subject:	FW: n2154 | 601 Norfolk St S, Simcoe
Date:	March 18, 2022 9:13:09 AM
Attachments:	image004.png Terms of Reference - TIS 601 Norfolk St S.docx

Hello Gurminder

I have received your TOR from Mohammad and had a chance to review. I have put Development Engineering comments in the attached file in Track Change format.

Please review and let me know if you have any questions.

Regards,
Stephen

Stephen Gradish
Development Technologist
Engineering
Environmental and Infrastructure Services Division
185 Robinson Street
Suite 200, Simcoe, Ontario, N3Y 5L6
519-426-5870 x. 8015

Working together with our community

From: Mohammad Alam <Mohammad.Alam@norfolkcounty.ca>
Sent: Monday, March 14, 2022 10:04 AM
To: Stephen Gradish <Stephen.Gradish@norfolkcounty.ca>
Subject: FW: n2154 | 601 Norfolk St S, Simcoe

Morning Stephen,
Can you please review the TOR of the study?

Thanks,
Mohammad

Mohammad Alam, MPL, MUD, RPP, MCIP
Senior Planner
Planning

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

Working together with our community

From: Gurminder Jagjait | nEngineering Inc <gj@nengineering.com>
Sent: Monday, March 14, 2022 9:31 AM
To: Mohammad Alam <Mohammad.Alam@norfolkcounty.ca>
Cc: 'Nitin Malhotra | nArchitecture Inc.' <nm@narchitecture.com>; 'Abu Ziauddin | nEngineering Inc' <az@nengineering.com>
Subject: n2154 | 601 Norfolk St S, Simcoe

Hello Mohammad,

I will be working on the Traffic Impact Study (TIS) for the proposed development of this project.

I have attached the Terms of Reference, could you please forward this to the transportation engineering department for review.

I hope to hear from you soon. Thank You!

Regards,

Gurminder Jagjait | EIT Transportation Analyst
9120 Leslie Street, Suite-208, Richmond Hill, Ontario. L4B3J9 T: 905-597-5937
http://nengineering.com/ | https://www.facebook.com/nArchitectureInc

n Engineering Inc

Terms of Reference-TIS

9120 Leslie Street, Suite 208, Richmond Hill, Ontario. L4B 3J9 I T: 416.303.4821 I F: 1.866.340.5265 I E: info@nengineering.com

`Date: March 14, 2022

RE: n2154| 601 Norfolk Street, Simcoe, Ontario

Subject: Terms of Reference for Traffic Impact Assessment

n Engineering Inc. was retained by the owner to provide a Traffic Operations Assessment Report in support of the proposed addition to the existing commercial development. The subject site is at 601 Norfolk Street, Simcoe, Ontario. Based on the Norfolk County Integrated Sustainable Master Plan (ISMP) Appendix J ~~of Simcoe~~ TIS Guideline, the terms of reference are listed below. Please review and recommend.

Proposed Development

As per conceptual site plan, phase one of the proposed development consists of a C-Store with a gross floor area (GFA) of 278.74 m^2. The site is accessible via two site entrances on Norfolk ~~Road~~Street South. As per Zoning By-law 1-Z-2014, the proposed Zoning is CS Service Commercial Zone for the development. n Architecture Inc. is proposing 11 parking spaces (including barrier free and handicap parking).

Terms Requiring Approval

1. The following intersections in the study area illustrated in Figure 1 will be analyzed for the TIS:

   A. Norfolk Street S & Decou Road (Signalized) This intersection analysis must also include Parker Drive which is in direct proximity and would have effects on the Traffic signals.
   B. Norfolk Street S & Lynn Valley Road (Unsignalized)
   C. North Entrance 1 & Norfolk St (Unsignalized)
   D. South Entrance 2 & Norfolk St (Unsignalized)

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Figure 1 Study Area

n Engineering Inc

Terms of Reference-TIS

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Posted Speeds

Norfolk St: 50 km/h – The speed limit in front of the subject property is 60km/h. The 50km/h zone starts halfway back in towards Simcoe.

Lynn Valley Rd: 50 km/h

Decou Rd: 50 km/h

Data Collection

Please advise if you are aware of Turing Movement Counts from the County (within 3 years of the study) for the intersections listed above.

Norfolk County does not have turning movement data for any of the intersections noted above.

Future Background Development

Please advise for any future proposed developments open to public in the vicinity that we should include in our TIS, if so please provide the TIS reports for them.

There is a current Residential subdivision which has been partially constructed and sitting vacant for several years on Decou Road approximately 300m East of Norfolk Street. Unfortunately, due to its age this subdivision predates the requirements for a Traffic Impact Study. For background the current phase is proposed to have 57 Single Family Dwellings and is under new ownership which is attempting to start building by end of 2022 and be completely built out prior to end of 2024.

The ITE traffic generation manual would be used to estimate the trips generated for the new proposed development.

Traffic Volume Analysis

1. **Horizon Years**
   The horizon years are 2029 & 2034 and assumed to be 5 and 10 years after the full build-out of the site. (Estimated Build-Out Date is: 2024). Agreed

2. **Time Period**
   Traffic operation will be analyzed at Weekday AM and PM peak hours. Agreed

9120 Leslie Street, Suite 208, Richmond Hill, Ontario. L4B 3J9 I T: 416.303.4821 I F: 1.866.340.5265 I E: info@nengineering.com

Growth rate

Analyze the historical turning movement counts to assess the growth rate, if it is negative, the default value of 2% will be used. Agreed

Please advise if this growth rate factor can be applied to existing conditions.

Trip Generation and Distribution

ITE Trip generation 10th Edition will be used to estimate trips generated by proposed development.

Trip distribution assumptions will be applied the following:

- Existing/anticipated travel patterns,
- Transportation Tomorrow Survey,
- Please provide the output from the city's Travel Demand Forecasting Model if required. Currently Norfolk County does not have a Travel Demand Forecasting Model. This is not required.

Modal split

Please advise if model split is necessary for this report.

This is not required.

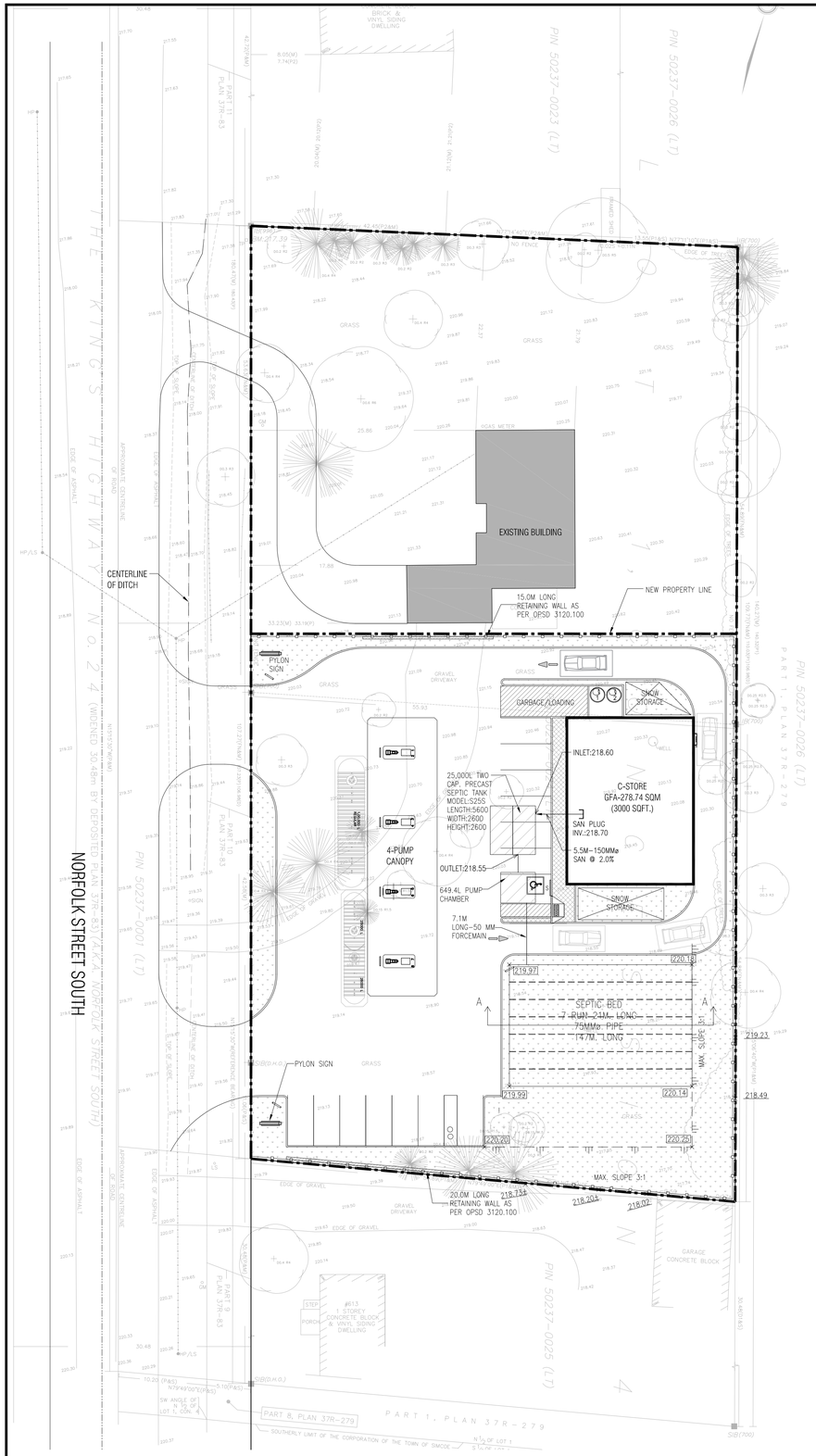
Capacity Analysis

Capacity analysis will comply with the Region's *Guidelines for Transportation Impact Study.* This includes the Niagara Region standards for lane settings, volume settings, timing settings, etc.

For Synchro analysis, the County's Guidelines for Using Synchro will be followed. Synchro 11.0 utilized with HCM 6th Edition will be used. SimTraffic will be used to achieve 95th percentile queue length.

County Safety Concerns

The northern and southern site accesses will be analyzed in Synchro simulation and with sight line guidelines according to TAC to ensure the County safety concerns are addressed.



25,000 LITRE TWO COMPARTMENT PRECAST SEPTIC TANK MODEL S25S

WILKINSON HEAVY PRECAST LIMITED
DUNDAS, ONTARIO 905-628-5611
www.wilkinsonheavyprecast.com

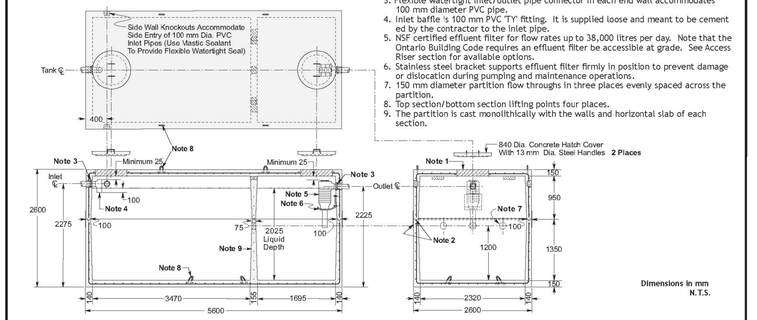
CONSTRUCTION DETAILS *

Concrete: 35 MPa at 28 Days, 5 to 8% Air Entrainment.

Reinforcing: 10 M bars at 200 mm centres each way in roof, walls and floor; horizonally in partition.
Four extra 15 M bars around roof access opening.
Minimum cover over reinforcing steel - 25 mm.

Weight:
Top Section 10,472 kg
Bottom Section 12,620 kg
Total 23,092 kg

Actual Capacity: 12,378 Litres Per Vertical Metre.
28,469 Litres to Underside of Roof Slab.
25,065 Litres to Invert of Outlet.



NOTES

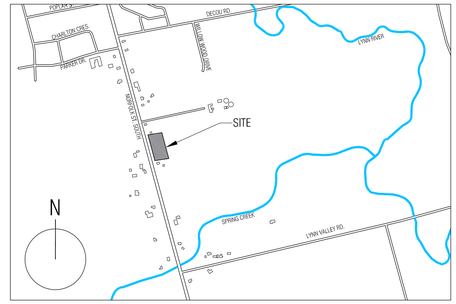
1. Large 685 mm diameter roof access openings facilitate tank and filter maintenance. Please note that each cover weighs approximately 125 kg and must be handled only with suitable mechanical lifting equipment. Access extensions may be required to meet Ontario Building Code requirements. See Access Riser section for available options.
2. Close tolerance of tongue and groove joint and fibrous mastic sealant ensures a solid structural and water-tight seal. Primer and Mastic Band are supplied with each tank for application to the external surface of the tank over the joint between the tank sections. This band is to be applied by the installing contractor.
3. Flexible watertight inlet/outlet pipe connector in each end wall accommodates 100 mm diameter PVC pipe.
4. Inlet baffle is 100 mm PVC TY fitting. It is supplied loose and meant to be cemented by the contractor to the inlet pipe.
5. NSF certified effluent filter for flow rates up to 38,000 litres per day. Note that the Ontario Building Code requires an effluent filter be accessible at grade. See Access Riser section for available options.
6. Stainless steel bracket supports effluent filter firmly in position to prevent damage or dislocation during pumping and maintenance operations.
7. 150 mm diameter partition flow throughs in three places evenly spaced across the partition.
8. Top section/bottom section lifting points four places.
9. The partition is cast monolithically with the walls and horizontal slab of each section.

* Commensurate with a **1.2 Metre** burial over the top slab in firm soil away from any area of vehicular traffic.

For recommended installation procedures refer to Wilkinson Installation Guidelines and Lifting and Assembly Instructions.

WARNING ! IMPROPER INSTALLATION ESPECIALLY IN UNSTABLE SOILS CAN RESULT IN THE STRUCTURAL FAILURE OF THIS PRODUCT

9 May, 2008



KEY PLAN

SCALE: NTS

LEGAL DESCRIPTION

PART OF LOT 1 CONCESSION 4 FORMERLY IN THE TOWNSHIP OF WOODHOUSE NOW IN THE TOWN OF SIMCOE COUNTY OF NORFOLK

SURVEYOR INFORMATION

FARZAD SALEHI
ONTARIO LAND SURVEYORS

BENCH MARK NOTE

BEARINGS ARE ASTRONOMIC, AND ARE REFERRED TO THE EASTERLY LIMIT OF THE KING'S HIGHWAY NO. 24 AS SHOWN ON PLAN 37R-83, HAVING A BEARING OF N15°15'30"W. ELEVATIONS SHOWN HEREON ARE GEODETIC, AND ARE FROM REAL TIME NETWORK GPS READINGS PROVIDED BY CAN-NET AND TOTAL STATION, AND ARE IN GEOID MODEL CGG2013.

APPLICANT

n Engineering Inc
9120 Leslie Street, Suite-208,
Richmond Hill, Ontario. L4B 3J9
T: 416.256.9741
E: info@nengineering.com
www.narchitecture.com

PERCOLATION RATE CONFIRMED BY GEOTECHNICAL ENGINEER

LEGEND

- PROPERTY LINE
- DEVELOPMENT LIMIT
- PROPOSED CONCRETE CURB
- 1M D/C — PROPOSED DEPRESSED CONCRETE CURB
- LANDSCAPED AREA
- CONCRETE WALKWAY/SIDEWALK
- PAINTED LINE
- BARRIER FREE PARKING
- MAIN ENTRANCE
- OVER HEAD DOOR
- RETAINING WALL / CONCRETE TOE WALL
- FFE — FINISHED FLOOR ELEVATION
- HP — EX. HYDRO POLE
- UP — UTILITY POLE
- EX.CB — EXISTING CATCH BASIN
- CB — PROPOSED CATCH BASIN MANHOLE
- CBMH — PROPOSED CATCH BASIN MANHOLE
- EX.MH — EXISTING STORM MANHOLE
- MH — PROPOSED STORM MANHOLE
- EX.MH — EXISTING SANITARY MANHOLE
- MH1A — PROPOSED SANITARY MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EX.WV — EXISTING WATER VALVE
- WV — PROPOSED WATER VALVE
- DD — DOUBLE CHECK DETECTOR ASSEMBLY
- M — WATER METER
- B — BACK FLOW PREVENTER

DESIGN CALCULATIONS
DESIGN INPUT:

1. PERCOLATION RATE: TBD (ASSUME 30 MIN/CM BASED ON GENERALIZED SOIL MAP REGIONAL MUNICIPALITY OF HALDIMAND-NORFOLK; MAP NUMBER: ON57; PERCOLATION RATE TO BE CONFIRMED WITH GEOTECHNICAL REPORT)
2. DESIGN CRITERIA: OBC 8.2.1.3.B
3. GAS STATION NOZZLE: 8
4. NO. OF WASH ROOM IN CONVENIENCE STORE: 1 (ONE)
5. TAKE-OUT RESTAURANT AREA: 78.23 M2

DESIGN FLOW:

FLOW FROM GAS STATION (Q1)
FLOW PER NOZZLE: 560 L/DAY
DAILY DESIGN FLOW FROM GAS BAR: 8 X 560 = 4,480 L/DAY (Q1)

FLOW FROM CONVENIENT STORE (Q2)
NO. OF WASHROOM: 1(ONE)
DAILY DESIGN FLOW CONVENIENT STORE = 1 X 1250 L/DAY = 1250 L/DAY

FLOW FROM TAKE-OUT RESTAURANT (Q3)
FLOW PER 9.25 M2 OF FLOOR AREA: 190 L/DAY
DAILY DESIGN FLOW FROM TAKE-OUT RESTAURANT = (78.23 M2/9.25M2) X 190 L/DAY = 1606.89 L/DAY
TOTAL DESIGN SEWAGE FLOW = Q1 + Q2 + Q3 = 4,480 + 1250 + 1606.89 = 7336.89 L/DAY

LEACHING BED DESIGN:

WHERE:
A = THE AREA OF CONTACT OF THE BED WHEN CONSTRUCTED OUT ON NATIVE SOILS (M2)
Q = THE TOTAL DAILY DESIGN SANITARY SEWAGE FLOW (L)
T = THE PERCOLATION RATE OF THE NATIVE SOIL TO MAXIMUM OF 50 MIN/CM

A = (7336.89 X 30)/400 = 550.27M2
7 RUNS OF 21 M LONG 75MM DIAMETER PIPE LENGTH OF 147 M PROPOSED TO INSTALL

SEPTIC TANK DESIGN: (OBC 8.2.2.3)

1. VOLUME OF THE SEPTIC TANK = DAILY SEWAGE FLOW X 3
   = 7336.89 X 3 = 22,010.67 L
   1 TANKS OF 25,000 L CAPACITY PROPOSED TO INSTALL

SEPTIC PUMP STATION:
A 649.4 L SINGLE COMPONENT TO BE INSTALLED FOR PUMPING STATION.
BED DOSING REQUIREMENT:
PIPE VOLUME $\pi \times \frac{d^2}{4} \times h = \pi \times \frac{0.075^2}{4} \times h = 0.649\ m^3 = 649.4L$
DESIGN FLOW = 7336.89/DAY
FREQUENCY OF PUMPING 2 HRS THROUGH A 50MM FORCEMAIN

GENERAL NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL AND LANDSCAPING PLANS.
2. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE APPLICABLE HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
3. ALL WORK, MATERIALS AND CONSTRUCTION METHODS TO CONFORM WITH THE LATEST STANDARDS, SPECIFICATIONS, POLICIES, REGULATIONS, GUIDELINES AND LAWS FOR THE COUNTY, THE ONTARIO BUILDING CODE (OBC), MINISTRY OF THE ENVIRONMENT (MOE), ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS (OPSD AND OPSS), THE ENVIRONMENTAL PROTECTION ACT AND THE WATER RESOURCES ACT. THE MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
4. THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS COMPILED FROM LOCATES INFORMATION AND RECORD DRAWINGS FROM THE. THE INFORMATION IS SHOWN FOR GENERAL INFORMATION ONLY AND THE ACCURACY OR COMPLETENESS OF THE PROVIDED INFORMATION HAS NOT BEEN CONFIRMED. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTOR'S EXPENSE.
5. THIS PLAN SHOULD BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS' PLANS. ANY DISCREPANCIES SHALL BE CLARIFIED PRIOR TO CONSTRUCTION. INFORMATION RELATED TO DIMENSIONS FOR PRIVATE ROADS, PARKING, CURBING, BUILDING LOCATION AND SETBACKS SHALL BE TAKEN FROM THE SITE PLAN PREPARED BY THE ARCHITECT.
6. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.

INSPECTIONS:

7. ALL WORK IN THE MUNICIPAL RIGHT OF WAY AND EASEMENTS IS TO BE INSPECTED BY THE COUNTY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE COUNTY AS PER THE SITE PLAN AGREEMENT.
8. ALL DISTURBED GRASSED AREAS TO BE RESTORED WITH MINIMUM 200MM TOPSOIL AND NO. 1 NURSERY SOD.
9. THE CONTRACTOR AGREES NOT TO MAKE A MATERIAL CHANGE OR CAUSE A MATERIAL CHANGE TO BE MADE TO A PLAN, SPECIFICATION, DOCUMENT OR OTHER INFORMATION, ON THE BASIS OF WHICH THIS DRAWING WAS APPROVED BY THE COUNTY, WITHOUT NOTIFYING, FILING DETAILS WITH AND OBTAINING WRITTEN AUTHORIZATION OF THE MUNICIPAL AND PROJECT ENGINEER.
10. ALL STORMWATER MANAGEMENT WORK, WATER SERVICING WORK AND SANITARY SEWER WORK INSIDE THE BOUNDARY OF THE SITE IS TO BE INSPECTED BY N ENGINEERING INC PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY N ENGINEERING AS PER APPROVED PLANS BY THE COUNTY.

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LICENSED PROFESSIONAL ENGINEER
A.S.ZIAUDDIN
100233432
11APR.2022
PROVINCE OF ONTARIO

N
(DEGREE TO NORTH)
PROJECT NORTH

No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	HR

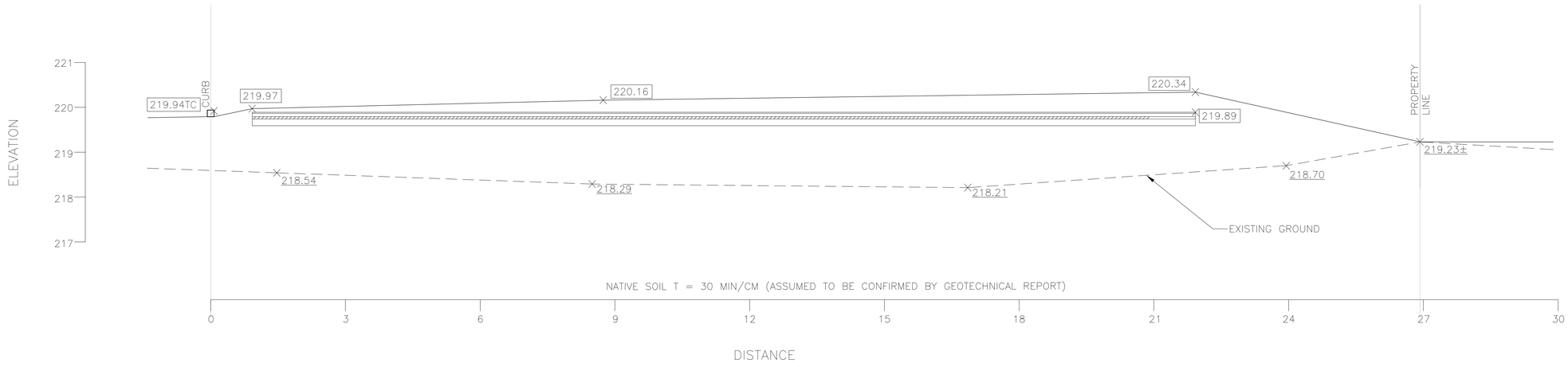
PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

SEPTIC SYSTEM PLAN

DRAWN BY: HR	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: 21-54	DRAWING NO.: SD-1



SEWAGE SYSTEM CONSTRUCTION / MAINTENANCE NOTES

GENERAL:

1. SEWAGE SYSTEM DESIGNED FOR A MAXIMUM DAILY FLOW OF 7336.89 L/DAY.
2. PRIOR TO COMMENCEMENT OF EXCAVATIONS, UNDERGROUND SERVICES SHALL BE LOCATED.
3. CONTRACTOR MUST REPORT ANY DISCREPANCIES TO THE PROJECT ENGINEER TO DETERMINE THE IMPACT.
4. ANY CHANGES MUST BE APPROVED BY THE PROJECT ENGINEER.
5. ALL CONSTRUCTION MATERIAL MUST MEET AT MINIMUM, THE ONTARIO BUILDING CODE (2012) SPECIFICATIONS.
6. THE BUILDING'S SUMP, FLOOR DRAINS, AND/OR WATER TREATMENT SYSTEM, AND/OR
   GARBORATOR SHOULD NOT BE CONNECTED TO THE SEWAGE SYSTEM.
7. A DETAILED GRADING / DRAINAGE PLAN AND PLANTING PLAN SHALL BE COMPLETED BY OTHERS UNDER SEPARATE COVER BASED ON THE PROPOSED FINISHED GRADES OF THE SEWAGE SYSTEM.
8. TOPSOIL SHALL BE OF GOOD LANDSCAPING QUALITY WITH LESS THAN 30 % FINES (SILT) TO ALLOW FOR AIR TRANSFER INTO SUBSURFACE.

PIPING:

9. BEDDING, COVER, AND BACKFILL TO BE IN ACCORDANCE WITH OPSS.
10. ALL PVC FITTINGS AND PIPES BETWEEN TANKS ARE SCHEDULE 40.
11. ALL GRAVITY CONNECTIONS SHALL HAVE A MINIMUM 2 % GRADE BETWEEN TANKS/BUILDING(S).
12. ALL SANITARY PIPES / FORCEMAINS SHALL BE INSULATED OR BURIED BENEATH FROST LINE.
13. ALL JOINT SEALS TO BE DONE WITH PRIMER AND MASTIC BAND, OR AS PER THE MANUFACTURER'S REQUIREMENTS.
14. ALL CONCRETE TANKS ARE TO HAVE A MAXIMUM BURIAL DEPTH OF 1.0 m IN NON TRAFFIC AREAS. EXTRA REINFORCEMENT IS REQUIRED FOR TRAFFIC AREAS AND/OR DEEP BURIAL.
15. TANK ELEVATIONS MAY VARY FROM THAT SHOWN DEPENDING ON SELECTED PRE-CASTER. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL ELEVATIONS.
16. ALL HOLES AROUND PIPES GOING THROUGH CONCRETE STRUCTURE AND RISER SEAMS SHALL BE SEALED WITH NON-SHRINKING GROUT.
17. ALL RISERS SHALL EXTEND TO SURFACE, COMPLETE WITH CHILD PROOF, TAMPER PROOF, LIDS.
18. IF HIGH GROUNDWATER CONDITIONS ARE ENCOUNTERED, TANKS WITH DYNAMIC WATER LEVELS MUST BE ANCHORED. ANCHORING TO BE DESIGNED BY A PROFESSIONAL ENGINEER.
19. TANK SEAMS AFFECTED BY HIGH GROUNDWATER ELEVATIONS MUST BE WATERPROOFED
    WITH AN EXTERIOR MEMBRANE.
20. TANKS SHALL BE INSTALLED ON 50 mm OF LOOSE SAND SPREAD EVENLY OVER MINIMUM
    200 mm OF COMPACTED GRAVEL OR CRUSHED STONE.
21. TANK EXCAVATIONS SHALL BE LEVEL AND APPROPRIATELY COMPACTED TO AVOID SETTLING.

LEACHING BED

27. BASE EXCAVATION IS TO BE SCARIFIED PRIOR TO PLACING FILL MATERIAL. NO EQUIPMENT (RUBBER TIRE OR TRACK) IS TO COME IN CONTACT WITH THE SOILS AFTER SCARIFICATION. SCARIFIED SOILS CANNOT BE LEFT EXPOSED TO RAIN. IMPORTED MATERIAL IS TO BE BLADED ONTO THE SCARIFIED AREA IN 0.20 m TO 0.25 m LIFTS AND TRACK COMPACTED.
28. LEACHING BED SHALL BE IMMEDIATELY SODDED OR HYDRO SEEDED UPON COMPLETION.
29. NO LANDSCAPING OR BUILDINGS ARE PERMITTED ON THE LEACHING BED AREA. NO TREES SHALL BE PLANTED WITHIN 6 m OF THE SEWAGE SYSTEM.
30. NO IRRIGATION SYSTEMS ARE PERMITTED WITHIN THE LEACHING BED AREA.
31. ALL SLOPES SHALL BE CONSTRUCTED NO STEEPER THAN 4:1 (H:V) UNLESS OTHERWISE NOTED.
32. SEWAGE SYSTEM DESIGNED IN COMPLIANCE WITH ONTARIO BUILDING CODE 8.1.3.1. "DISCHARGE".

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PROVINCE OF ONTARIO

N
(DEGREES NORTH)
PROJECT NORTH

No.	Date	Version	Dwn.
1.	11 APR. 2022	ISSUED FOR SPA	HR

PROJECT:

GAS STATION AT 601 NORFOLK STREET SOUTH, SIMCOE, ON

DRAWING TITLE:

SECTION AND DETAILS

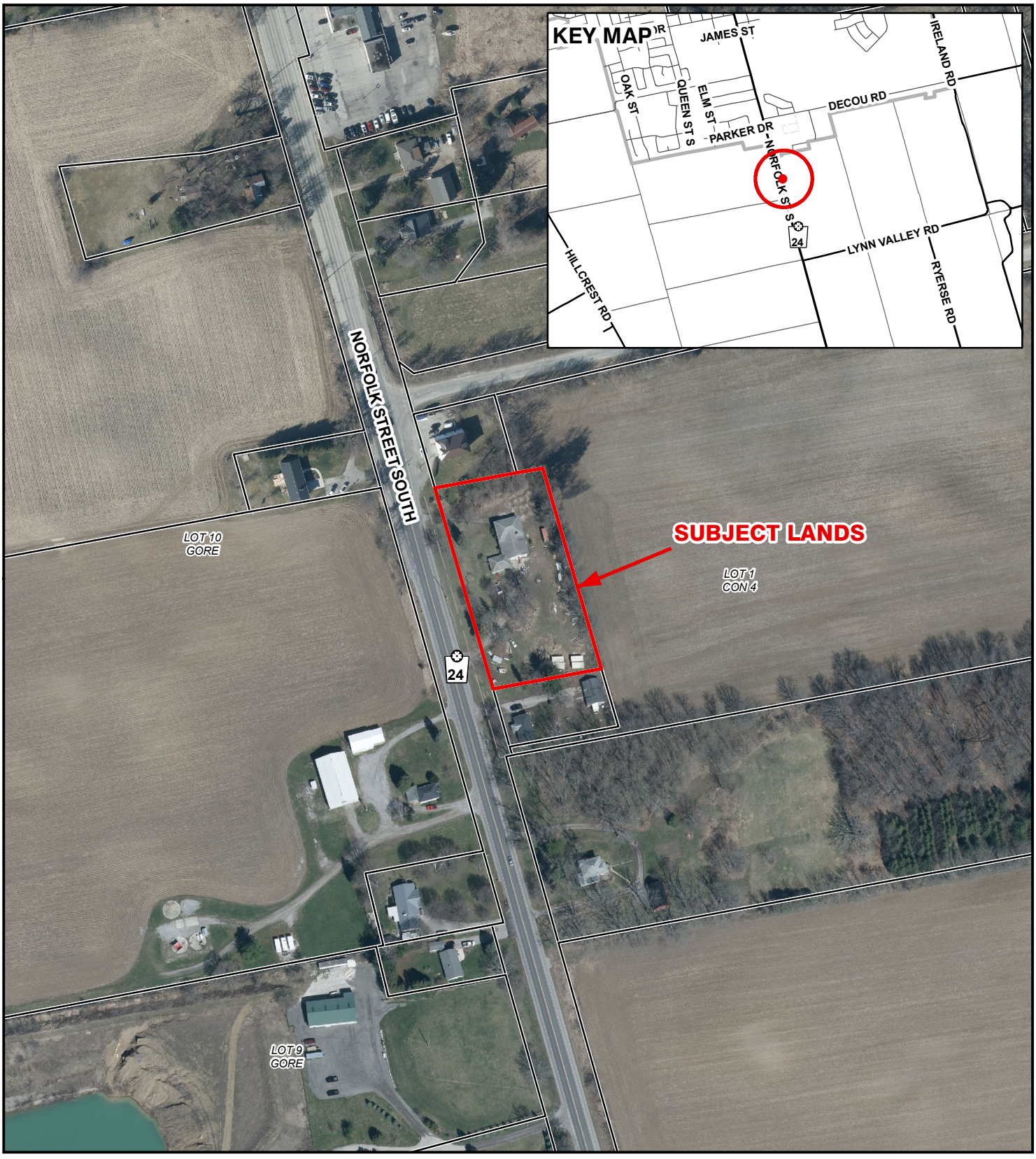
DRAWN BY: HR	DATE: 21 MAR. 2022
CHECKED BY: AZ	SCALE: 1:300
PROJECT NO.: **21-54**	DRAWING NO.: **SD-2**

MAP A

CONTEXT MAP

Township of WOODHOUSE

SPPL2022138



Legend

Subject Lands

2020 Air Photo

5/16/2022

N

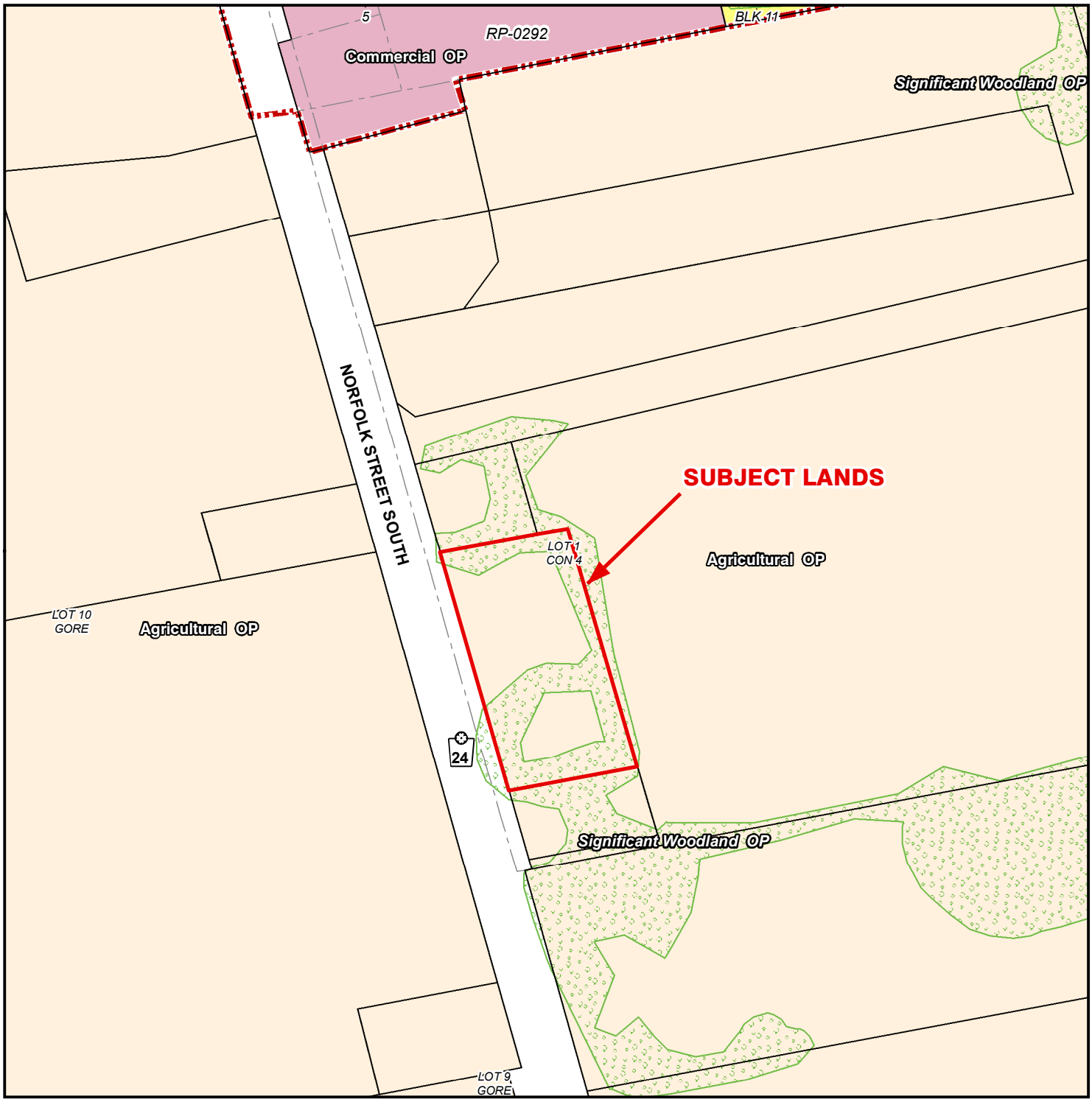
20 10 0 20 40 60 80 Meters

MAP B

SPPL2022138

OFFICIAL PLAN MAP

Township of WOODHOUSE



Legend

Subject Lands

Official Plan Designations

Agricultural

Urban Residential

Commercial

Urban Area Boundary

Significant Woodland

5/16/2022

N

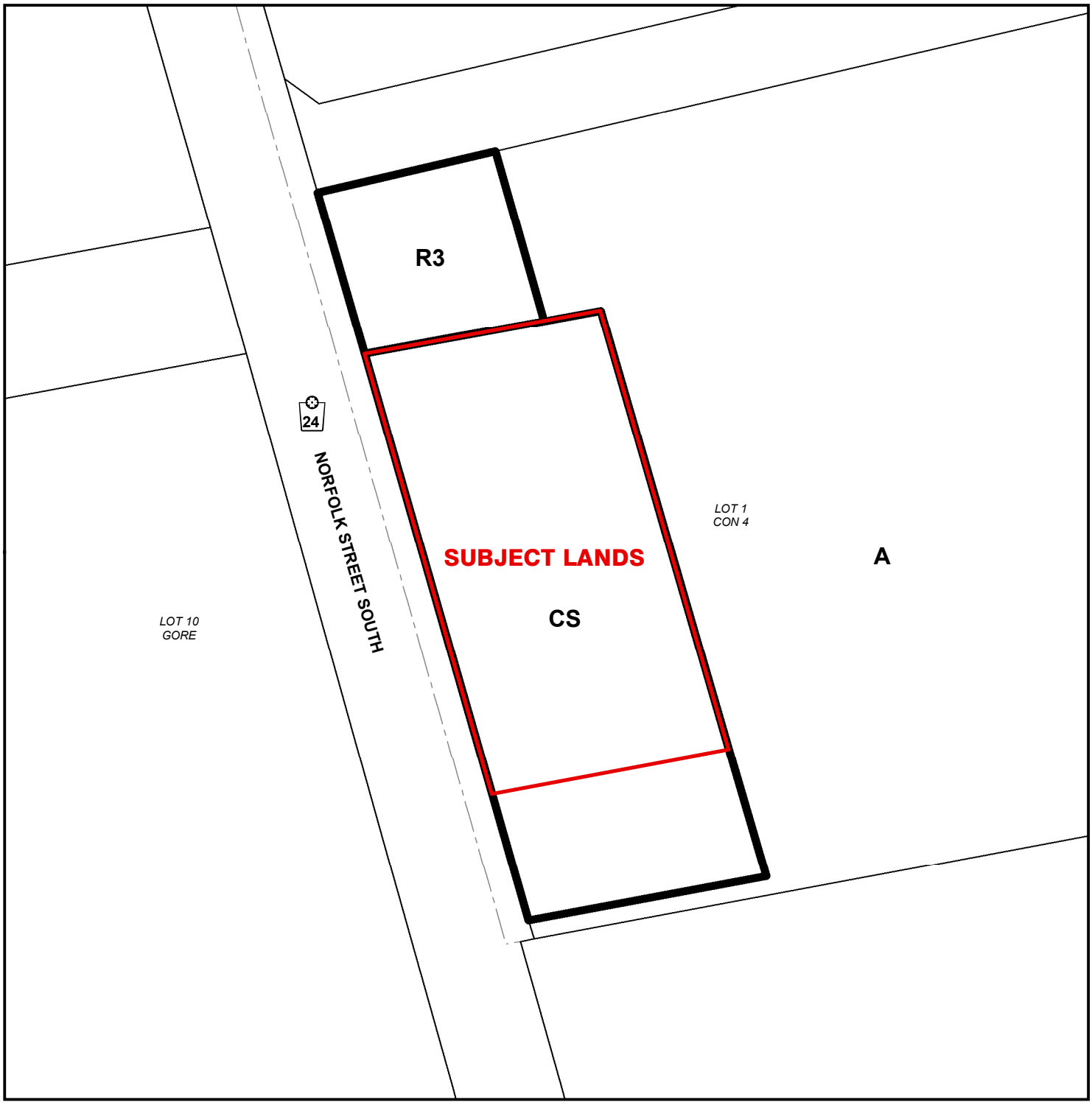
10 5 0 10 20 30 40 Meters

MAP C

SPPL2022138

ZONING BY-LAW MAP

Township of WOODHOUSE



LEGEND

Subject Lands

ZONING BY-LAW 1-Z-2014

(H) - Holding

A - Agricultural Zone

CS - Service Commercial Zone

R3 - Residential R3 Zone

5/16/2022

N

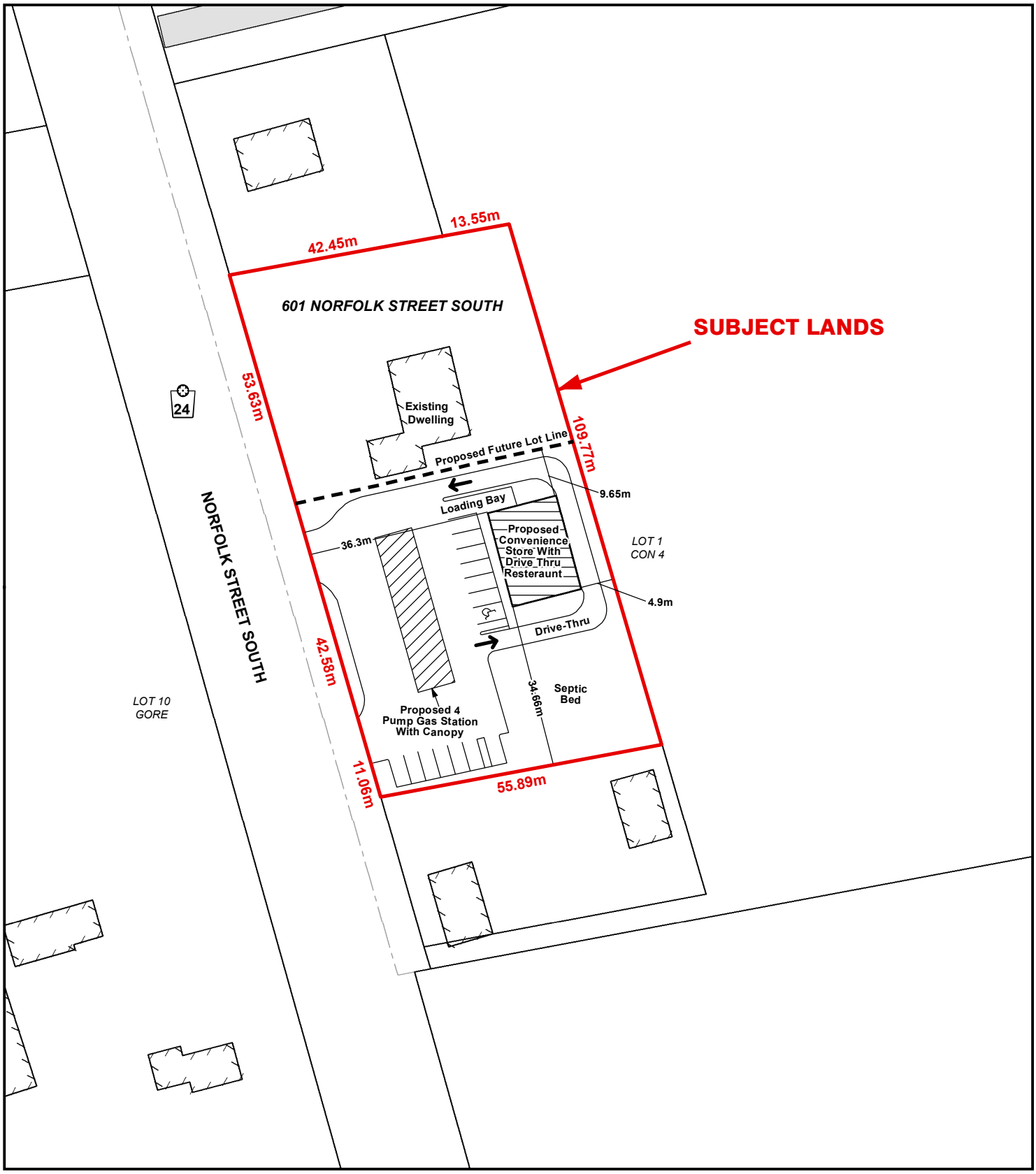
10 5 0 10 20 30 40 Meters

MAP D

SPPL2022138

CONCEPTUAL PLAN

Township of WOODHOUSE



Legend

Subject Lands

5/16/2022

N

8.5 4.25 0 8.5 17 25.5 34 Meters