architectural design associates inc. architect
1670 Mercer St.
Windsor | Ontario
N8X 3P7
Tel 519.254.3430
ada-architect.ca

May 08, 2024

Open House Report

Re: Stage 2 Planning Consultation Application
(0 Howard Avenue, Roll No. 080-060-01100)
Applicant – RAFCO Property Trust Ltd.

To Whom it May Concern:

Architectural Design Associates Inc. Architect (ADA) was retained to organize a public open house in preparation for the submission of a Stage 2 Planning Consultation Application (PC2), on behalf of the Applicant, RAFCO Property Trust Ltd. (Zeyad Rafih).

The open house was held at 4350 Howard Avenue (Antonino's Original Pizza), approximately 150m from the subject site. The open house was held between 4:30PM and 6:30PM on Monday, April 8th, 2024. A copy of the notice provided to nearby property owners can be found in **Appendix A**. The sign-in sheet provided for nearby property owners can be found in **Appendix B**. Also in attendance were the following:

- Zeyad Rafih – Property Owner and Applicant
- Jerry Kavanaugh – ADA Representative
- Olivia Byrne – ADA Representative
- Adam Szymczak – City of Windsor Representative

During the open house, conceptual architectural packages and enlarged display boards were available for residents to review. A copy of the conceptual packages can be found in **Appendix C**. Additionally, copies of the noise study, sanitary sewer study, and storm sewer study prepared for this application were available for residents to review. Copies of these reports can be found in **Appendices D through F**.

Summary of Comments

Neighbouring residents were mostly concerned with three items:

a) Parking Provided
   - Concern: Residents of Howard Place were concerned that the parking provided for the development would be inadequate for the number of residents, and that overflow parking would occur along Howard Place

- Response: The parking provided was based on the City of Windsor By-law 8600 requirement for a "Multiple Dwelling containing a minimum of 5 Dwelling units". The By-law requires 1.25 spaces per dwelling unit:

  1.25 spaces / unit x 18 units = 22.5 spaces = **22 spaces** (per 24.20.7.3)

b) Refuse Enclosure
- Concern: Residents of Howard Place were concerned with the location and visibility of the refuse enclosure
- Response: The refuse enclosure initially proposed is consistent with the City of Windsor standards. Additionally, there is a mature tree line along Howard Place that screens a large part of the development – all parties involved are committed to preserving as many of these trees as possible. The option of individual roll-out containers was also discussed, and an alternative site plan has been developed for curbside pickup in lieu of overhead collection in the parking lot (see **Appendix G**).

c) Environmental Remediation
- Concern: Long-established residents expressed concern about the environmental remediation of the site and its previous use having been a gas station
- Response: As no environmental assessment of the property was required for the PC2 Application, no copy of the existing report was provided at the open house. A subsurface investigation was conducted by Central Projects Group Inc. in 1992 for the purposes of divestment and potential sale of the property; a copy of this report can be found in **Appendix H**. It was discussed with residents that should any future environmental studies or remediation need to be done for the development of the property, they would be completed as required and by qualified professionals.

Should you have any questions on the above or the enclosed, please do not hesitate to contact us.

Written by: Reviewed By:

Olivia Byrne Jerry Kavanaugh

Appendix A: Open House Notice

March 21st, 2024

RE: PUBLIC CONSULTATION MEETING

PROPOSED DEVELOPMENT – 0 HOWARD AVENUE

Dear Neighboring Resident: I am the owner of the property located at 0 Howard Avenue, the property bounded by Howard Avenue, Howard Place, and Tuson Way (more specifically shown by the attached map). I am looking to develop this property as a small-scale multi-residential development, consisting of three 6 plex buildings. Since this property is currently zoned for commercial development, I am in the process of completing a Zoning Bylaw Amendment (ZBA) application. Prior to applying to the City of Windsor Planning Department, I would like to take the opportunity to share the proposal in more detail with you.

The purpose of this meeting is to provide a discussion for the applicant and surrounding property owners/residents to review the proposal and to identify any issues so that they may be considered before a ZBA application is submitted to the City. This meeting gives you the opportunity to share with me any concerns or feedback regarding the planned development. My architectural team and I will gather your comments for consideration and incorporate them into the development where possible, feasible and appropriate.

You are invited to attend meeting on:

Monday, April 8th between 4:30PM and 6:00PM, at

Antonino's Original Pizza (4350 Howard Avenue)

Please note this meeting will be an informational meeting based on preliminary development plans, which may be altered prior to final submittal of the application to the City. However, these plans were developed to give the public a realistic understanding of the look and scale of this development. I look forward to discussing this proposal with you in detail. Complimentary refreshments will also be provided.

Sincerely,

Zeyad Rafih

Rafco Property Trust Ltd.

ArcGIS Web Map

11/7/2023, 4:24:51 PM

1:1,122

0 0.01 0.01 0.03 mi

0 0.01 0.03 0.06 km

Override 1

Parcels

Parcels

Major Roads

Municipal Address

Appendix B: Open House Sign-In Sheet

architectural design associates inc. architect
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ada-architect.ca

Public Consultation Sign-in Sheet

Date: MONDAY, APRIL 8, 2024 (4:30PM-6PM)

Address	Name(s)		Sign-In
0 DOUGALL AVE	WINDSOR CITY		
0 HOWARD AVE	RAFCO PROPERTY TRUST LIMITED		
545 NORTH TALBOT RD	DESJARDINS, PATRICIA KELLIE	DESJARDINS, MICHAEL	
4292 HOWARD PL	HORMIZ, MAGED	YOUNAN, NUHA	
365 NEAL BLVD	PUTRUS, ALAA TONY		
4235 DOUGALL AVE	BORDIGNON, DAVID	BORDIGNON, JACQUELINE	
4245 DOUGALL AVE	ZILA, SAMUEL	ZILA, ELIZABETH	
4265 DOUGALL AVE	DAWSON, DWAYNE ALLAN	DAWSON, SANDRA EVE	
4275 DOUGALL AVE	PATEL, RADHA		
4230 HOWARD PL	MORROW, DANIEL GEORGE		David Morrow
4240 HOWARD PL	MILLAR, CATHERINE MACAULEY		Cmillar
4252 HOWARD PL	MILLAR, CATHERINE		
4262 HOWARD PL	SHAW, RAYMOND LLOYD		
4270 HOWARD PL	HABIB, MARIA		
4272 HOWARD PL	ALEJANDRIA, ALEXANDER GIL	ALEJANDRIA, SHARRON LEE	
4276 HOWARD PL	POTRUS, KLARA		
4284 HOWARD PL	DIFAZIO, ASSUNTA		
4286 HOWARD PL	FARDELLA, SIMONE	FARDELLA, CONCETTA	
4298 HOWARD PL	GIROUX, JEAN	VERONNEAU, CORINNE	
4300 HOWARD AVE	1486062 ONTARIO INC		
4248 KENNEDY DR E	SEFEROVIC, PETAR		
4258 KENNEDY DR E	SPANOS, JIM	SPANOS, MARY	
4266 KENNEDY DR E	BAKO, LESLIE LASZLO		
4272 KENNEDY DR E	LENISA, ROSE MARIE ANN		
4278 KENNEDY DR E	RETTIG, STEVEN	RETTIG, CHRISTINA	
4284 KENNEDY DR E	BRKLACIC, SARAH CATHERINE	LARABEE, JUSTIN MATTHEW	
4290 KENNEDY DR E	REALE, DONATO		
320 NEAL BLVD	MALLET, GILBERT JOSEPH	MALLET, NORA MARIE	
330 NEAL BLVD	TRIM, DEBRA SUE	Ted Trim	
340 NEAL BLVD	BOXE, VERNON JOSEPH	BOXE, CYNTHIA ELEENE	
360 NEAL BLVD	MOHSEN, MANSOUR		
4296 KENNEDY DR E	ZHENG, CHAO	LI, QI	
530 NORTH TALBOT RD	RIDDICK, SAMUEL WALTER	RIDDICK, JOSEPHINE BERTHA	
535 NORTH TALBOT RD	CIARAVINO, GIUSEPPE		
540 NORTH TALBOT RD	BIASI, FRANCO LOUIE	BIASI, ANGELA	

4210 Howard. John Renaud

architectural
design
associates
inc. architect

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Windsor | Ontario
N8X 3P7
Tel 519.254.3430
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Public Consultation Sign-in Sheet

Date:

Address	Name(s)		Sign-In
333 BARTLET DR	CHAMI, SOURAYA		
355 BARTLET DR	OLLETT, CHRISTOPHER	RANGER OLLETT, CAROL	
540 N Talbot	Bert		
424C HOWARD	Carl GUALTIERI	(RENTER)	
4350 HOWARD	1339456 ONTARIO LTD.		
4276 How	Klara Petras		

Appendix C: Conceptual Architectural Package

0 HOWARD AVENUE, WINDSOR, ON

PROPOSED MULTI-RESIDENTIAL DEVELOPMENT

R E N D E R P A C K A G E

architectural design associates inc. architect

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Proposed Multi-Residential Development

0 Howard Avenue,
Windsor, ON

architectural design associates inc. architect

1670 Mercer St.
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N8X 3P7

Tel 519.254.3430

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Proposed Multi-Residential Development

0 Howard Avenue,
Windsor, ON

architectural design associates inc. architect

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Proposed Multi-Residential Development

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Windsor, ON

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Proposed Multi-Residential Development

0 Howard Avenue,
Windsor, ON

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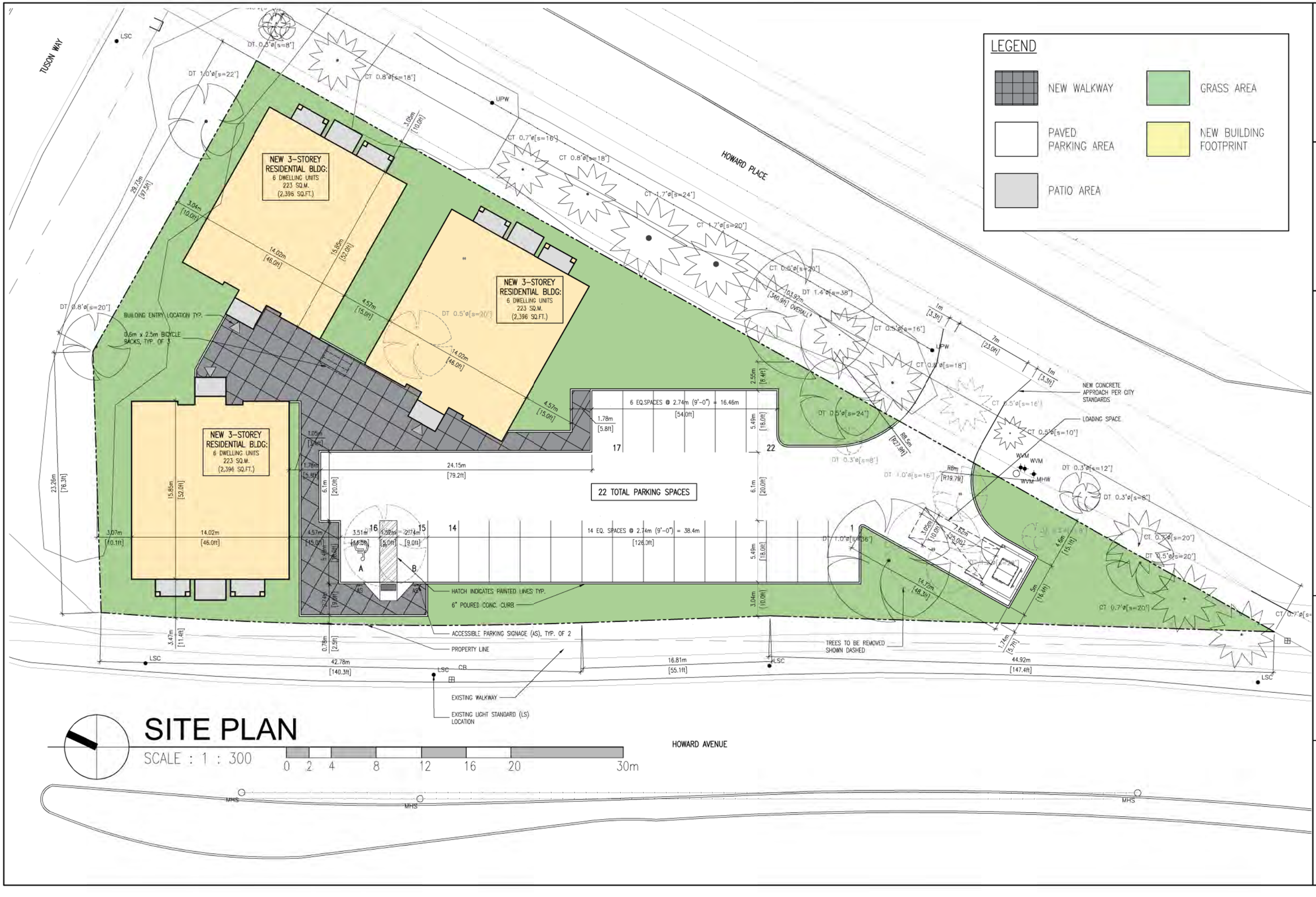

date:	APR 2024
comm. no.:	2021-057
dwg. no.:	SPC-1a
title:	SITE PLAN
drawn by:	OB
checked by:	JBK

project:
PROPOSED MULTI-RESIDENTIAL DEVELOPMENT
0 HOWARD AVENUE

client:
RAFCO PROPERTY TRUST LTD.

1670 Mercer Street
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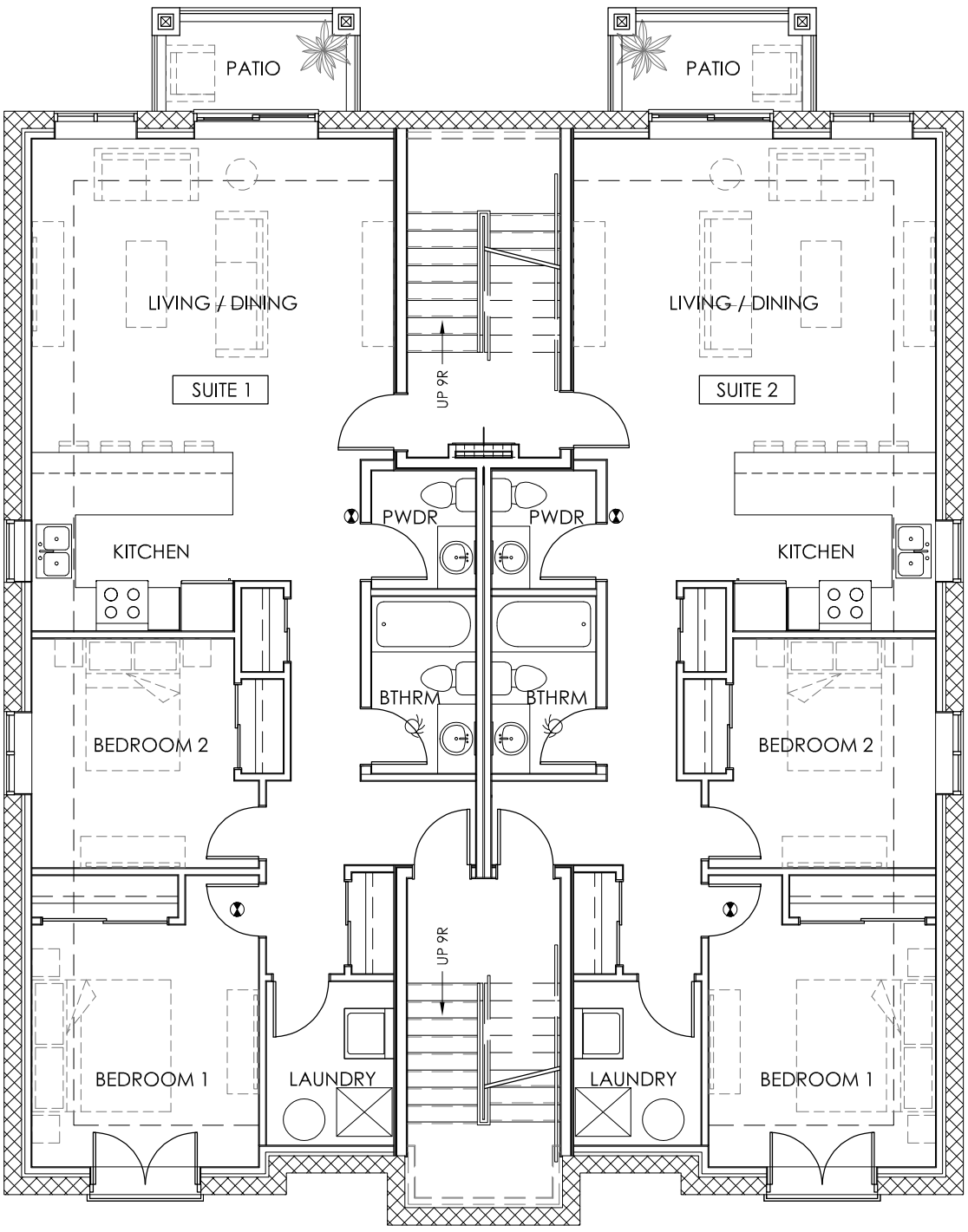
a architectural d design a associates inc. architect



LOWER FLOOR PLAN

SCALE : 1/8" = 1'-0"

0 2 4 8 12 24 FEET

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ada-architect.ca

project:
PROPOSED MULTI-RESIDENTIAL DEVELOPMENT
0 HOWARD AVENUE

client:
RAFCO PROPERTY TRUST LTD.

title:
LOWER FLOOR PLAN

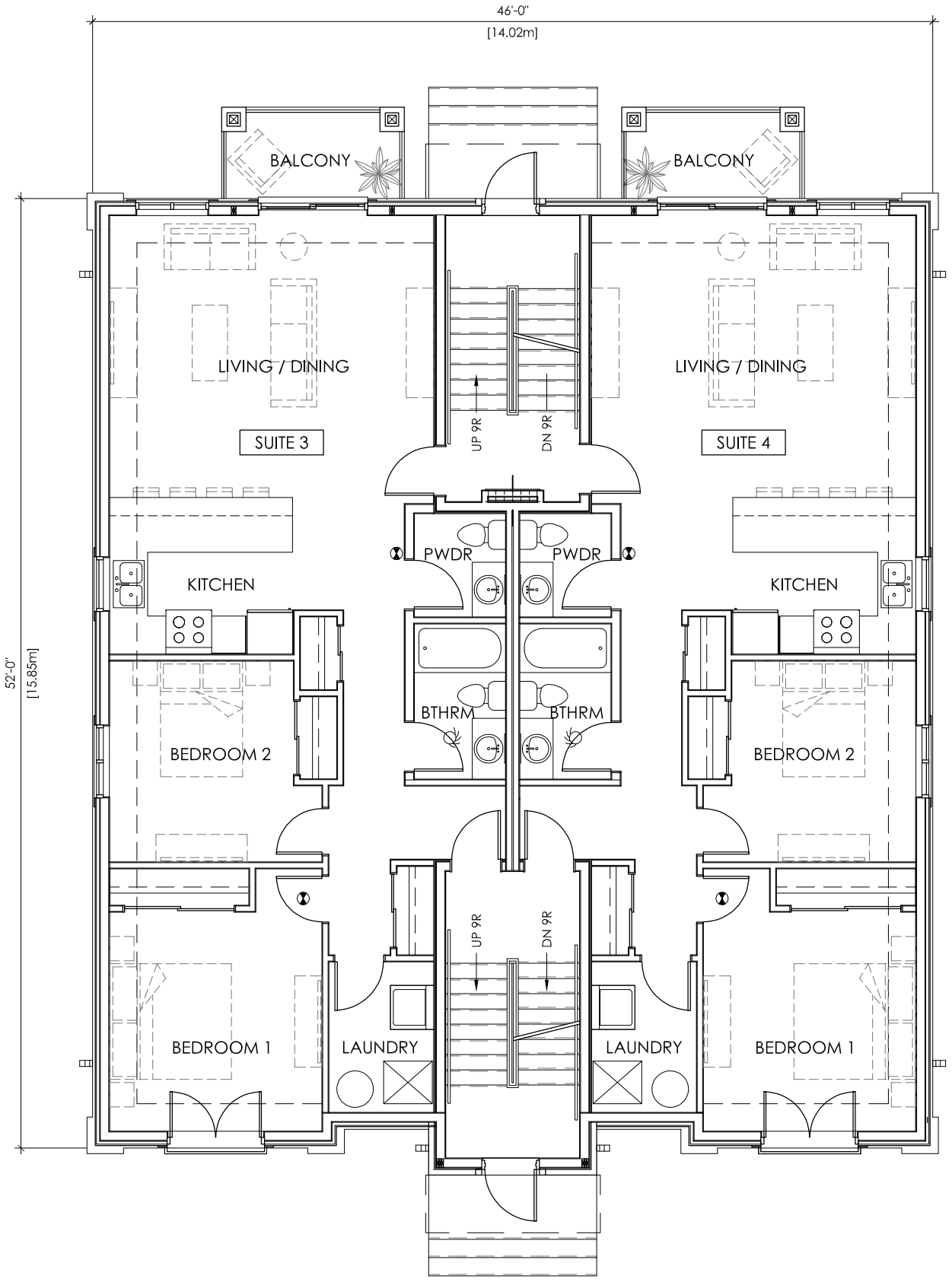
drawn by: OB

checked by: JBK

date: APR 2024

comm. no.: 2021-057

dwg. no.: SK-1



FIRST FLOOR PLAN

SCALE : 1/8" = 1'-0"

0 2 4 8 12 24 FEET

architectural design associates inc. architect

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project:
PROPOSED MULTI-RESIDENTIAL DEVELOPMENT
0 HOWARD AVENUE

client:
RAFCO PROPERTY TRUST LTD.

title:
FIRST FLOOR PLAN

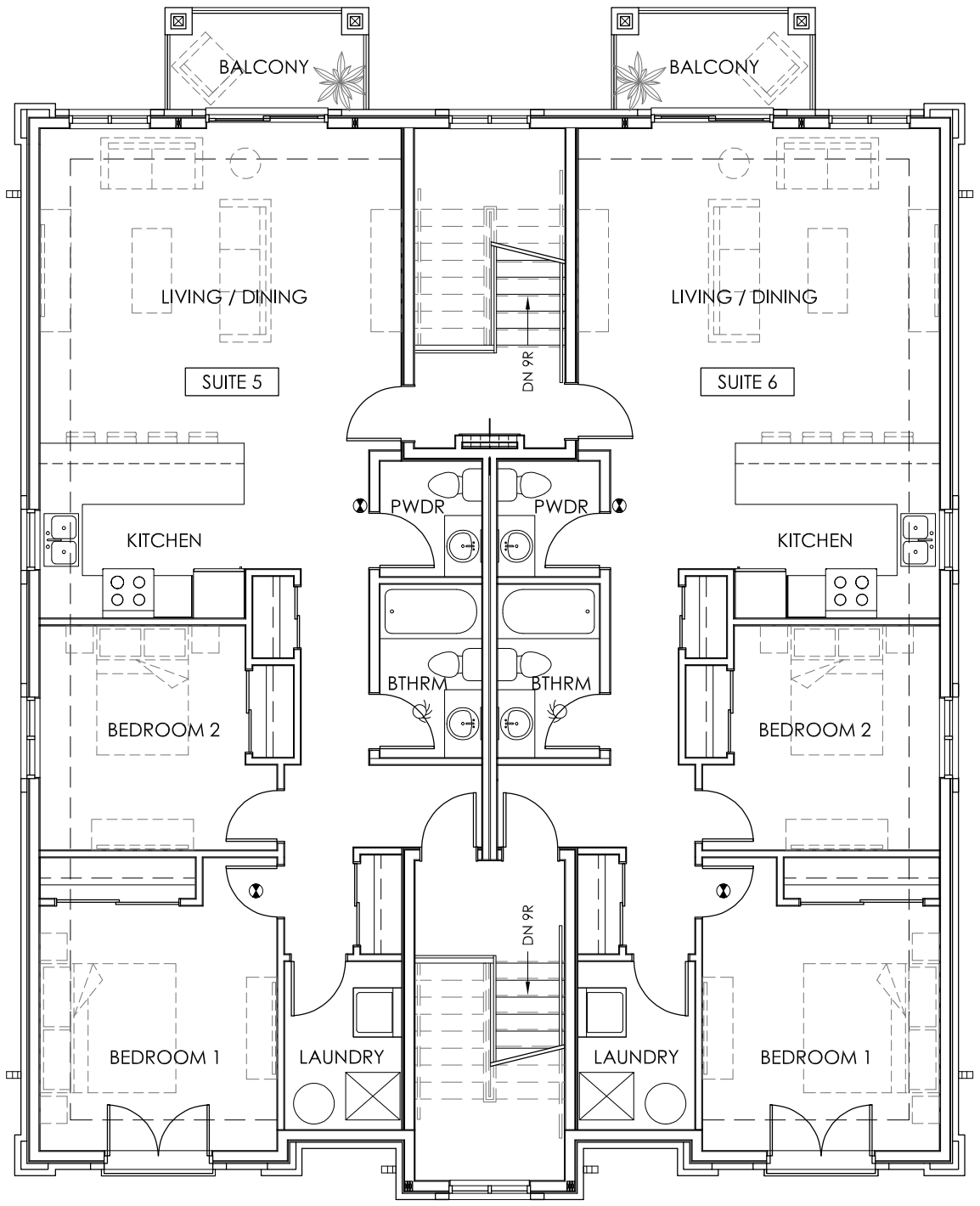
drawn by: OB

checked by: JBK

date: APR 2024

comm. no.: 2021-057

dwg. no.: SK-2



SECOND FLOOR PLAN

SCALE : 1/8" = 1'-0"

0 2 4 8 12 24 FEET

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project:
PROPOSED MULTI-RESIDENTIAL DEVELOPMENT
0 HOWARD AVENUE

client:
RAFCO PROPERTY TRUST LTD.

title:
SECOND FLOOR PLAN

drawn by: OB

checked by: JBK

date: APR 2024

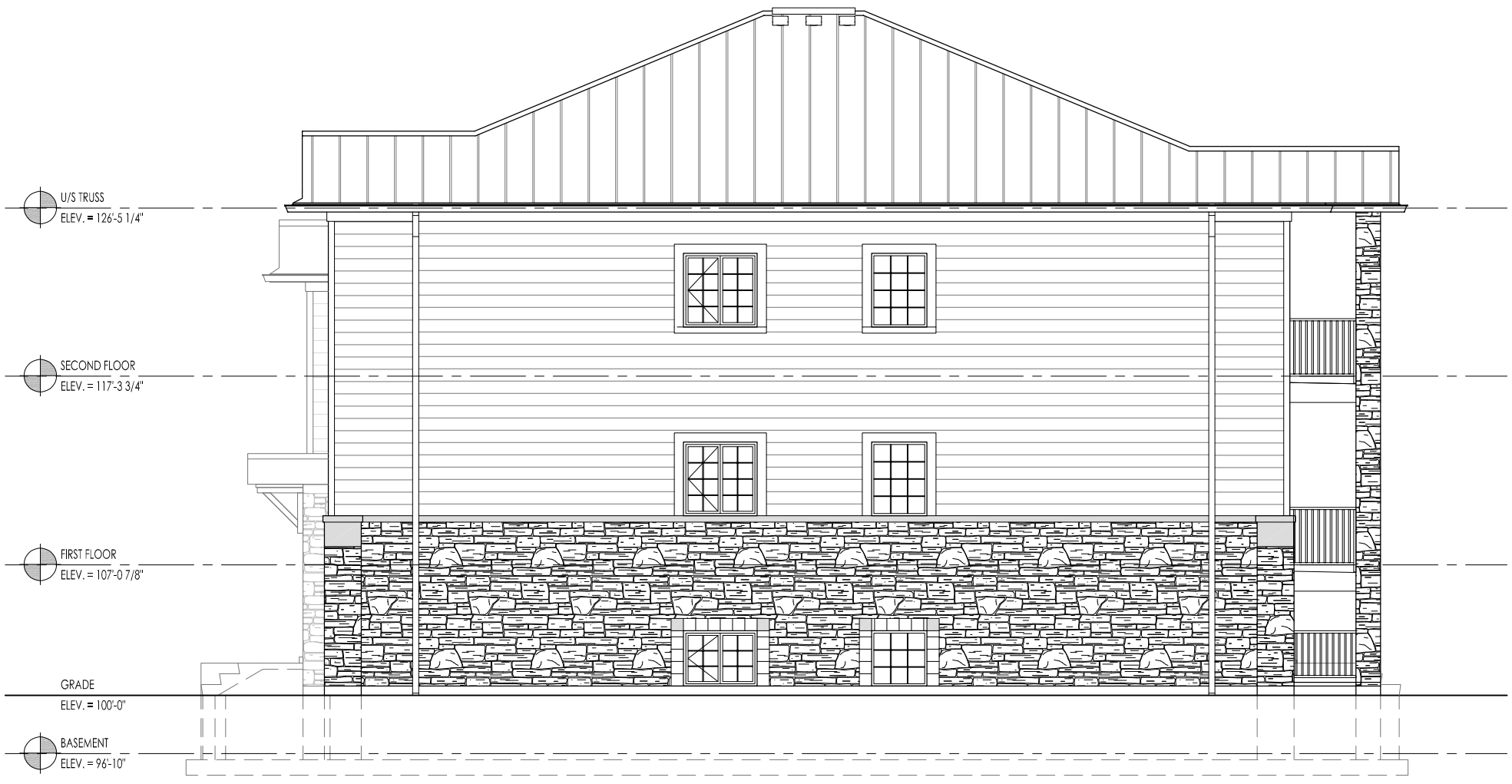
comm. no.: 2021-057

dwg. no.: SK-3

FRONT ELEVATION

SCALE : 1/8" = 1'-0"

0 2 4 8 12 24 FEET



SIDE ELEVATION

SCALE : 1/8" = 1'-0"

0 2 4 8 12 24 FEET

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ada-architect.ca

project:
PROPOSED MULTI-RESIDENTIAL DEVELOPMENT
0 HOWARD AVENUE

client:
RAFCO PROPERTY TRUST LTD.

title:
FRONT ELEVATION
SIDE ELEVATION

drawn by: OB

checked by: JBK

date: APR 2024

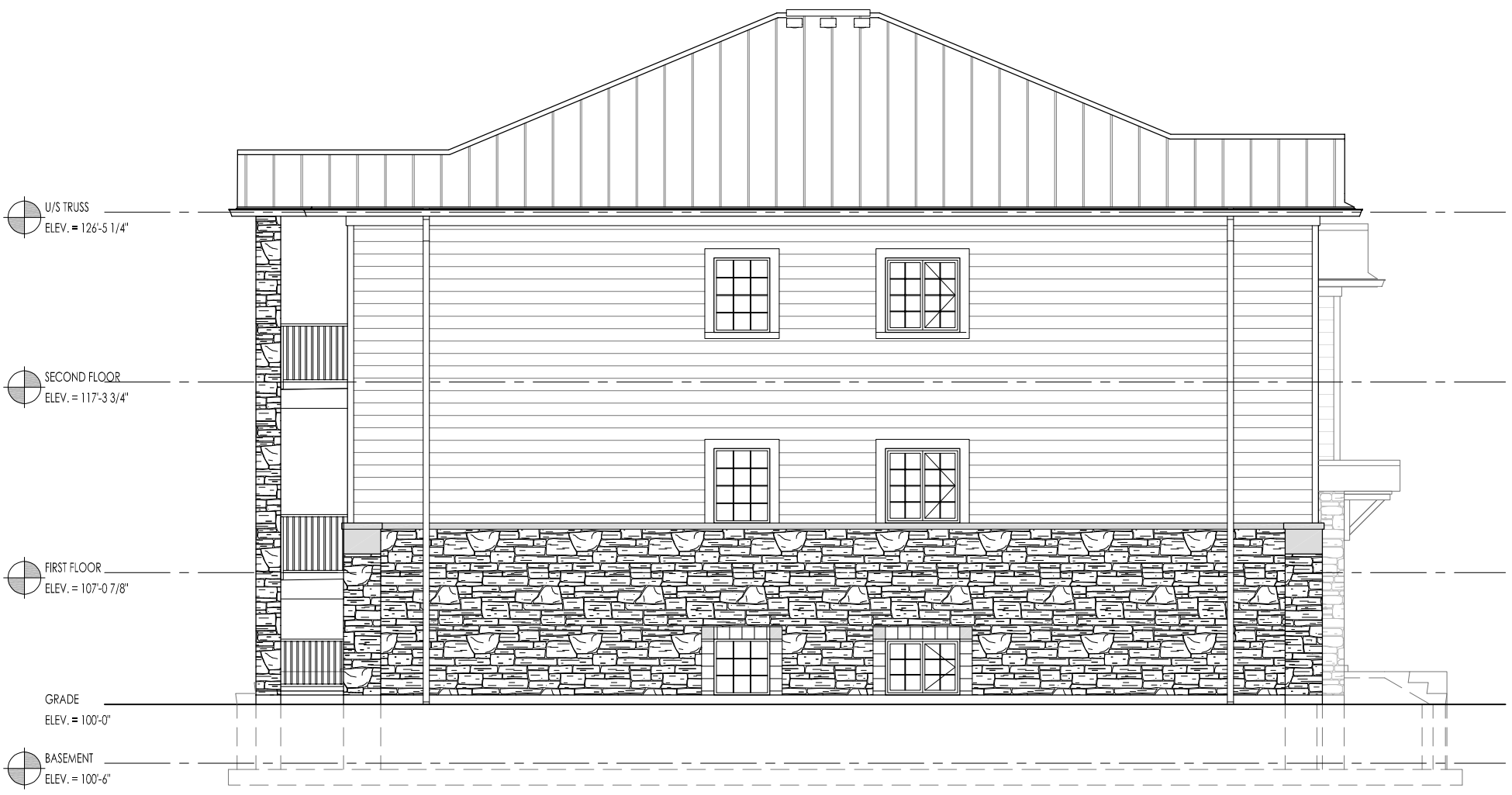
comm. no.: 2021-057

dwg. no.: SK-4

REAR ELEVATION

SCALE : 1/8" = 1'-0"

0 2 4 8 12 24 FEET



SIDE ELEVATION

SCALE : 1/8" = 1'-0"

0 2 4 8 12 24 FEET

architectural design associates inc. architect

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project:
PROPOSED MULTI-RESIDENTIAL DEVELOPMENT
0 HOWARD AVENUE

client:
RAFCO PROPERTY TRUST LTD.

title:
REAR ELEVATION
SIDE ELEVATION

drawn by: OB

checked by: JBK

date: APR 2024

comm. no.: 2021-057

dwg. no.: SK-5

Appendix D: Noise Study

ACOUSTIC ENGINEERING Ltd.

Road Traffic and Stationary Noise Impact Study

4280 Howard Place, Windsor, Ontario

JJ-00565 NIS1

October 23, 2023 Reference No. JJ-00565-NIS1

OLIVIA BYRNE
Junior Project Manager
ADA Architects
1670 Mercer St.
Windsor, Ontario, N8X 3P7

Dear Ms. Byrne:

Re: Road Traffic and Stationary Noise Impact Study
4280 Howard Place, Windsor, Ontario

1. Introduction

JJ Acoustic Engineering Ltd. (JJAE) was retained to complete a Road Traffic and Stationary Noise Impact Study (Study) for the residential development located at 4280 Howard Place in Windsor, Ontario (Site). The Site will be developed into three 3-storey residential buildings. JJAE has provided a copy of the most up-to-date Site Plan in Attachment A.

The Study was prepared consistent with Ontario Ministry of the Environment, Conservation and Park (MOECP) NPC 300, "Environmental Noise Guideline, Stationary and Transportation Sources– Approval and Planning" dated August 2013.

This Study has determined that the potential environmental noise impact from road traffic noise is significant. The proposed development will need the following: a requirement for central air-conditioning, noise warning clauses and special building components. Road traffic noise control requirements for the Site were determined based on road traffic volumes provided by the City of Windsor (City) and forecasted to 10 years from the date of this study.

JJ Acoustic Engineering Ltd.
joey@jjae.ca
226-346-6473

The following attachments were included with this Study:

- Attachment A – Site Plan
- Attachment B – Traffic Data Summary Table & Sample Stamson Traffic Model Outputs
- Attachment C – Stationary Noise Impact Figures
- Attachment D – Stationary Noise Impact Source Table

2. Road Traffic Analysis

2.1 Road Traffic Noise Modeling Methodology

The road traffic noise impact was conducted using STAMSON, the MOECP's computerized model of ORNAMENT. The Application of the model for the site was consistent with the ORNAMENT technical documents. The computer model input parameters include, among other data, the number of road segments, number of house rows, the positional relationship of the receptor to a noise source or barrier in terms of distance, elevation and angle of exposure to the source, the basic site topography, the ground surface type, traffic volumes, traffic composition and speed limit.

The predicted sound level is based on the 1-hour equivalent sound level, designated as Leq, and is adjusted by the STAMSON program to the 16-hour daytime and the 8-hour nighttime equivalent sound level. The applicable noise criteria for noise sensitive spaces are specified in terms of the 16-hour daytime period (7:00 a.m. to 11:00 p.m.) and 8-hour nighttime period (11:00 p.m. to 7:00 a.m.) enabling a direct comparison between the STAMSON model output and the noise limits.

2.2 Road Traffic Model Input Parameters

This section describes the STAMSON model input parameters used to predict road traffic noise impact for the Site.

The Site has four significant roadways in the vicinity of the development: North Talbot approximately 45 meters to the East of Block A, Howard Avenue approximately 15 meters to the West of Block A, Dougall Parkway East Bound approximately 290 meters to the North of Block A, Dougall Parkway South Bound approximately 300 meters to the North of Block A. Where there are intervening and off-site structures that provide line-of-sight obstruction to the roads, JJAE did not include line-of-sight obstruction in our analysis as to calculate worst-case noise impact.

2.2.1 Road Traffic Parameters

The traffic data provided by the City has been summarized below:

North Talbot:

- Current AADT (2012): 8,900
- Forecast AADT (2033): 14,948
- Commercial Vehicle Rates: 2% medium trucks and 3% heavy trucks
- Posted Speed Limit: 50 km/h
- Day Night Splits: 90% day and 10% night

Howard Avenue:

- Current AADT (2018): 18,000
- Forecast AADT (2033): 26,069
- Commercial Vehicle Rates: 2% medium trucks and 3% heavy trucks
- Posted Speed Limit: 50 km/h
- Day Night Splits: 90% day and 10% night

Dougall Parkway East Bound:

- Current AADT (2019): 12,000
- Forecast AADT (2033): 16,959
- Commercial Vehicle Rates: 2% medium trucks and 3% heavy trucks
- Posted Speed Limit: 60 km/h
- Day Night Splits: 90% day and 10% night

Dougall Parkway South Bound:

- Current AADT (2019): 4,600
- Forecast AADT (2033): 6,500
- Commercial Vehicle Rates: 2% medium trucks and 3% heavy trucks
- Posted Speed Limit: 60 km/h
- Day Night Splits: 90% day and 10% night

It should be noted that traffic along Howard Place is 500 AADT, which is considered environmentally insignificant and has not been included in this report.

Moreover, JJAE was not provided with commercial vehicle rates and assumes that medium trucks are 2% and heavy trucks are 3%.

The traffic data is the foundation of this analysis and the Study will be updated if the values change. JJAE assumed 2.5% annual growth to forecast AADT. Traffic data was supplied by the City. The City's AADT report for this Noise Studies report has been supplied in Attachment B.

2.3 Road Traffic Noise Modeling Results

JJAE calculated the Plane of Window (POW) noise exposure for each floor at the Site for the separate daytime and nighttime periods.

The STAMSON road traffic model outputs are provided in Attachment B.

2.4 Road Traffic Modeling Discussion

Noise control requirements will be defined based on NPC 300.

Daytime Outdoor Living Area Assessment (NPC 300, Section C7.1.1)

NPC 300 section A5 (pages 13-14) defines an Outdoor Living Area (OLA). As part of this definition, a balcony or terrace is considered an OLA if it has a minimum depth of 4 meters. All balconies are less than 4 m in depth and therefore will not be considered as OLAs.

The OLA is located approximately 10 meters from the East façade of Block C. JJAE has calculated the noise impact to the OLA to be 65dBA. Due to the excess noise level of road traffic, the OLA is not feasible at the location indicated in Attachment A.

Plane of a Window – Ventilation Requirements (NPC 300, Section C7.1.2)

The predicted daytime and nighttime Plane of Window (POW) noise impact assumes a worst-case and direct line of sight noise exposure to both roads, unless the building itself blocks line-of-sight (full or partial).

JJAE has used the following criteria, which is a summary of NPC 300 requirements, to evaluate the Site noise impacts from road traffic noise:

Daytime Level (dBA)	**Nighttime Level (dBA)**	**Ventilation Requirements and Warning Clauses**	**Special Building Components**
55	50	Not Required	Not Required
55 – 65	50 – 60	Yes, with Type C Warning Clause	Not Required
66 or more	60 or more	Yes, with Type D Warning Clause	Yes

Table B.1 summarizes the predicted worst-case sound levels and the requirements for the units. The following warning clause is required:

Warning Clause C: "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

Warning Clause D: "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment"

Indoor Living Areas – Building Components (NPC 300, Section C7.1.3)

At minimum, the building must be constructed to standard Ontario Building Code requirements. Improved building components are required and summarized in Table B.1. JJAE has assumed 35% window to floor area coverage and that windows are thick and operable. In addition, exterior wall compositions must be a minimum of STC 46, with brick veneer or masonry equivalent.

3. Stationary Noise Impact Analysis

3.1 Stationary Noise Impact Sound Level Criteria

The general criteria for stationary noise sources are defined by NPC 300. The criteria defined in Table C-5 and C-6, "Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Outdoor Points of Reception" and "Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Plane of Window of Noise Sensitive Spaces" are used to evaluate the noise impact at the proposed development.

The criteria for a Class 1 area have been summarized below:

Receiver Category	Time Period	Stationary Noise Criteria
Outdoor Living Area (OLA)	Day = 7:00 to 23:00	Leq = 50 dBA
Plane of Window (POW)	Day = 7:00 to 23:00	Leq = 50 dBA
	Night = 23:00 to 7:00	Leq = 45 dBA

3.2 Modelling Methodology

The stationary noise impact was evaluated using the CADNA A acoustic modelling software that is based on the ISO 9613-2 standard. The data for all potential stationary noise sources was summarized in Attachment D.

JJAE used the following assumptions in our Cadna A model:

- **Ground Absorption**: Default ground absorption coefficient of 0.7 was used.
- **Temperature**: 10°C
- **Humidity**: 70%
- **Building Reflection Coefficient**: Absorption Coefficient Alpha of 0.37 (Reflection Loss of 2dB, Structured Façade) was used.
- **Time-Weighted Adjustment:** where sources operate non-continuously JJAE has provided operating times and as shown in Sections 4 and 5.
- **Tonality**: A 5 dbA tonal penalty was applied to all tonal sources, where applicable. JJAE has provided a (T) for sources identified as tonal in Sections 4 and 5.
- **Reflection Order**: A maximum reflection order of 1 was used to evaluate indirect noise impact.

4. Noise Impact Summary – From Site

The noise from the Site to the neighboring buildings could not be accounted for because the site has not undergone mechanical design yet. An addendum to this report should be completed once a mechanical design is done to account for noise from the Site to the neighboring building.

5. Noise Impact Summary – From Environment to Site

There are several buildings near the site. JJAE has identified several potential stationary noise sources including:

- Small HVAC Units

A summary of the noise sources used in our modelling is provided in Attachment D.

JJAE modelled the noise impact from all significant noise sources to the Site. The results are summarized in the table below and illustrated on Figure 1.

Block A	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	30	50	30	45	Yes
East	31	50	31	45	Yes
South	31	50	31	45	Yes
West	<30	50	<30	45	Yes

From the table above it can be seen that all façades are below noise limits.

Block B	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	31	50	31	45	Yes
East	<30	50	<30	45	Yes
South	<30	50	<30	45	Yes
West	<30	50	<30	45	Yes

From the table above it can be seen that all façades are below noise limits.

Block C	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	32	50	32	45	Yes
East	32	50	32	45	Yes
South	<30	50	<30	45	Yes
West	<30	50	<30	45	Yes

From the table above it can be seen that all façades are below noise limits.

6. Recommendations

The road traffic noise impacts were above the NPC 300 requirements. Noise mitigation measures include:

Block A:

- Warning Clause Type C for the North and East façades.
- Warning Clause Type D for the South and West façades.
- A minimum of STC 35 is required for all exterior glazing for the West façade.
- A minimum of STC 32 is required for all exterior glazing for the South façade.
- JJAE and the client require air conditioning for all units.

Block B:

- Warning Clause Type C for all façades.
- JJAE and the client require air conditioning for all units.

Block C:

- Warning Clause Type C for all façades.
- JJAE and the client require air conditioning for all units.

Outdoor Living Area (OLA):

- Due to the excess noise level of road traffic, the OLA is not feasible at the location indicated in Attachment A.

The stationary noise impacts from neighboring buildings to the site were evaluated and the sound level predictions were determined to be below noise limits.

The noise from the Site to the neighboring buildings could not be accounted for because the site has not undergone mechanical design yet. An addendum to this report should be completed once a mechanical design is done to account for noise from the Site to the neighboring building.

7. Conclusions

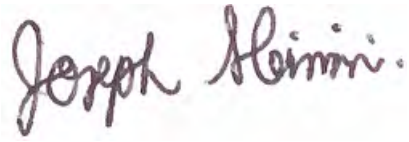
The results of this Study indicate that the potential environmental impact from road traffic sources are significant. Mitigation measures will be required including ventilation requirements, special building components and noise warning clauses for each unit. With the mitigation measures, provided in Section 6.

Should you have any questions on the above, please do not hesitate to contact us.

Yours truly,

Written By: Reviewed by:

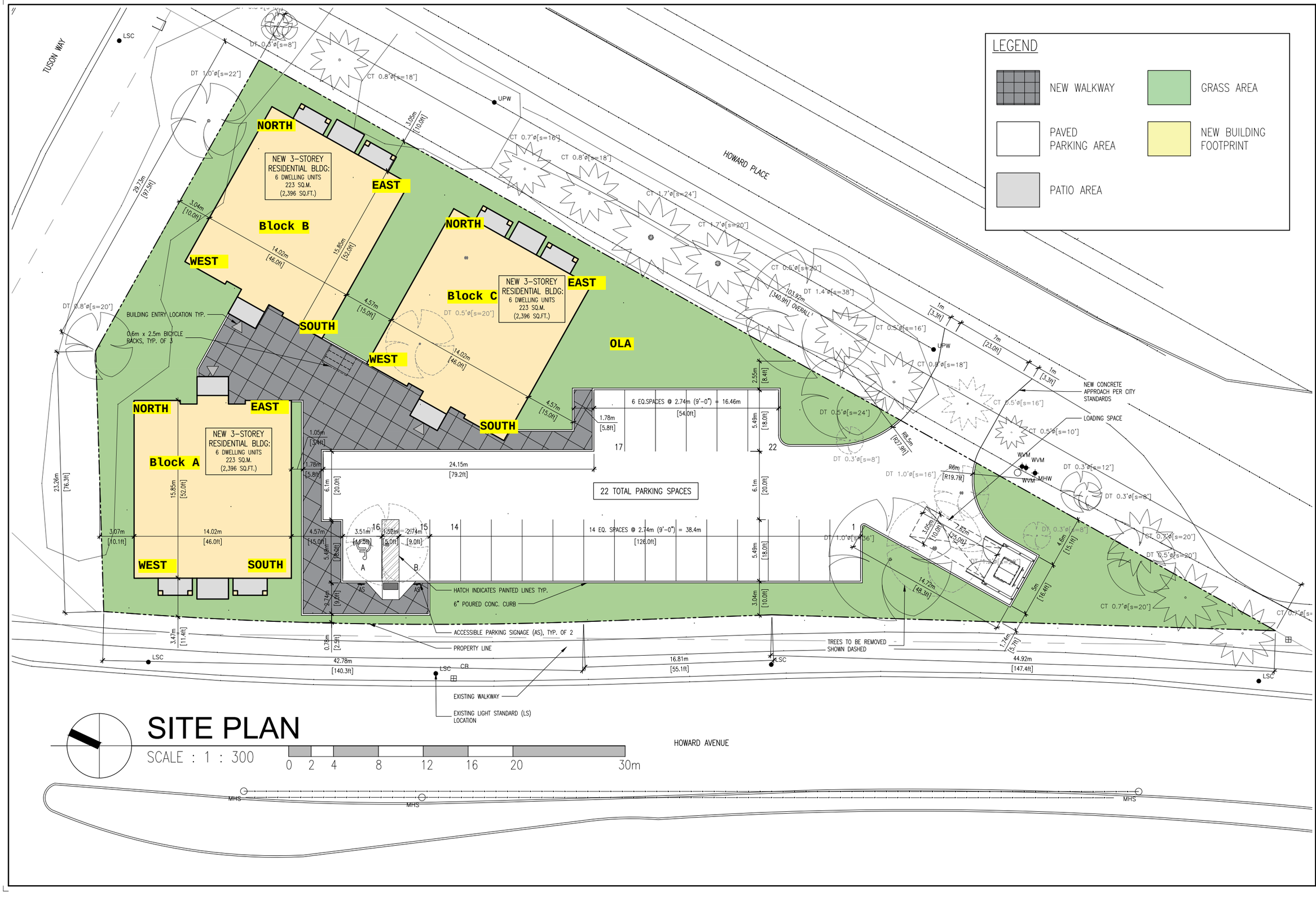
Oct. 23, 2023



Joseph Sleiman
Acoustic Technician

Joey Jraige, P.Eng., B.A.Sc.
President (Owner)

ATTACHMENT A



SITE PLAN

SCALE : 1 : 300

0 2 4 8 12 16 20 30m

date:	OCT. 2023
comm. no.:	2021-057
dwg. no.:	SPC-1a
title:	SITE PLAN
drawn by:	OB
checked by:	JBK

project:
0 HOWARD AVENUE
NEW MULTI-RESIDENTIAL DEVELOPMENT

client:
RAFCO PROPERTY TRUST LTD.

1670 mercer street
windsor ontario canada n8x 3p7
ph 519.254.3430 fax 519.254.3642
email - info@ada-architect.ca www.ada-architect.ca

architectural design associates inc. architect

ATTACHMENT B

Table B1

Road Traffic Noise Levels and Mitigation Measures Summary
4280 Howard Place Block A, Windsor, Ontario

Point of Reception	Road Sound Level Daytime (dBA)	Road Sound Level Nighttime (dBA)	Ventilation Requirements NPC 300	Warning Clauses From NPC 300	Special Building Components
North Façade					
Plane of Window Level 1	64 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	64 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	64 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
East Façade					
Plane of Window Level 1	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
South Façade					
Plane of Window Level 1	66 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 32
Plane of Window Level 2	66 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 32
Plane of Window Level 3	66 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 32
West Façade					
Plane of Window Level 1	69 (dBA)	62 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 35
Plane of Window Level 2	69 (dBA)	62 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 35
Plane of Window Level 3	68 (dBA)	62 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 34

Table B1

Road Traffic Noise Levels and Mitigation Measures Summary
4280 Howard Place Block B, Windsor, Ontario

Point of Reception	Road Sound Level Daytime (dBA)	Road Sound Level Nighttime (dBA)	Ventilation Requirements NPC 300	Warning Clauses From NPC 300	Special Building Components
North Façade					
Plane of Window Level 1	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
East Façade					
Plane of Window Level 1	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
South Façade					
Plane of Window Level 1	63 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	63 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	63 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
West Façade					
Plane of Window Level 1	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code

Table B1

Road Traffic Noise Levels and Mitigation Measures Summary
4280 Howard Place Block C, Windsor, Ontario

Point of Reception	Road Sound Level Daytime (dBA)	Road Sound Level Nighttime (dBA)	Ventilation Requirements NPC 300	Warning Clauses From NPC 300	Special Building Components
North Façade					
Plane of Window Level 1	61 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	61 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	61 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
East Façade					
Plane of Window Level 1	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
South Façade					
Plane of Window Level 1	63 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	63 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	63 (dBA)	57 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
West Façade					
Plane of Window Level 1	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Outdoor Living Area					
OLA	65 (dBA)	N/A	N/A		N/A

Joseph Sleiman

From: Spagnuolo, Mike <mspagnuolo@citywindsor.ca>
Sent: Wednesday, August 23, 2023 10:55 AM
To: Joey Jraige; Joseph Sleiman; Amicarelli, Clare; Dhiman, Siddharth
Subject: RE: Traffic Data for surrounding roadways 4280 Howard Avenue

Joey, here is the information I have;
Howard Place north of Tuson Way 500 (2018)
Howard Ave north of North Talbot 18,000 (2018)
North Talbot East of Howard 8,900 (2012)
Dougall Parkway Eastbound east of Howard ramps 12,000 (2019)
Dougall Parkway to Southbound Howard off ramp 4,600 (2019)

MIKE SPAGNUOLO | SIGNAL SYSTEMS ANALYST
THE CITY OF WINDSOR ONTARIO, CANADA
Office Of The City Engineer
1269 Mercer St | Windsor, ON | N8X 0A9
(519) 255-6247 Ext 6061
www.citywindsor.ca

From: Joey Jraige <joey@jjae.ca>
Sent: August 23, 2023 8:53 AM
To: Spagnuolo, Mike <mspagnuolo@citywindsor.ca>; Joseph Sleiman <Joseph@jjae.ca>; Amicarelli, Clare <CAmicarelli@citywindsor.ca>; Dhiman, Siddharth <SDhiman@citywindsor.ca>
Subject: Re: Traffic Data for surrounding roadways 4280 Howard Avenue

Hello Mike,

The address is 4280 Howard Place

Regards,

Joey Jraige
JJ Acoustic Engineering Ltd.
226-346-6473
joey@jjae.ca

From: Spagnuolo, Mike <mspagnuolo@citywindsor.ca>
Sent: Wednesday, August 23, 2023 8:24:23 AM
To: Joseph Sleiman <Joseph@jjae.ca>; Amicarelli, Clare <CAmicarelli@citywindsor.ca>; Dhiman, Siddharth <SDhiman@citywindsor.ca>
Cc: Joey Jraige <joey@jjae.ca>
Subject: RE: Traffic Data for surrounding roadways 4280 Howard Avenue

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:06:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b1north.te Time Period: Day/Night 16/8 hours
Description: Building #1 North Facade Floor 1

Road data, segment # 1: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50
Number of Years of Growth : 15.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Howard Ave (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 29.00 / 29.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Dougal Pk Ea (day/night)

Car traffic volume : 14497/1611 veh/TimePeriod *
Medium truck volume : 305/34 veh/TimePeriod *
Heavy truck volume : 458/51 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dougal Pk Ea (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 290.00 / 290.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk So (day/night)
-------------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 300.00 / 300.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Howard Ave (day)
-------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 62.83 + 0.00) = 62.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	68.71	0.00	- 2.86	- 3.01	0.00	0.00	0.00	62.83

Segment Leq : 62.83 dBA

Results segment # 2: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 55.56 + 0.00) = 55.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	68.42	0.00	-12.86	0.00	0.00	0.00	0.00	55.56

Segment Leq : 55.56 dBA

Results segment # 3: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 51.24 + 0.00) = 51.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	64.25	0.00	-13.01	0.00	0.00	0.00	0.00	51.24

Segment Leq : 51.24 dBA

Total Leq All Segments: 63.82 dBA

Results segment # 1: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 56.29 + 0.00) = 56.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	62.17	0.00	- 2.86	- 3.01	0.00	0.00	0.00	56.29

Segment Leq : 56.29 dBA

Results segment # 2: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 49.03 + 0.00) = 49.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-	90	90	0.00	61.89	0.00	-12.86	0.00	0.00	0.00	0.00	49.03

Segment Leq : 49.03 dBA

Results segment # 3: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 44.65 + 0.00) = 44.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-	90	90	0.00	57.66	0.00	-13.01	0.00	0.00	0.00	0.00	44.65

Segment Leq : 44.65 dBA

Total Leq All Segments: 57.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.82
(NIGHT): 57.28

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:07:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b1east.te Time Period: Day/Night 16/8 hours
Description: Building #1 East Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 45.00 / 45.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Dougal Pk Ea (day/night)

Car traffic volume : 14497/1611 veh/TimePeriod *
Medium truck volume : 305/34 veh/TimePeriod *
Heavy truck volume : 458/51 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dougal Pk Ea (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk So (day/night)
-------------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 305.00 / 305.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 58.51 + 0.00) = 58.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	66.29	0.00	- 4.77	- 3.01	0.00	0.00	0.00	58.51

Segment Leq : 58.51 dBA

Results segment # 2: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 52.47 + 0.00) = 52.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	68.42	0.00	-12.94	- 3.01	0.00	0.00	0.00	52.47

Segment Leq : 52.47 dBA

Results segment # 3: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 48.15 + 0.00) = 48.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	64.25	0.00	-13.08	- 3.01	0.00	0.00	0.00	48.15

Segment Leq : 48.15 dBA

Total Leq All Segments: 59.78 dBA

Results segment # 1: North Talbot (night)

Source height = 1.32 m

ROAD (0.00 + 51.99 + 0.00) = 51.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	59.77	0.00	- 4.77	- 3.01	0.00	0.00	0.00	51.99

Segment Leq : 51.99 dBA

Results segment # 2: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 45.95 + 0.00) = 45.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	61.89	0.00	-12.94	- 3.01	0.00	0.00	0.00	45.95

Segment Leq : 45.95 dBA

Results segment # 3: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	57.66	0.00	-13.08	- 3.01	0.00	0.00	0.00	41.57

Segment Leq : 41.57 dBA

Total Leq All Segments: 53.26 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.78
(NIGHT): 53.26

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:07:02
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b1south.te Time Period: Day/Night 16/8 hours
Description: Building #1 South Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 140.00 / 140.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Howard Ave (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------

Source height = 1.32 m

ROAD (0.00 + 56.59 + 0.00) = 56.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  66.29   0.00 - 9.70   0.00   0.00   0.00   0.00  56.59
-------------------------------------------------------------------------------

Segment Leq : 56.59 dBA


Results segment # 2: Howard Ave (day)
-------------------------------------

Source height = 1.32 m

ROAD (0.00 + 65.70 + 0.00) = 65.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.71   0.00   0.00 - 3.01   0.00   0.00   0.00  65.70
-------------------------------------------------------------------------------

Segment Leq : 65.70 dBA

Total Leq All Segments: 66.20 dBA


Results segment # 1: North Talbot (night)
-----------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 50.07 + 0.00) = 50.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	59.77	0.00	- 9.70	0.00	0.00	0.00	0.00	50.07

Segment Leq : 50.07 dBA

Results segment # 2: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 59.16 + 0.00) = 59.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	62.17	0.00	0.00	- 3.01	0.00	0.00	0.00	59.16

Segment Leq : 59.16 dBA

Total Leq All Segments: 59.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.20
(NIGHT): 59.66

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:07:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b1west.te Time Period: Day/Night 16/8 hours
Description: Building #1 West Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 152.00 / 152.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Howard Ave (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk Ea (day/night)
-----------------------------------------------
Car traffic volume  : 14497/1611  veh/TimePeriod  *
Medium truck volume :   305/34    veh/TimePeriod  *
Heavy truck volume  :   458/51    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  12000
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk Ea (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: Dougal Pk So (day/night)
-----------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
```

```
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 4: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 305.00 / 305.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------

Source height = 1.32 m

ROAD (0.00 + 53.23 + 0.00) = 53.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  66.29   0.00 -10.06  - 3.01   0.00   0.00   0.00  53.23
-------------------------------------------------------------------------------

Segment Leq : 53.23 dBA


Results segment # 2: Howard Ave (day)
-------------------------------------

Source height = 1.32 m

ROAD (0.00 + 68.71 + 0.00) = 68.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  68.71   0.00   0.00   0.00   0.00   0.00   0.00  68.71
```

Segment Leq : 68.71 dBA

Results segment # 3: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 52.47 + 0.00) = 52.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.42	0.00	-12.94	- 3.01	0.00	0.00	0.00	52.47

Segment Leq : 52.47 dBA

Results segment # 4: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 48.15 + 0.00) = 48.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	64.25	0.00	-13.08	- 3.01	0.00	0.00	0.00	48.15

Segment Leq : 48.15 dBA

Total Leq All Segments: 68.97 dBA

Results segment # 1: North Talbot (night)

Source height = 1.32 m

ROAD (0.00 + 46.70 + 0.00) = 46.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	59.77	0.00	-10.06	- 3.01	0.00	0.00	0.00	46.70

Segment Leq : 46.70 dBA

Results segment # 2: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 62.17 + 0.00) = 62.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	62.17	0.00	0.00	0.00	0.00	0.00	0.00	62.17

Segment Leq : 62.17 dBA

Results segment # 3: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 45.95 + 0.00) = 45.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.89	0.00	-12.94	- 3.01	0.00	0.00	0.00	45.95

Segment Leq : 45.95 dBA

Results segment # 4: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.66	0.00	-13.08	- 3.01	0.00	0.00	0.00	41.57

Segment Leq : 41.57 dBA

Total Leq All Segments: 62.43 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.97
(NIGHT): 62.43

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:08:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b2north.te Time Period: Day/Night 16/8 hours
Description: Building #2 North Facade Floor 1

Road data, segment # 1: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50
Number of Years of Growth : 15.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Howard Ave (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 60.00 / 60.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Dougal Pk Ea (day/night)

Car traffic volume : 14497/1611 veh/TimePeriod *
Medium truck volume : 305/34 veh/TimePeriod *
Heavy truck volume : 458/51 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dougal Pk Ea (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 290.00 / 290.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk So (day/night)
-------------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 300.00 / 300.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Howard Ave (day)
-------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 59.68 + 0.00) = 59.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	68.71	0.00	- 6.02	- 3.01	0.00	0.00	0.00	59.68

Segment Leq : 59.68 dBA

Results segment # 2: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 55.56 + 0.00) = 55.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	68.42	0.00	-12.86	0.00	0.00	0.00	0.00	55.56

Segment Leq : 55.56 dBA

Results segment # 3: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 51.24 + 0.00) = 51.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	64.25	0.00	-13.01	0.00	0.00	0.00	0.00	51.24

Segment Leq : 51.24 dBA

Total Leq All Segments: 61.53 dBA

Results segment # 1: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 53.14 + 0.00) = 53.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	62.17	0.00	- 6.02	- 3.01	0.00	0.00	0.00	53.14

Segment Leq : 53.14 dBA

Results segment # 2: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 49.03 + 0.00) = 49.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-	90	90	0.00	61.89	0.00	-12.86	0.00	0.00	0.00	49.03

Segment Leq : 49.03 dBA

Results segment # 3: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 44.65 + 0.00) = 44.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-	90	90	0.00	57.66	0.00	-13.01	0.00	0.00	0.00	44.65

Segment Leq : 44.65 dBA

Total Leq All Segments: 54.99 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.53
(NIGHT): 54.99

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:08:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b2east.te Time Period: Day/Night 16/8 hours
Description: Building #2 East Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 145.00 / 145.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Dougal Pk Ea (day/night)

Car traffic volume : 14497/1611 veh/TimePeriod *
Medium truck volume : 305/34 veh/TimePeriod *
Heavy truck volume : 458/51 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dougal Pk Ea (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk So (day/night)
-------------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 305.00 / 305.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 53.43 + 0.00) = 53.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	66.29	0.00	- 9.85	- 3.01	0.00	0.00	0.00	53.43

Segment Leq : 53.43 dBA

Results segment # 2: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 52.47 + 0.00) = 52.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	68.42	0.00	-12.94	- 3.01	0.00	0.00	0.00	52.47

Segment Leq : 52.47 dBA

Results segment # 3: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 48.15 + 0.00) = 48.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	64.25	0.00	-13.08	- 3.01	0.00	0.00	0.00	48.15

Segment Leq : 48.15 dBA

Total Leq All Segments: 56.65 dBA

Results segment # 1: North Talbot (night)

Source height = 1.32 m

ROAD (0.00 + 46.91 + 0.00) = 46.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	59.77	0.00	- 9.85	- 3.01	0.00	0.00	0.00	46.91

Segment Leq : 46.91 dBA

Results segment # 2: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 45.95 + 0.00) = 45.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	61.89	0.00	-12.94	- 3.01	0.00	0.00	0.00	45.95

Segment Leq : 45.95 dBA

Results segment # 3: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	57.66	0.00	-13.08	- 3.01	0.00	0.00	0.00	41.57

Segment Leq : 41.57 dBA

Total Leq All Segments: 50.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.65
(NIGHT): 50.12

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:08:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b2south.te Time Period: Day/Night 16/8 hours
Description: Building #2 South Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 146.00 / 146.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Howard Ave (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  34.00 / 34.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------

Source height = 1.32 m

ROAD (0.00 + 56.41 + 0.00) = 56.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  66.29   0.00 - 9.88   0.00   0.00   0.00   0.00  56.41
-------------------------------------------------------------------------------

Segment Leq : 56.41 dBA


Results segment # 2: Howard Ave (day)
-------------------------------------

Source height = 1.32 m

ROAD (0.00 + 62.14 + 0.00) = 62.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.71   0.00 - 3.55 - 3.01   0.00   0.00   0.00  62.14
-------------------------------------------------------------------------------

Segment Leq : 62.14 dBA

Total Leq All Segments: 63.17 dBA


Results segment # 1: North Talbot (night)
-----------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 49.89 + 0.00) = 49.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	59.77	0.00	- 9.88	0.00	0.00	0.00	0.00	49.89

Segment Leq : 49.89 dBA

Results segment # 2: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 55.60 + 0.00) = 55.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	62.17	0.00	- 3.55	- 3.01	0.00	0.00	0.00	55.60

Segment Leq : 55.60 dBA

Total Leq All Segments: 56.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.17
(NIGHT): 56.63

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:09:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b2west.te Time Period: Day/Night 16/8 hours
Description: Building #2 West Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 160.00 / 160.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Howard Ave (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  39.00 / 39.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk Ea (day/night)
-----------------------------------------------
Car traffic volume  : 14497/1611  veh/TimePeriod  *
Medium truck volume :   305/34    veh/TimePeriod  *
Heavy truck volume  :   458/51    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  12000
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk Ea (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: Dougal Pk So (day/night)
-----------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
```

```
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 4: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 305.00 / 305.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------

Source height = 1.32 m

ROAD (0.00 + 53.00 + 0.00) = 53.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  66.29   0.00 -10.28  - 3.01   0.00   0.00   0.00  53.00
-------------------------------------------------------------------------------

Segment Leq : 53.00 dBA


Results segment # 2: Howard Ave (day)
-------------------------------------

Source height = 1.32 m

ROAD (0.00 + 64.56 + 0.00) = 64.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  68.71   0.00  - 4.15   0.00   0.00   0.00   0.00  64.56
```

Segment Leq : 64.56 dBA

Results segment # 3: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 52.47 + 0.00) = 52.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.42	0.00	-12.94	- 3.01	0.00	0.00	0.00	52.47

Segment Leq : 52.47 dBA

Results segment # 4: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 48.15 + 0.00) = 48.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	64.25	0.00	-13.08	- 3.01	0.00	0.00	0.00	48.15

Segment Leq : 48.15 dBA

Total Leq All Segments: 65.18 dBA

Results segment # 1: North Talbot (night)

Source height = 1.32 m

ROAD (0.00 + 46.48 + 0.00) = 46.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	59.77	0.00	-10.28	- 3.01	0.00	0.00	0.00	46.48

Segment Leq : 46.48 dBA

Results segment # 2: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 58.02 + 0.00) = 58.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	62.17	0.00	- 4.15	0.00	0.00	0.00	0.00	58.02

Segment Leq : 58.02 dBA

Results segment # 3: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 45.95 + 0.00) = 45.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.89	0.00	-12.94	- 3.01	0.00	0.00	0.00	45.95

Segment Leq : 45.95 dBA

Results segment # 4: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.66	0.00	-13.08	- 3.01	0.00	0.00	0.00	41.57

Segment Leq : 41.57 dBA

Total Leq All Segments: 58.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.18
(NIGHT): 58.65

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:09:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b3north.te Time Period: Day/Night 16/8 hours
Description: Building #3 North Facade Floor 1

Road data, segment # 1: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50
Number of Years of Growth : 15.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Howard Ave (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 60.00 / 60.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Dougal Pk Ea (day/night)

Car traffic volume : 14497/1611 veh/TimePeriod *
Medium truck volume : 305/34 veh/TimePeriod *
Heavy truck volume : 458/51 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dougal Pk Ea (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 310.00 / 310.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk So (day/night)
-------------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 320.00 / 320.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Howard Ave (day)
-------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 59.68 + 0.00) = 59.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	68.71	0.00	- 6.02	- 3.01	0.00	0.00	0.00	59.68

Segment Leq : 59.68 dBA

Results segment # 2: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 55.27 + 0.00) = 55.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	68.42	0.00	-13.15	0.00	0.00	0.00	0.00	55.27

Segment Leq : 55.27 dBA

Results segment # 3: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 50.96 + 0.00) = 50.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	64.25	0.00	-13.29	0.00	0.00	0.00	0.00	50.96

Segment Leq : 50.96 dBA

Total Leq All Segments: 61.43 dBA

Results segment # 1: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 53.14 + 0.00) = 53.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	62.17	0.00	- 6.02	- 3.01	0.00	0.00	0.00	53.14

Segment Leq : 53.14 dBA

Results segment # 2: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 48.74 + 0.00) = 48.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-	90	90	0.00	61.89	0.00	-13.15	0.00	0.00	0.00	48.74

Segment Leq : 48.74 dBA

Results segment # 3: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 44.37 + 0.00) = 44.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-	90	90	0.00	57.66	0.00	-13.29	0.00	0.00	0.00	44.37

Segment Leq : 44.37 dBA

Total Leq All Segments: 54.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.43
(NIGHT): 54.89

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:10:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b3east.te Time Period: Day/Night 16/8 hours
Description: Building #3 East Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 128.00 / 128.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Dougal Pk Ea (day/night)

Car traffic volume : 14497/1611 veh/TimePeriod *
Medium truck volume : 305/34 veh/TimePeriod *
Heavy truck volume : 458/51 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dougal Pk Ea (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 315.00 / 315.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk So (day/night)
-------------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 325.00 / 325.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 53.97 + 0.00) = 53.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	66.29	0.00	- 9.31	- 3.01	0.00	0.00	0.00	53.97

Segment Leq : 53.97 dBA

Results segment # 2: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 52.19 + 0.00) = 52.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	68.42	0.00	-13.22	- 3.01	0.00	0.00	0.00	52.19

Segment Leq : 52.19 dBA

Results segment # 3: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 47.88 + 0.00) = 47.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	64.25	0.00	-13.36	- 3.01	0.00	0.00	0.00	47.88

Segment Leq : 47.88 dBA

Total Leq All Segments: 56.78 dBA

Results segment # 1: North Talbot (night)

Source height = 1.32 m

ROAD (0.00 + 47.45 + 0.00) = 47.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	59.77	0.00	- 9.31	- 3.01	0.00	0.00	0.00	47.45

Segment Leq : 47.45 dBA

Results segment # 2: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 45.66 + 0.00) = 45.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	61.89	0.00	-13.22	- 3.01	0.00	0.00	0.00	45.66

Segment Leq : 45.66 dBA

Results segment # 3: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 41.29 + 0.00) = 41.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	0	0.00	57.66	0.00	-13.36	- 3.01	0.00	0.00	0.00	41.29

Segment Leq : 41.29 dBA

Total Leq All Segments: 50.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.78
(NIGHT): 50.25

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:09:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b3south.te Time Period: Day/Night 16/8 hours
Description: Building #3 South Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 130.00 / 130.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Howard Ave (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  34.00 / 34.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------

Source height = 1.32 m

ROAD (0.00 + 56.92 + 0.00) = 56.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  66.29   0.00 - 9.38   0.00   0.00   0.00   0.00  56.92
-------------------------------------------------------------------------------

Segment Leq : 56.92 dBA


Results segment # 2: Howard Ave (day)
-------------------------------------

Source height = 1.32 m

ROAD (0.00 + 62.14 + 0.00) = 62.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.71   0.00 - 3.55 - 3.01   0.00   0.00   0.00  62.14
-------------------------------------------------------------------------------

Segment Leq : 62.14 dBA

Total Leq All Segments: 63.28 dBA


Results segment # 1: North Talbot (night)
-----------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 50.39 + 0.00) = 50.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	59.77	0.00	- 9.38	0.00	0.00	0.00	0.00	50.39

Segment Leq : 50.39 dBA

Results segment # 2: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 55.60 + 0.00) = 55.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	62.17	0.00	- 3.55	- 3.01	0.00	0.00	0.00	55.60

Segment Leq : 55.60 dBA

Total Leq All Segments: 56.74 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.28
(NIGHT): 56.74

STAMSON 5.0 NORMAL REPORT Date: 07-09-2023 17:10:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b3west.te Time Period: Day/Night 16/8 hours
Description: Building #3 West Facade Floor 1

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 142.00 / 142.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Howard Ave (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  39.00 / 39.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Dougal Pk Ea (day/night)
------------------------------------------------
Car traffic volume  : 14497/1611  veh/TimePeriod  *
Medium truck volume :   305/34    veh/TimePeriod  *
Heavy truck volume  :   458/51    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  12000
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dougal Pk Ea (day/night)
------------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 315.00 / 315.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: Dougal Pk So (day/night)
------------------------------------------------
Car traffic volume  :  5557/617   veh/TimePeriod  *
```

```
Medium truck volume :   117/13    veh/TimePeriod  *
Heavy truck volume  :   175/19    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   4600
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 4: Dougal Pk So (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 325.00 / 325.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------

Source height = 1.32 m

ROAD (0.00 + 53.52 + 0.00) = 53.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  66.29   0.00  - 9.76  - 3.01   0.00   0.00   0.00  53.52
-------------------------------------------------------------------------------

Segment Leq : 53.52 dBA


Results segment # 2: Howard Ave (day)
-------------------------------------

Source height = 1.32 m

ROAD (0.00 + 64.56 + 0.00) = 64.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  68.71   0.00  - 4.15   0.00   0.00   0.00   0.00  64.56
```

Segment Leq : 64.56 dBA

Results segment # 3: Dougal Pk Ea (day)

Source height = 1.32 m

ROAD (0.00 + 52.19 + 0.00) = 52.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.42	0.00	-13.22	- 3.01	0.00	0.00	0.00	52.19

Segment Leq : 52.19 dBA

Results segment # 4: Dougal Pk So (day)

Source height = 1.32 m

ROAD (0.00 + 47.88 + 0.00) = 47.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	64.25	0.00	-13.36	- 3.01	0.00	0.00	0.00	47.88

Segment Leq : 47.88 dBA

Total Leq All Segments: 65.20 dBA

Results segment # 1: North Talbot (night)

Source height = 1.32 m

ROAD (0.00 + 47.00 + 0.00) = 47.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	59.77	0.00	- 9.76	- 3.01	0.00	0.00	0.00	47.00

Segment Leq : 47.00 dBA

Results segment # 2: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 58.02 + 0.00) = 58.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	62.17	0.00	- 4.15	0.00	0.00	0.00	0.00	58.02

Segment Leq : 58.02 dBA

Results segment # 3: Dougal Pk Ea (night)

Source height = 1.32 m

ROAD (0.00 + 45.66 + 0.00) = 45.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.89	0.00	-13.22	- 3.01	0.00	0.00	0.00	45.66

Segment Leq : 45.66 dBA

Results segment # 4: Dougal Pk So (night)

Source height = 1.31 m

ROAD (0.00 + 41.29 + 0.00) = 41.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.66	0.00	-13.36	- 3.01	0.00	0.00	0.00	41.29

Segment Leq : 41.29 dBA

Total Leq All Segments: 58.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.20
(NIGHT): 58.66

STAMSON 5.0 NORMAL REPORT Date: 08-09-2023 12:18:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola.te Time Period: Day/Night 16/8 hours
Description: Outdoor Living Area

Road data, segment # 1: North Talbot (day/night)

Car traffic volume : 12781/1420 veh/TimePeriod *
Medium truck volume : 269/30 veh/TimePeriod *
Heavy truck volume : 404/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8900
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: North Talbot (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 120.00 / 120.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Howard Ave (day/night)

Car traffic volume : 22289/2477 veh/TimePeriod *
Medium truck volume : 469/52 veh/TimePeriod *
Heavy truck volume : 704/78 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 2.50

```
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Howard Ave (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: North Talbot (day)
---------------------------------------

Source height = 1.32 m

ROAD (0.00 + 57.26 + 0.00) = 57.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  66.29   0.00 - 9.03   0.00   0.00   0.00   0.00  57.26
-------------------------------------------------------------------------------

Segment Leq : 57.26 dBA


Results segment # 2: Howard Ave (day)
-------------------------------------

Source height = 1.32 m

ROAD (0.00 + 64.24 + 0.00) = 64.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
  - 90     90   0.00  68.71   0.00 - 4.47   0.00   0.00   0.00   0.00  64.24
-------------------------------------------------------------------------------

Segment Leq : 64.24 dBA

Total Leq All Segments: 65.03 dBA


Results segment # 1: North Talbot (night)
-----------------------------------------
```

Source height = 1.32 m

ROAD (0.00 + 50.74 + 0.00) = 50.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	59.77	0.00	- 9.03	0.00	0.00	0.00	0.00	50.74

Segment Leq : 50.74 dBA

Results segment # 2: Howard Ave (night)

Source height = 1.32 m

ROAD (0.00 + 57.70 + 0.00) = 57.70 dBA

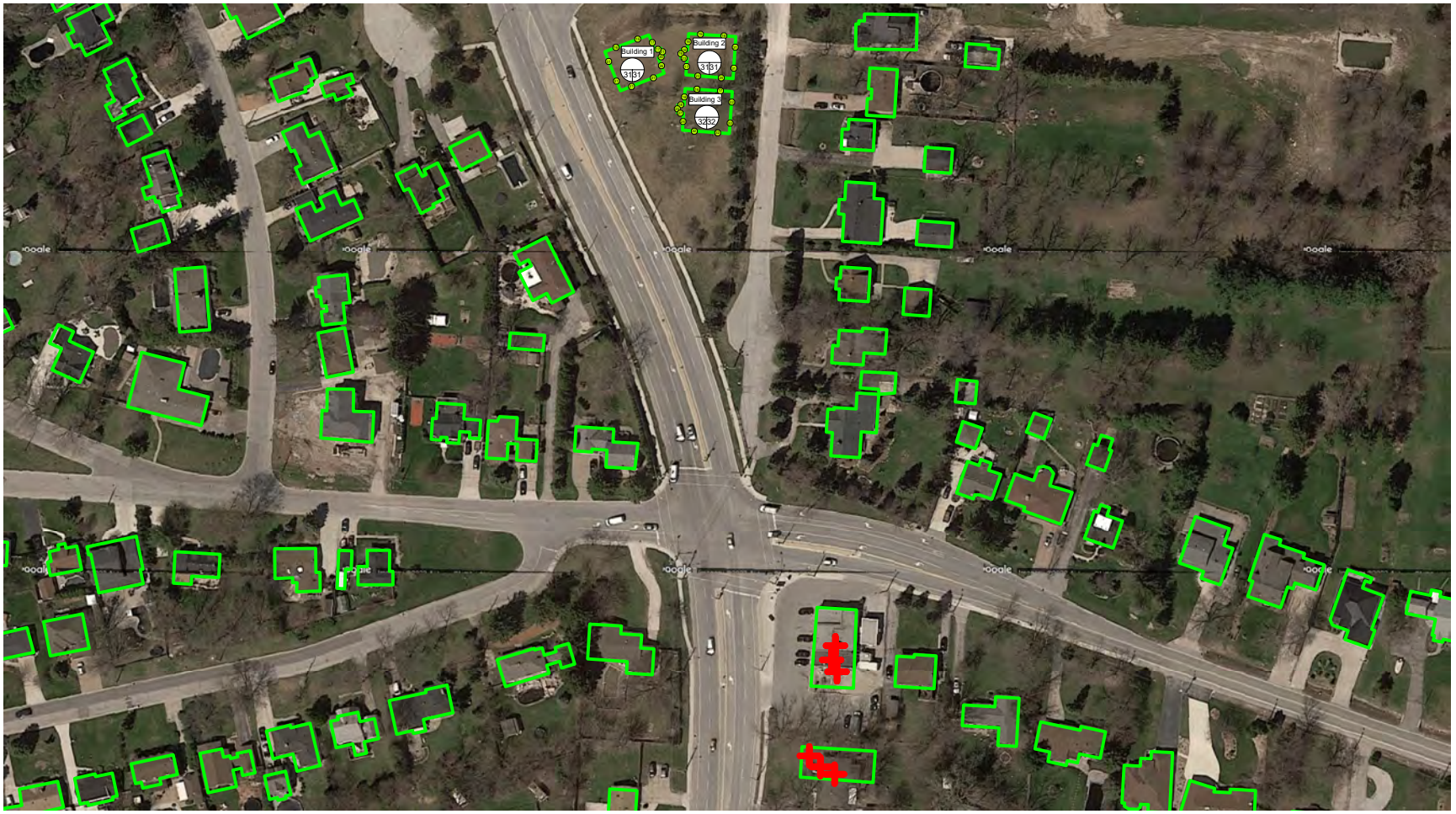
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
- 90	90	0.00	62.17	0.00	- 4.47	0.00	0.00	0.00	0.00	57.70

Segment Leq : 57.70 dBA

Total Leq All Segments: 58.50 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.03
(NIGHT): 58.50

ATTACHMENT C



> -99.0 dB
> 35.0 dB
> 40.0 dB
> 45.0 dB
> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

Point Source
Building
Building Evaluation

STATIONARY NOISE IMPACT
4280 HOWARD PLACE, WINDSOR, ONTARIO

FIGURE 1
NOISE IMPACT FROM NEIGHBORING BUILDINGS TO SITE

ATTACHMENT D

Table D1
Stationary Noise Impact Source Data
4280 Howard Place, Windsor, Ontario

Noise Source Description	Cadna ID	Total SWL (dBA)	Data Source or Representative Data	Height Absolute (m)	Above Roof (m)	x	y
Small HVAC	Small_HVAC	81.9	Small_HVAC	6.5	1.5	17335337.8	4679056
Small HVAC	Small_HVAC	81.9	Small_HVAC	6.5	1.5	17335336.4	4679051
Small HVAC	Small_HVAC	81.9	Small_HVAC	6.5	1.5	17335338.3	4679047
Small HVAC	Small_HVAC	81.9	Small_HVAC	9.5	1.5	17335328.9	4679019
Small HVAC	Small_HVAC	81.9	Small_HVAC	9.5	1.5	17335332.7	4679015
Small HVAC	Small_HVAC	81.9	Small_HVAC	9.5	1.5	17335337.5	4679013

Appendix E: Sanitary Sewer Study

ALEO ASSOCIATES INC.
CONSULTING ENGINEERS

October 3, 2023

Corporation of the City of Windsor
Engineering Department – Development Division
350 City Hall Square West, Room 210
Windsor, Ontario, N9A 6S1

ATT: MR. ROBERT PERISSINOTTI, DEVELOPMENT ENGINEER
RE: SANITARY SEWER STUDY FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT 0 HOWARD AVENUE, WINDSOR, ONTARIO

Dear Mr. Perissinotti,

We were retained by Architectural Design Associates Inc. to conduct a sanitary sewer study for the proposed residential development at 0 Howard Avenue which is required at this time for a zoning by-law amendment.

The property is currently an undeveloped open grass area and is a zoned commercial district. Proposed are three multi-unit buildings each with 6 units for a total of 18 units.

The existing municipal sanitary sewer system has been assessed to determine if there is capacity available to accept the increased sewage flow from the proposed medium density residential development. The sewer analyzed is the 250 mm diameter PVC sanitary sewer along Howard Place. This sanitary sewer transitions to a 900 mm diameter sanitary trunk sewer at the Howard Avenue & North Talbot intersection.

The existing 250 mm diameter sanitary sewer along Howard Place has a gradient of 0.41% and a total capacity of 38 L/s. The sewer currently provides drainage solely for the fourteen (14) single family dwellings along Howard Place.

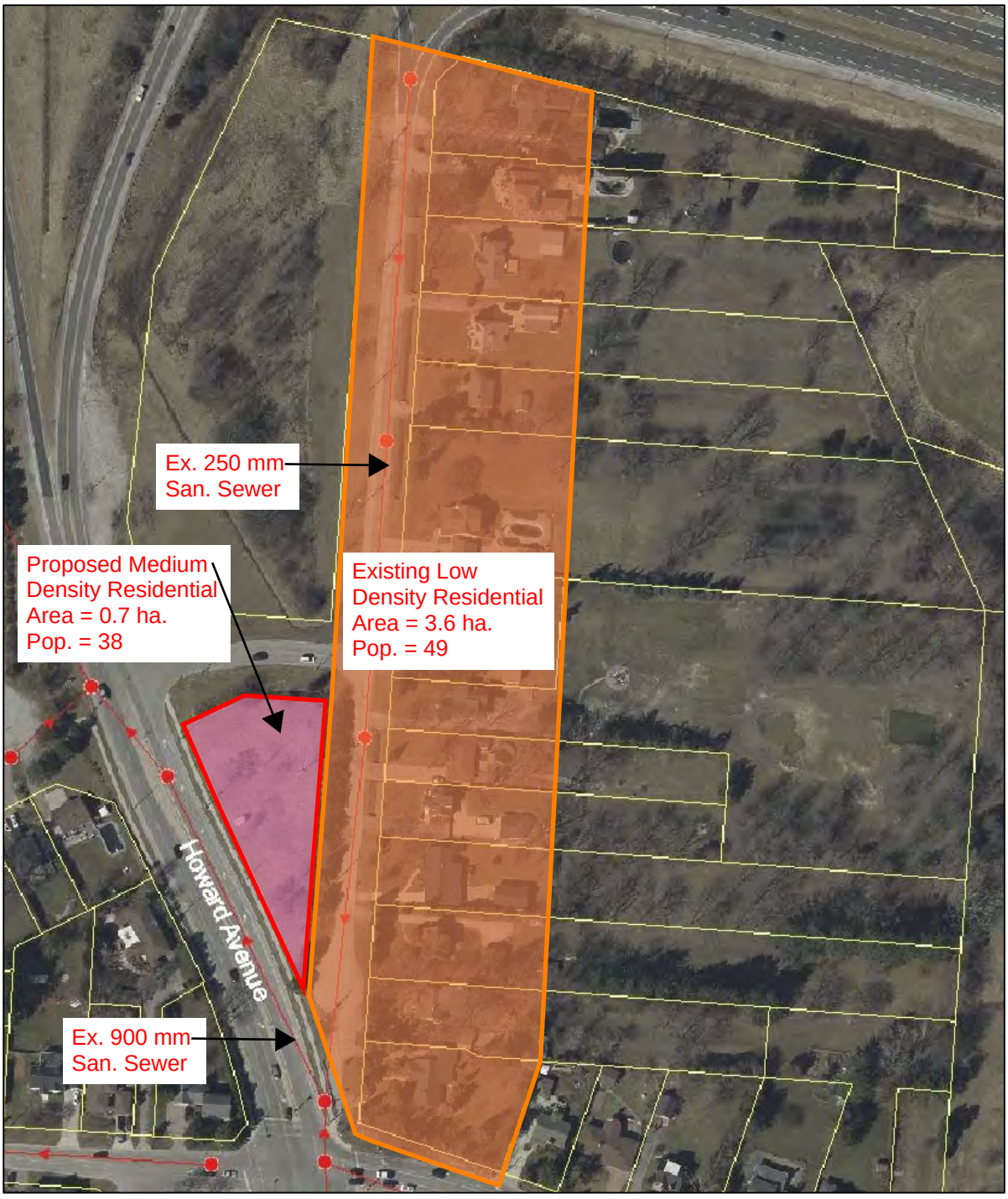
The peak sewage flow rate from these existing dwellings to the municipal sewer is approximately 1.4 L/s based on a population density of 3.5 persons per household. The proposed medium density residential development will have 18 units for a total population of 38 persons based on a 2.1 person per unit population density. This corresponds to a peak domestic sewage flow rate of 0.8 L/s. Therefore, the total peak sewage flow rate in the proposed condition would be approximately 2.2 L/s.

As indicated, the existing municipal sanitary sewer has a capacity of 38 L/s and will therefore only have 6% of its capacity utilized. Please refer to the sanitary sewer capacity assessment enclosed. The assessed municipal sanitary sewer has substantial capacity available to support the proposed development.

If you have any questions or concerns, please contact me.

Yours Very Truly

John-Paul Aleo, P.Eng.
ALEO ASSOCIATES INC.



BUILDING NORTH

N TRUE

SCALE: NTS

SANITARY SEWER DRAINAGE AREA PLAN

ALEO ASSOCIATES INC.
CONSULTING ENGINEERS
325 DEVONSHIRE RD. SUITE 500, WINDSOR, ON, CANADA N8Y 2L3
TELEPHONE (519) 254-7926 FACSIMILE (519) 254-0895

DATE	OCT. 3, 2023
SCALE	NTS
DRAWN BY	JPA
AUTOCAD REF.	8225.dwg

PROJECT TITLE: PROPOSED RESIDENTIAL DEVELOPMENT
0 HOWARD AVENUE, WINDSOR, ONTARIO

SHEET TITLE: SANITARY SEWER DRAINAGE AREA PLAN

SHEET No. 1 of 1

PROJECT No. 8538

ALEO ASSOCIATES INC.
Consulting Engineers

Prepared By: J.P.A.
Project Name: Howard Residential Development
Project Address: 0 Howard Avenue
Project No.: 8538
Date: 2023.09.26

SANITARY SEWER CAPACITY ASSESSMENT
250 mm DIAMETER SANITARY SEWER FROM MH 7S3173 TO MH 7S3174
ASSESSMENT OF PROPOSED CONDITION

LOCATION				POPULATION			SEWAGE FLOW			SEWER DESIGN					
Area No.	DEVELOPMENT TYPE	AREA (HEC.)	# OF UNITS	PER UNIT	POP.	PEAKING FACT.	INFIL. l/sec	SEW. l/sec	TOTAL l/sec	SIZE (mm)	n	SLOPE (%)	CAP. l/sec	VEL. m/s	CAPACITY UTILIZED (%)
1	SINGLE-FAMILY DWELLINGS (LOW DENSITY RESIDENTIAL)	3.6	14	3.5	49	4.3	0.6	0.9	1.4	-	-	-	-	-	-
2	PROPOSED 6 PLEX DEVELOPMENT (MEDIUM DENSITY RESIDENTIAL)	0.7	18	2.1	38	4.3	0.1	0.7	0.8	-	-	-	-	-	-
	TOTAL	112.0		-	87	-	0.7	1.6	2.2	250	0.013	0.41	38	0.78	5.9

Design Criteria:

1) Residential Sewage Flow Rate = 0.0042 l/sec/cap
2) Infiltration = 0.1560 l/s/ha
3) Peak Wastewater Flow Factor, M = 1+14/(4+P^0.5)
4) Manning's Coefficient = 0.013
5) Minimum Velocity = 0.76 m/s
6) Maximum Velocity = 3.0 m/s

Appendix F: Storm Sewer Study

ALEO ASSOCIATES INC.
CONSULTING ENGINEERS

October 3, 2023

Corporation of the City of Windsor
Engineering Department – Development Division
350 City Hall Square West, Room 210
Windsor, Ontario, N9A 6S1

ATT: MR. ROBERT PERISSINOTTI, DEVELOPMENT ENGINEER
RE: STORM SEWER STUDY FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT 0 HOWARD AVENUE, WINDSOR, ONTARIO

Dear Mr. Perissinotti,

We have been retained by Architectural Design Associates Inc. to conduct a storm sewer study for the proposed residential development at 0 Howard Avenue which is required at this time for a zoning by-law amendment.

The property is bounded by Howard Avenue to the West, Howard Place to the East, Tuson Way to the North, and North Talbot Road to the South. See site location drawing enclosed.

The property has a total area of 29,664 ft² (0.681 acres) and is currently an undeveloped open grass area. The property is generally flat with the land sloping from South to North. The land currently drains stormwater runoff by overland flow to an existing municipal ditch inlet catch basin located North-East of the site. See topographic survey plan enclosed showing the drainage pattern of the land.

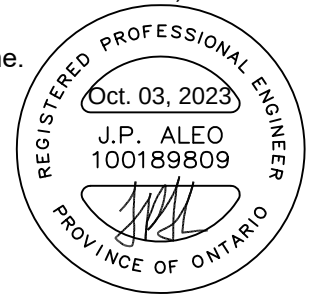
The pre-development release rate to be used for the proposed development shall be based on the current overland flow rate from the undeveloped open grass area to the municipal drainage system. The pre-development release rate was determined to be 7 L/s based on a hydrologic analysis using the 1:2 year 4-hour Chicago design storm distribution. See determination of the pre-development release rate enclosed.

The proposed development consists of three, multi-unit residential buildings with surrounding parking lot and landscape areas. An 80% impervious percentage will be used for the developed site. A flow restrictor will be installed at the outlet to restrict the post development flows to the pre-development release of 7 L/s. The runoff rate of the existing pre-developed condition is being maintained as part of the proposed development and therefore, there will not be any effect on the receiving storm sewer system or surrounding properties.

A storm detention scheme will be carried out during the detailed design phase and will be completed to conform to the Windsor-Essex Region Stormwater Management Standards. Storage will be provided through surface storage on the parking lot surface and in an underground chamber system.

Stormwater quality control will be accomplished through the underground chamber system which will treat stormwater captured from the site through a settling and filtration process before it is released to the municipal sewer system. The level of treatment will be normal (70% TSS removal).

If you have any questions or concerns, please contact me.



Yours Very Truly,

John-Paul Aleo, P.Eng.
ALEO ASSOCIATES INC.

325 DEVONSHIRE ROAD, SUITE 500, WINDSOR, ONTARIO, CANADA N8Y 2L3 TELEPHONE (519) 254-7926

BUILDING NORTH
N TRUE
SITE LOCATION
SCALE: NTS

ALEO ASSOCIATES INC.
CONSULTING ENGINEERS
325 DEVONSHIRE RD. SUITE 500, WINDSOR, ON, CANADA N8Y 2L3
TELEPHONE (519) 254-7926 FACSIMILE (519) 254-0895

DATE: OCT. 3, 2023	PROJECT TITLE: PROPOSED RESIDENTIAL DEVELOPMENT, 0 HOWARD AVENUE, WINDSOR, ONTARIO	SHEET No.: 1 of 1
SCALE: NTS		
DRAWN BY: JPA	SHEET TITLE: SITE LOCATION	PROJECT No.: 8538
AUTOCAD REF.: 8225.dwg		

Pre-Development Release Rate:

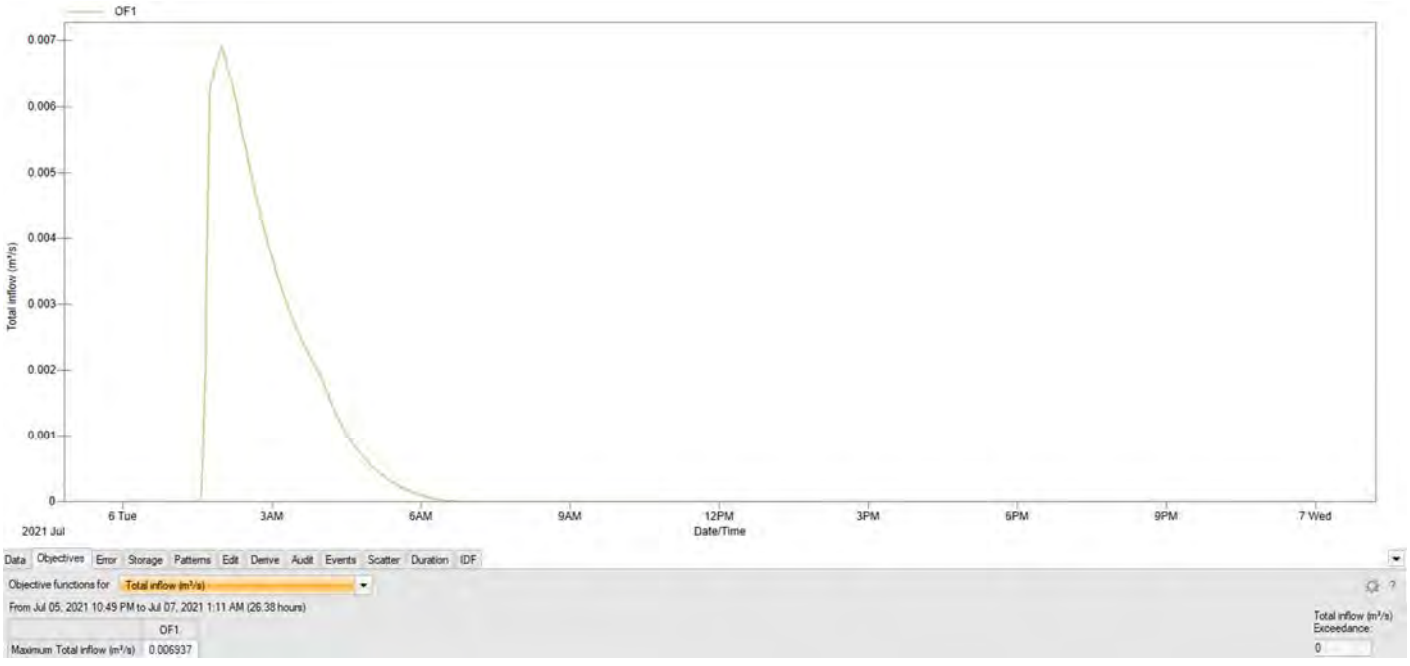
A PCSWMM model was prepared to simulate the existing drainage condition of the site and to determine the pre-development release rate for the property. The site was modelled as a single catchment area and using the Green-Ampt Infiltration method. The land is currently an open grass area with numerous trees. The native soil consists of Berrien Sand which is classified as hydrologic soil group 'C'. The pre-development release rate model ran the 1:2-year 4-hour Chicago storm event with a 15-minute time interval and a total rainfall depth of 37.7 mm. Provided in the table below are the sub-catchment parameters used.

Table 1: Sub-catchment Parameters for the Pre-Development Release Rate Model

Attribute		Value
Area (Ha.)		0.28
Flow Length (m)		103
Flow Width (m)		27
Percent of Impervious Area (%)		0
Slope (%)		1.0
Manning's n for Impervious Area		0.013
Manning's n Pervious Area		0.24 (grass dense)
Depression Storage Impervious (mm)		2.5
Depression Storage Pervious (mm)		10.0 (open field)
Green-Ampt Infiltration Soil Type: Berrien Sand Hydrologic Group 'C'	Suction Head (mm)	180
	Conductivity (mm/hr)	0.50
	Initial Deficit, normal	0.10

Based on the existing condition, the pre-development release rate for the proposed drainage area was determined to be 7 L/s. Refer to Figure 1.

Figure 1: Pre-development 1:2 year hydrograph using 4 hour Chicago storm event.



TOPOGRAPHIC SURVEY
OF
PART OF LOT 107, REGISTERED PLAN 1489
IN THE
CITY OF WINDSOR
COUNTY OF ESSEX, ONTARIO

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2197038
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29 (3)

SCALE : 1"=20'

0 10.0 20.0 40.0 60.0 100.0 FEET

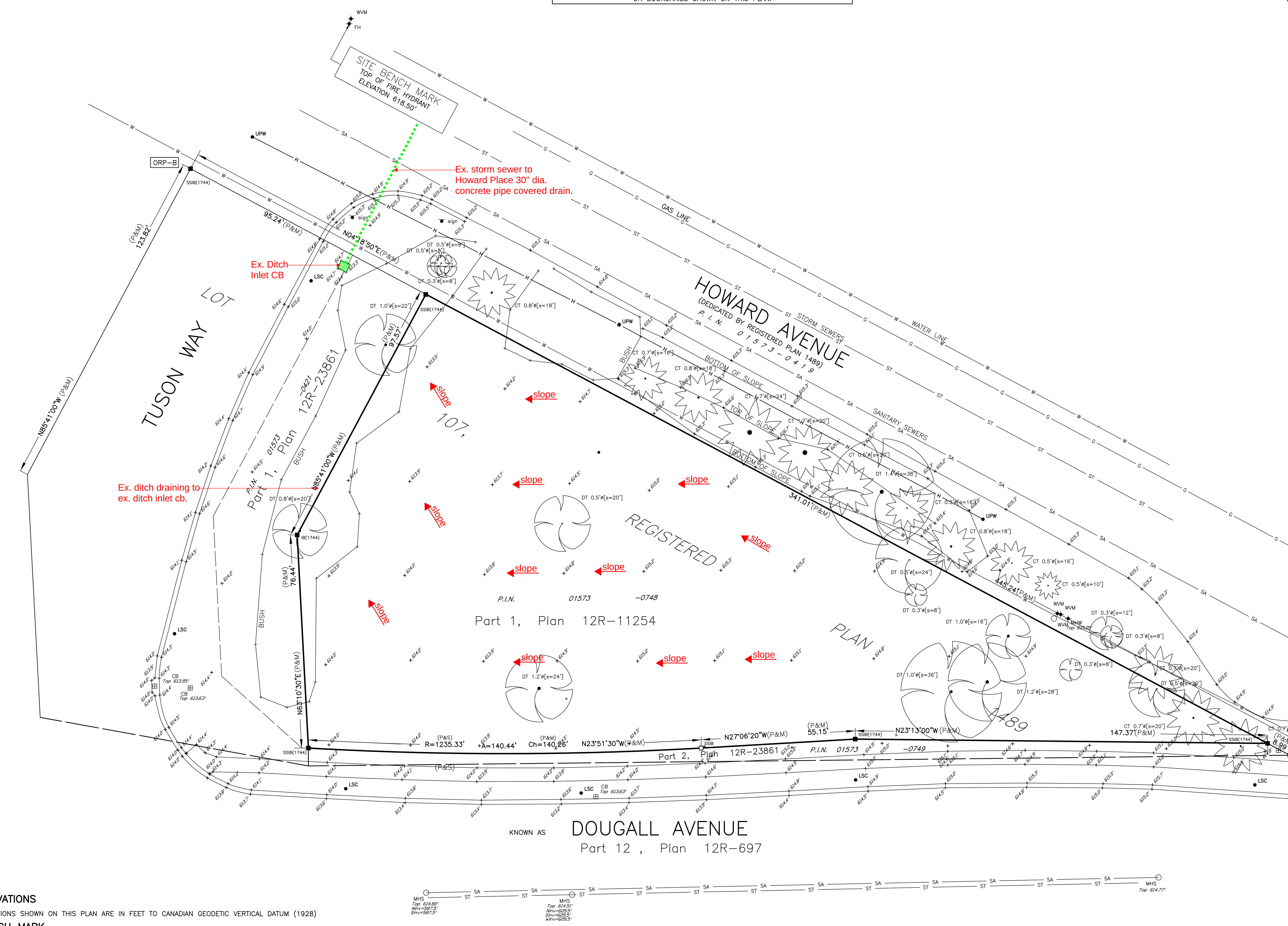
"IMPERIAL"
Distances and coordinates shown on this plan are in feet and can be converted to metres by multiplying by 0.3048

INTEGRATION DATA

COORDINATES ARE DERIVED FROM GRID OBSERVATIONS USING THE CAN-NET NETWORK SERVICE AND ARE REFERRED TO UTM ZONE 17 (81° WEST LONGITUDE) NAD83 (CSRS) (2010.0).
COORDINATE VALUES ARE TO AN URBAN ACCURACY IN ACCORDANCE WITH SECTION 14(2) O.REG 216/10

POINT ID	NORTHING	EASTING
ORP-A	N15351565.81	E1100058.35
ORP-B	N15352009.80	E1100091.80

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



LEGEND AND NOTES

BEARINGS ARE UTM GRID DERIVED FROM OBSERVED REFERENCE POINTS 'A' AND 'B' BY REAL TIME NETWORK OBSERVATIONS AND ARE REFERRED TO UTM ZONE 17 (81° WEST LONGITUDE) NAD83 (CSRS) (2010.0).

DISTANCES ON THIS PLAN ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999860

ALL SET SSIB AND PB MONUMENTS WERE USED DUE TO LACK OF OVERBURDEN AND/OR PROXIMITY OF UNDERGROUND UTILITIES IN ACCORDANCE WITH SECTION 11 (4) OF O.REG. 525/91.

■	DENOTES	SURVEY MONUMENT FOUND
□	DENOTES	SURVEY MONUMENT SET
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
IB	DENOTES	IRON BAR
PB	DENOTES	PLASTIC BAR
WIT	DENOTES	WITNESS
M	DENOTES	MEASURED
S	DENOTES	SET
⊥	DENOTES	PERPENDICULAR
OU	DENOTES	ORIGIN UNKNOWN
ORP	DENOTES	OBSERVED REFERENCE POINT
(P)	DENOTES	PLAN 12R-23861
(JDB)	DENOTES	J.D. BARNES LIMITED
(1744)	DENOTES	VERHAEGEN LAND SURVEYORS

MHH DENOTES HYDRO MANHOLE	FH DENOTES FIRE HYDRANT
MHS DENOTES SEWER MANHOLE	WM DENOTES WATER METER
MHT DENOTES TELEPHONE MANHOLE	WVS DENOTES WATER VALVE (Service)
MHTR DENOTES TRAFFIC MANHOLE	WVM DENOTES WATER VALVE (Main)
MHW DENOTES WATER MANHOLE	GM DENOTES GAS METER
CB DENOTES CATCH BASIN	GV DENOTES GAS VALVE
DCB DENOTES DOUBLE CATCH BASIN	HM DENOTES HYDRO METER
LSc DENOTES LIGHT STANDARD CONCRETE	PedT DENOTES TELEPHONE PEDESTAL
LSs DENOTES LIGHT STANDARD STEEL	PedCTV DENOTES CABLE TV PEDESTAL
LSw DENOTES LIGHT STANDARD WOOD	TRs DENOTES TRAFFIC SIGN
UPc DENOTES UTILITY POLE CONCRETE	TRsg DENOTES TRAFFIC SIGNAL
UPs DENOTES UTILITY POLE STEEL	TRsb DENOTES TRAFFIC SIGNAL BOX
UPw DENOTES UTILITY POLE WOOD	TH DENOTES TESTHOLE
GP DENOTES GUY POLE	BM DENOTES BENCH MARK
GW DENOTES GUY WIRE	HCP DENOTES HORIZONTAL CONTROL POINT
Bol DENOTES BOLLARD	VCP DENOTES VERTICAL CONTROL POINT
PM DENOTES PARKING METER	DENOTES SHRUB
TOC DENOTES TOP OF CURB	SC DENOTES SEWER CLEANOUT
BOC DENOTES BOTTOM OF CURB	INV DENOTES INVERT

DECIDUOUS AND CONIFEROUS TREES ARE DENOTED DT AND CT RESPECTIVELY. A PREFIX TO THE DESCRIPTION DESIGNATES THE NUMBER OF TREE TRUNKS WHEN TREES ARE CLUMPED TOGETHER AND A SUFFIX DENOTES THE TREE DIAMETER OR (NTS) NOT TO SCALE.

—C— —C— —C—	DENOTES OVERHEAD CABLE TV LINE
—G— (pipe size) —G—	DENOTES GAS LINE
—H— —H— —H—	DENOTES OVERHEAD HYDRO LINE
—CS— (pipe size) —CS—	DENOTES COMBINED SEWER
—SA— (pipe size) —SA—	DENOTES SANITARY SEWER
—ST— (pipe size) —ST—	DENOTES STORM SEWER
—T— —T— —T—	DENOTES OVERHEAD TELEPHONE LINE
—W— (pipe size) —W—	DENOTES WATER LINE

UNDERGROUND CABLE, HYDRO OR TELEPHONE LINES ARE PREFIXED WITH THE LETTER "u" (CABLE = uC HYDRO = uH TELEPHONE = uT)

ELEVATIONS

ELEVATIONS SHOWN ON THIS PLAN ARE IN FEET TO CANADIAN GEODETIC VERTICAL DATUM (1928)

BENCH MARK

BENCH MARK 1218 ELEVATION 616.29'
M.B. 340 NEAL BOULEVARD; THE PLATE IS LOCATED ON THE EAST WALL, 0.3' FROM THE SOUTH WALL AND 1.1' ABOVE GRADE.

SITE BENCH MARK

ELEVATION 618.50'
TOP OF FIRE HYDRANT LOCATED AT 4262 HOWARD PLACE.

AREA

0.681 ACRES

CAUTION

UNDERGROUND UTILITIES AND SERVICES SHOWN ON THIS PLAN ARE APPROXIMATE AND MUST BE VERIFIED BEFORE CONSTRUCTION

INVERTS

INVERTS ARE DERIVED FROM CITY OF WINDSOR SEWER ATLAS (PLATE L15) AND SHOULD BE VERIFIED BEFORE CONSTRUCTION.

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. THIS SURVEY WAS COMPLETED ON THE 29th DAY OF SEPTEMBER, 2022.

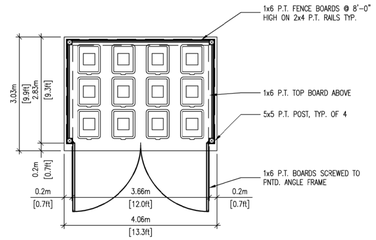
DATE OCTOBER 21, 2022

Roy Simone
ROY A. SIMONE
ONTARIO LAND SURVEYOR

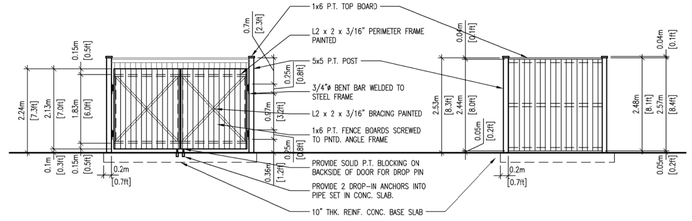
VERHAEGEN LAND SURVEYORS
SURVEYING MAPPING GIS
A DIVISION OF J.D. BARNES LTD.
944 OTTAWA STREET, WINDSOR, ON, N8X 2E1
T: (519) 258-1772 F: (519) 258-1791 www.jdbarnes.com

DRAWN BY:	CHECKED BY:	REFERENCE NO.:
A.J.M.	R.A.S.	22-47-404-00
FILE: 22-47-404-00.dwg	E-1489-10	CAD Date: October 21, 2022 11:25 AM CAD File: 22-47-404-00.dwg

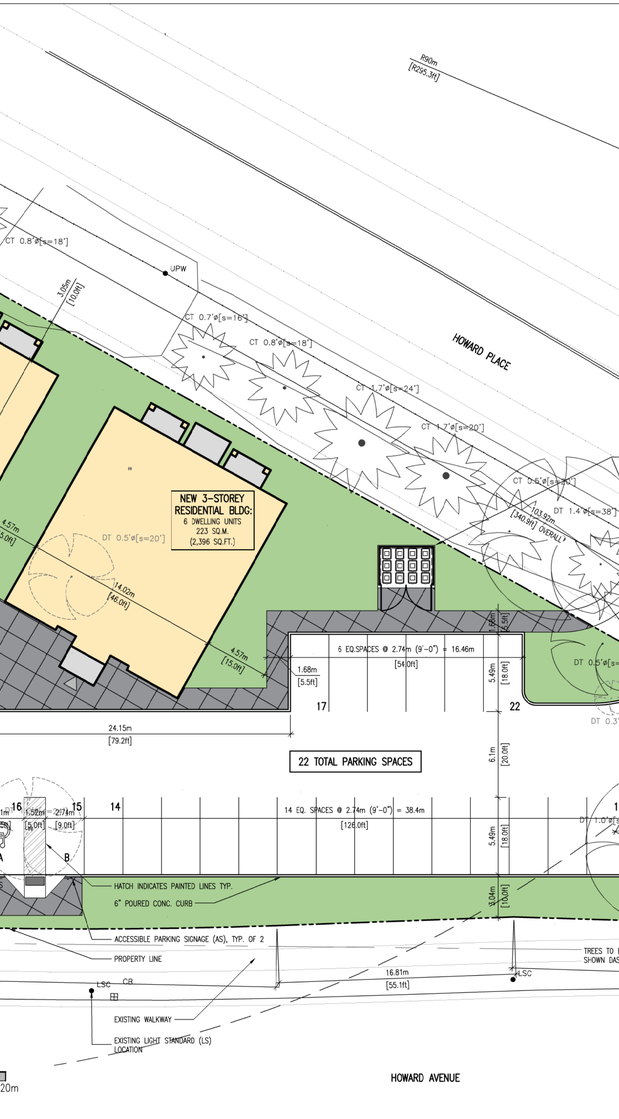
Appendix G: Alternate Site Plan



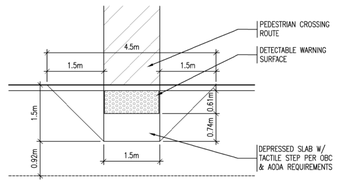
100 SPC1 SPC1 REFUSE ENCLOSURE
SCALE : 1 : 75



REFUSE FRONT ELEV.
SCALE : 1 : 75



REFUSE SIDE ELEV.
SCALE : 1 : 75



TYPICAL CURB RAMP PLAN
SCALE : 1 : 75

SITE PLAN
SCALE : 1 : 200
0 2 4 6 8 10 12 14 16 20m

ITEM	SITE DATA MATRIX						OBC REFERENCE
1	PROJECT DESCRIPTION NEW RESIDENTIAL DEVELOPMENT 0 HOWARD AVENUE		☒ NEW ☐ ADDITION ☐ ALTERATION ☐ CHANGE OF USE				☐ PART 3 ☒ PART 9 ☐ PART 11
2	ZONING DESIGNATION:		RESIDENTIAL DISTRICT – SPECIFIC ZONING TBD				
3	EXISTING LAND USE:		VACANT				
4	MAJOR OCCUPANCY(S):		GROUP C – MULTI RESIDENTIAL				
5	BUILDING CLASSIFICATION:		3.2.2.47 – GROUP C				
6	SITE AREA		BUILDING AREA		GROSS AREA		
	EXISTING:	2,706.76 m²	EXISTING:	0.0 m²	EXISTING:	0.0 m²
	PROPOSED:	0.0 m²	PROPOSED:	0.0 m²	PROPOSED:	0.0 m²
	TOTAL:	2,706.76 m²	TOTAL:	±667.7 m²	TOTAL:	±2,003.1m²
7	LOT COVERAGE		MINIMUM LOT WIDTH		BUILDING HEIGHT	
	MAXIMUM:	N/A %	REQUIRED:	N/A m	MAXIMUM:	N/A m
	PROVIDED:	24.8 %	PROVIDED:	X.X m	PROVIDED:	±7.8 m
8	MINIMUM FRONT YARD DEPTH		MINIMUM REAR YARD DEPTH		MINIMUM SIDE YARD DEPTH	
	REQUIRED:	X.X m	REQUIRED:	X.X m	REQUIRED:	X.X m
	PROVIDED:	X.X m	PROVIDED:	X.X m	PROVIDED:	X.X m
9	PARKING:					
	USE CLASSIFICATION:					
	VEHICLES SPACES (2.5m x 5.5m)		BICYCLE SPACES (0.6m x 2.5m)		LOADING SPACES (3.0m x 7.5m)	
	EXISTING:	– SPACES	EXISTING:	– SPACES	EXISTING:	– SPACES
	PROPOSED:	22 SPACES	PROPOSED:	3 SPACES	PROPOSED:	1 SPACES
	REQUIRED:	22 SPACES	REQUIRED:	3 SPACES	REQUIRED:	1 SPACES
	TOTAL:	22 SPACES (INCLUDING ACCESSIBLE)	TOTAL:	3 SPACES	TOTAL:	1 SPACES
	ACCESSIBLE TYPE A 3.5m (3.5m x 5.5m)		ACCESSIBLE TYPE B (2.5m x 5.5m)			
	EXISTING:	– SPACES	EXISTING:	– SPACES		
	PROPOSED:	1 SPACES	PROPOSED:	1 SPACES		
	REQUIRED:	1 SPACES	REQUIRED:	0 SPACES		
	TOTAL:	1 SPACES	TOTAL:	1 SPACES		
10	LANDSCAPED AREA		CURBING LENGTH		SCREENING FENCE LENGTH	
	EXISTING:	– m²	EXISTING:	– m	EXISTING:	0.0 m
	PROPOSED:	1,225.21 m² 44.4 %	PROPOSED:	177.7 m	PROPOSED:	0.0 m
	REQUIRED:	N/A %	TOTAL:	177.7 m	TOTAL:	0.0 m
	TOTAL:	1225.21 m²				

Should archaeological deposits be found during construction activities, all work in the area must stop immediately and the City's Manager of Cultural Affairs and the Ontario Ministry of Tourism, Culture and Sport must be notified, and clearance given by the Ministry.

In the event that human remains are encountered during construction, all work in that area must be stopped immediately and the site secured. The local police or coroner must be contacted to determine whether or not the skeletal remains are human, and whether the remains constitute a part of a crime scene. The Ontario Ministry of Tourism, Culture and Sport and the Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer Services must then be notified, and clearance be given by the Ministry of Tourism, Culture and Sport.

A building shall not be located beneath existing above ground electrical conductors. Where a building is to be constructed in proximity to above ground electrical conductors, horizontal clearances between buildings and conductors shall comply with Subsection 3.1.19. of the Ontario Building Code.

LEGEND

NEW WALKWAY | GRASS AREA | PATIO AREA | PAVED PARKING AREA | NEW BUILDING FOOTPRINT

2024/05/03	PC2 SUBMISSION

date (yyyy/mm/dd) | issued for:

general notes:

1. THIS PRINT IS AN INSTRUMENT OF SERVICE ONLY AND IS THE PROPERTY OF THE ARCHITECT.
2. DRAWINGS SHALL NOT BE SCALED.
3. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS.
4. ATTENTION IS DIRECTED TO PROVISIONS IN THE GENERAL CONDITIONS REGARDING CONTRACTOR'S RESPONSIBILITIES IN REGARD TO SUBMISSION OF SHOP DRAWINGS.
5. IN THE EVENT THE ARCHITECT IS RETAINED TO REVIEW SHOP DRAWINGS, SUCH REVIEW IS ONLY TO CHECK FOR CONFORMANCE WITH DESIGN CONCEPT AND WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS.
6. CONTRACTORS SHALL PROMPTLY NOTIFY THE ARCHITECT IN WRITING OF THE EXISTENCE OF ANY OBSERVED VARIATIONS BETWEEN THE CONTRACT DOCUMENTS AND ANY APPLICABLE CODES OR BY-LAWS.
7. THE ARCHITECT IS NOT RESPONSIBLE FOR THE CONTRACTOR'S MEANS, METHODS AND OR TECHNIQUES IN THE CONSTRUCTION OF THIS FACILITY.

stamp:

architectural design associates inc. architect
1670 mercer street
windsor ontario canada n8x 3p7
ph 519.254.3430 fax 519.254.3642
email - info@ada-architect.ca www.ada-architect.ca

project:
0 HOWARD AVE
NEW MULTI-RESIDENTIAL DEVELOPMENT

client:
RAFCO PROPERTY TRUST LTD.

title:
SITE PLAN
ZONING MATRIX

scale: AS SHOWN
drawn by: OB
checked by: JBK
date: MAY 2024
comm. no.: 2021-057
sheet no.: SPC-1

Appendix H: Subsurface Investigation Report

CPG INC
Consulting Engineers

Imperial Oil Ltd.
90 Wynford Drive
North York, Ontario
M3C 1K5

November 12, 1992

Attention: Mr. John Marshall

RE: SUBSURFACE INVESTIGATION
Former Texaco Service Station
4280 Howard Avenue
Windsor, Ontario

Dear Sir:

The following report documents work completed by Central Projects Group Inc. (CPG) on September 29 and September 30, 1992 at the above location. The purpose of the work was to investigate and address possible remaining environmental concerns associated with the past use of the property as a Texaco service station. This work was requested by Imperial Oil Ltd. (IOL) with respect to the divestment and potential sale of the property.

Our investigations and remedial work were conducted as a follow-up to investigations conducted by Golder Associates (GA) in April, 1989 (refer to GA report dated, April 5, 1989).

The following report summarizes our findings as of September 30, 1992.

Central Projects Group Inc.
250 Shields Court • Unit 15 • Markham • Ontario • L3R 9W7
Telephone 416 • 470 • 6570 Fax 416 • 470 • 0958

BACKGROUND INFORMATION

CPG's summary regarding the environmental condition of the property prior to our investigative work, based on our review of the GA report, and information obtained through discussions with Mr. John Marshall of IOL, are as follows:

- The soils underlying the site consist of fill overlying a native silty clay till. The fill consists of similar silty clay till, mixed with topsoil and granular material, ranging in thickness between 0.6 and 2.9 m.

  Groundwater was observed in boreholes, ranging between 0.63 and 0.86 m below grade following a gentle southerly gradient. Hydraulic conductivity of the soil was determined to be low (GA 1989).

- Hydrocarbon impact of soils identified in the 1989 GA report was limited to a maximum of 150 parts per million (ppm) based on laboratory analysis for total oil and grease in representative "worst case" samples (GA 1989).

- Hydrocarbon impact in groundwater samples analyzed for total oil and grease was limited to a maximum of 3 milligrams per litre (GA 1989).

- At the time of the GA study, all structures and equipment had been removed including six (6) UST's utilized for product storage.

- Investigative work completed by GA did not reveal the presence of significant petroleum hydrocarbon impact. Oil & grease concentrations in both soil and groundwater samples were within Ontario MOE clean-up criteria (GA 1989).

- Future intended land use is unknown.

- The subject site's sensitivity was determined using the sensitivity matrix outlined in the Province of Alberta's "Subsurface Remediation Guidelines for Underground Storage Tanks - February 1991", commonly referred to as the "MUST" Guidelines. Based on the analysis, the site would be classified as "moderately" sensitive and hence, MUST Level II would apply.

SUMMARY OF FINDINGS

September 29, 1992

On September 29, 1992, CPG personnel conducted a site reconnaissance and testpitting program using a rubber-tire backhoe.

The site reconnaissance included the monitoring of the accessible groundwater monitors installed at the site by GA. This monitoring included measuring of the Total Organic Vapour (TOV) concentrations with a portable Gastechtor Model 1238.

The TOV concentrations were measured with a Gastechtor Model 1238, calibrated with hexane. The Gastechtor is capable of detecting TOV concentrations from 0 to 12,000 ppm where 120 ppm is equivalent to 1 %LEL.

The measured TOV concentrations were predominantly low (< 175 ppm) in the existing BH2, BH5, and BH6 (refer to Figure 1 for locations of monitors and TOV readings). The TOV concentration in BH3 measured 100% LEL, presumed to be chiefly methane based on a strong organic, non-fuel related odour. BH1 and BH4 could not be located. Phase separated liquid hydrocarbon was not encountered in any of the monitoring wells on this date.

A total of six (6) testpits were excavated at the locations shown in Figure 1. The testpits generally confirmed the findings of the earlier investigation. Other findings include:

- Some product piping of the former fuelling system was still present in the subsurface and was removed where encountered.

- Testpit 1 (TP1) was dug to a depth of 3.4 m below grade in the vicinity of the former tank farm (Figure 1). Grey/black staining, as well as asphalt debris, was observed in the clayey backfill. A slight hydrocarbon odour was present throughout the material to the bottom of the testpit until native, hard brown silty clay was reached, which was free of hydrocarbon odour and staining (refer to Table 1 for TOV readings). Groundwater was encountered at 3.0 m below grade.

- TP2 was started near TP1 and advanced southward in order to intersect the most southerly limit of the tank farm. Observations were similar to TP1 until the native bank was reached where the hard, brown silty clay was free of staining and hydrocarbon odour. Perched groundwater was encountered at 1.8 m below grade, trapped in concrete rubble.

- TP3 was dug to 2.5 m below grade; minor grey staining, no hydrocarbon odour. Groundwater was not encountered.

- TP4 was advanced to 1.9 m below grade; product piping unearthed; minor grey staining, no hydrocarbon odour.

- TP5 was excavated to just below the surface in an area of stained grass. Removal of the grass revealed brown granular material free of staining and hydrocarbon odour.

- TP6 was dug in the area of the former hoist within the former building. No evidence of hydrocarbons was present in the granular backfill.

The accumulated water in the open excavations did not exhibit the presence of phase separated-liquid hydrocarbons during our assessment activity on September 29, 1992.

One soil sample (S1-A) was taken from TP1, representing "worst case" conditions encountered at the site. One soil sample (S3-A) was taken from each of TP2, TP3 and TP4, and was combined as an aggregate sample, representing general site conditions. One water sample (S2-A) was taken from BH3 to determine potential impact of groundwater, based on elevated TOV readings (refer to Figure 1 for sample locations).

Soil samples were submitted for analysis of total petroleum hydrocarbons (TPH) concentrations, as well as, benzene, toluene, ethylbenzene and xylene (BTEX) concentrations. Water sample S2-A was analyzed for BTEX concentrations (refer to Table 2 for sample results data as compared with Alberta MUST Clean-up Criteria).

The results of these laboratory analyses indicate that the tested soils and groundwater meet the Alberta MUST Clean-up Criteria for sites of moderate sensitivity (Level II).

DISCUSSION OF RESULTS

In summary, CPG's investigative activities at the former Texaco service station located at 4280 Howard Avenue in Windsor, Ontario revealed that significant hydrocarbon impact was not present in the investigated areas.

Marginally impacted soils were encountered in the fill material near TP1 and TP2. The impacted soil was in the form of "faint" hydrocarbon odours and some grey/black staining in the backfill material. The less permeable, native till was noted to be free of hydrocarbons.

Laboratory analyses of the soil samples extracted from soils remaining at the site further indicate that:

- The tested soils meets the Ontario Ministry of the Environment Decommissioning guidelines for the tested parameters (GA 1989).

- BTEX and TPH concentrations in the tested soils meets the Alberta MUST criteria for sites of moderate sensitivity (Level II).

- BTEX was not detected in the groundwater sample extracted from BH3.

CLOSURE

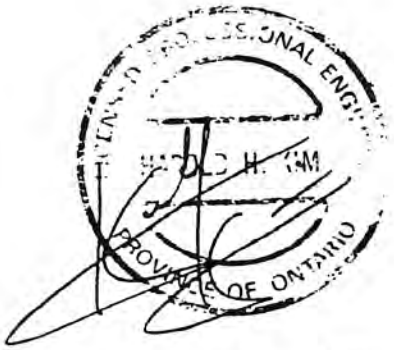
The information presented in this report was obtained while conducting investigative activity at the former Texaco service station located at 4280 Howard Avenue in the City of Windsor, Ontario, authorized by Imperial Oil Ltd.

This report is believed to provide a reasonable assessment of the conditions at the site within the excavated areas only, as of September 30, 1992 and draws conclusions based on these findings. Subsurface conditions between and beyond the excavated areas may differ and become apparent during future subsurface work.

We trust that the foregoing information is what you require at the present time. However, should you have any further questions, please do not hesitate to contact the undersigned.

Yours truly,

CENTRAL PROJECTS GROUP INC.



Per. Robert J. Kollaard

Per. Harry H. Kim, P.Eng.

Attachments:
- Figure 1 - Site Plan
- Tables
- Appendix - Laboratory Analytical Results

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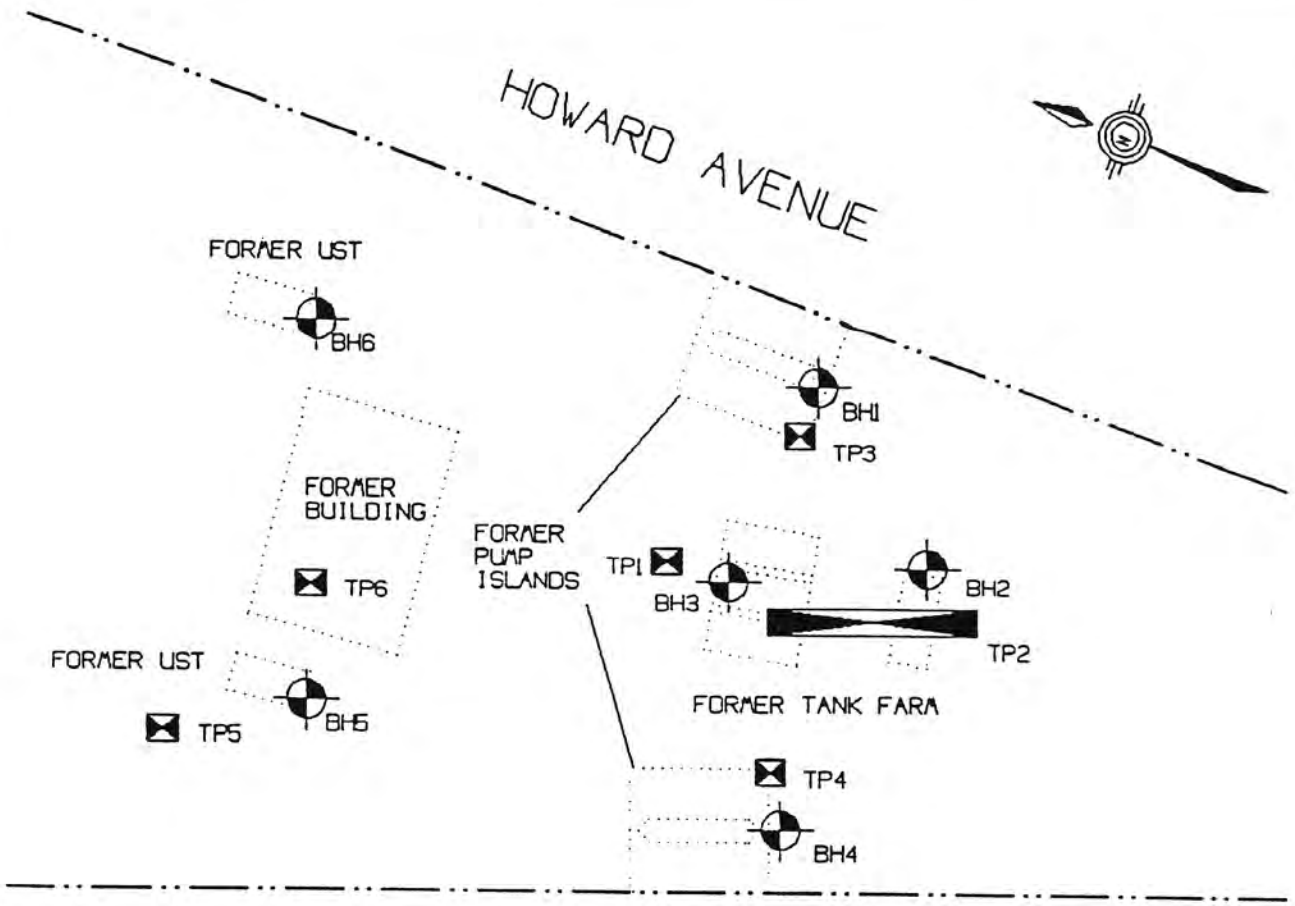

NOTE: DRAWING NOT TO SCALE

TOV READINGS

BH1	NOT FOUND
BH2	110 ppm
BH3	100% LEL
BH4	NOT FOUND
BH5	175 ppm
BH6	125 ppm

SAMPLE LOCATIONS

S1-A	WORST CASE: TP1
S2-A	WATER: BH3
S3-A	AGGREGATE: TP2, TP3, TP4

FORMER TEXACO SERVICE STATION

4280 HOWARD AVENUE
WINDSOR, ONTARIO

SITE PLAN

CPG INC

JOB NO.:	DATE:
0701	10/04/92

DRAWING NO.: FIGURE 1

TABLES

TABLE 1: Testpit Information

Test Location	Maximum TOV Concentration[1] (m below grade)	Maximum Depth (m below grade)
TP1	5% LEL at 3.0	3.4
TP2	120 at 1.8	1.8
TP3	ND[2]	2.4
TP4	ND	1.8
TP5	ND	0.1
TP6	ND	1.2

1. All values in parts per million unless noted as % (%LEL)
2. ND denotes not detected

TABLE 2: Testpit Soil Samples - Summary of Alberta MUST Related Laboratory Analyses

BOREHOLE NO.	DEPTH (m)	TPH (ppm)	BENZENE (ppm)	TOLUENE (ppm)	ETHYL-BENZENE (ppm)	XYLENE (ppm)	PHENOLS (ppm)	LEAD (ppm)
CRITERIA:								
MUST Level II		400	0.5	10.0	5.0	5.0	1.0	200
RESULTS:								
Sample S1-A	3.0	180	0.003	0.006	0.10	0.357	0.06	31.0
Sample S3-A	1.0	ND	ND	ND	ND	ND	NA	NA

1. All values in ppm
2. ND - Not Detected, NA - Not Analyzed

TABLE 3: Borehole Water Samples - Summary of Alberta MUST-Related Laboratory Analyses

BOREHOLE NO.	TPH (ppm)	BENZENE (ppm)	TOLUENE (ppm)	ETHYL-BENZENE (ppm)	XYLENE (ppm)	PHENOLS (ppm)	LEAD (ppm)
CRITERIA:							
MUST Level II	50	0.065	0.300	0.700	5	0.100	0.050
RESULTS:							
Sample S2-A	NA	ND	ND	ND	ND	NA	NA

1. All values in ppm
2. ND - Not Detected, NA - Not Analyzed

APPENDIX

Laboratory Analytical Results

CLIENT INFORMATION

Attention: Robert Kollaard
Client Name: Central Projects Group Inc.,
Project: 0701
Project Desc: Howard/Dougal, Windsor

Address: 250 Shields Court,
Markham, Ontario
L3R 9W7
Fax Number: 416-470-0958
Phone Number: 416-470-6570

LABORATORY INFORMATION

Contact: Gerry Bengert
Project: AN920840
Date Received: 92/10/05

Submission No.: 2J0088

Fax Number: 416-332-9169
Phone Number: 416-332-8788

NOTES:

All results are blank corrected except for Hi-Res MS data
'-' = Not Analysed
'<' = Less Than Method Detection Limit
Solids results are based on dry weight except for Volatile Organics, TPH and Biota analyses
Organic analyses are not corrected for surrogate recoveries except for Isotope Dilution methods

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Sixteenth Edition, published by the American Public Health Association, 1015 Fifteenth Street, NW, Washington, DC 20005. Other methods are based on the principles of MISA or EPA methodologies.

COMMENTS:

Certified by: G. A. Bengert

	Client ID:		Method Blank Soil	S1-A Worst Case	S3-A Aggregate Conf.
	Zenon ID:		028445 92	028446 92	028447 92
	Date Sampled:		92/10/01	92/10/01	92/10/01
Component	**MDL**	**Units**			
Phenolics	0.01	mg/kg	<	0.06	-
Lead	10	mg/kg	<	31	-
TPH	5	mg/kg	<	180	<
Surrogate Recoveries		%			
5-a-Androstane			85	113	118
Moisture	0.1	(%)	-	14	12
Benzene	0.001	mg/kg	<	0.003	<
Toluene	0.002	"	0.002	0.006	<
Ethylbenzene	0.002	"	<	0.10	<
m.p-Xylene	0.002	"	<	0.31	0.004
o-Xylene	0.002	"	<	0.047	0.003
Surrogate Recoveries		%			
d4-1,2-dichloroethane			108	85	108
d8-Toluene			101	74	93
Bromofluorobenzene			102	101	94

	Client ID:		Method Blank Water	S2-A Water BH3
	Zenon ID:		028448 92	028449 92
	Date Sampled:		92/10/01	92/10/01
Component	**MDL**	**Units**		
Benzene	0.2	ug/L	<	<
Toluene	0.4	"	<	<
Ethyl Benzene	0.4	"	<	<
m,p-Xylenes	0.5	"	<	<
o-Xylene	0.4	"	<	<
Surrogate Recoveries		%		
d4-1,2-Dichloroethane			101	99
d8-Toluene			106	107
Bromofluorobenzene			102	101