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Noise Feasibility Study
Proposed Residential Development
132 College Street
West Lincoln, Ontario

Prepared for:

2853972 Ontario Ltd.
166 Main Street West
Grimsby, Ontario, L3M 1S3

Prepared by

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July 4, 2024

HGC Project No. 02200069

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1 Introduction and Summary

HGC Engineering was retained by 2853972 Ontario Ltd. to conduct a noise feasibility study for a proposed residential development to be located at 132 College Street in West Lincoln, Regional Municipality of Niagara, Ontario. The study has been prepared for submission as part of the approval process by the municipality.

This report has been updated to include an updated concept plan and updates the sound level predictions.

Road traffic data for St. Catharines Street was obtained from the Region of Niagara. Rail traffic data for the nearby Canadian Pacific (CP) railway line was obtained from HGC Engineering past project files for projects in the area. The data was used to predict future traffic sound levels at the proposed dwellings. The predicted sound levels were compared to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP) and the Region of Niagara.

The sound level predictions indicate that the future road and rail traffic sound levels will exceed MECP guidelines at the proposed dwellings. Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant is required for dwellings with exposure to the railway or roadway. Any building constructions meeting the minimum requirements of the Ontario Building Code (OBC) will provide sufficient acoustical insulation for the dwelling units. The stationary noise analysis indicates that sound levels from the nearby commercial uses are expected to be within MECP sound level limits at the proposed development. Warning clauses are recommended to inform future residents of the road traffic noise impacts, address sound level excesses, and inform residents of the nearby commercial and retail uses.

2 Site Description and Sources of Sound

A key plan showing the location of the proposed site is indicated in Figure 1. The proposed development is located at 132 College Street in West Lincoln, Ontario. The proposed concept plan prepared by LandSmith Engineering & Consulting Ltd., last revised April 30, 2024, is attached as Figure 2 also showing the prediction locations. The proposed development will consist of stacked townhouses, amenity spaces, along with associated roadways and parking.

A site visit was performed by HGC Engineering personnel in April 2022. The primary sources of noise are road traffic on St. Catharines Street to the south and rail traffic on the CP railway to the north. A school building is currently located on the subject lands which is to be removed. Lands to the north and south are existing residential lands. Further to the north of the site is Galaxy Pallets. There are existing single storey dwellings immediately adjacent to the south of the Galaxy Pallets facility than the subject lands. There are 2-storey residences immediately to the northeast of the Galaxy Pallets facility as well. Galaxy Pallets operates during the daytime hours only (9 am to 9 pm) and is required to meet the applicable sound level limits at the closer existing residences. Due to increased distance of the subject site, Galaxy Pallets is expected to meet the applicable sound level limits at the subject site. To the west of the site along College Street are commercial/retail uses including: Carruthers; John's Auto Supply; and Smithville Pizzeria. A preliminary stationary noise analysis was conducted for the closest existing commercial uses along College Street and is included in Section 4.0 of this report. There were no other significant stationary sources of sound within 500 m of the subject site.

3 Road Traffic Noise

3.1 Criteria for Acceptable Sound Levels

Guidelines for acceptable levels of road and rail traffic noise impacting residential developments are given in the MECP publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Part C release date October 21, 2013 and are listed in Table 1 below. The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A weighted decibels [dBA].

Table 1: Road and Rail Traffic Noise Criteria

	Daytime $L_{EQ(16\ hour)}$ Road/Rail	Nighttime $L_{EQ(8\ hour)}$ Road/Rail
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA/40 dBA	45 dBA/40 dBA
Inside Bedrooms	45 dBA/40 dBA	40 dBA/35 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The guidelines in the MECP publication allow the sound level in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

Indoor guidelines are 5 dBA more stringent for rail noise than for road noise, to account for the low frequency (rumbling) character of locomotive sound, and its greater potential to transmit through exterior wall/window assemblies.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside living/dining room/bedroom windows exceed 60 dBA or daytime sound levels outside living/dining room and bedroom windows exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels at living/dining room/bedroom windows are in the range of 51 to 60 dBA or when daytime sound levels are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of bedroom/living/dining room window sound level is greater than 55 dBA due to nighttime or greater than 60 dBA during the daytime hours due to traffic noise.

MECP and CP policies stipulate that brick veneer or masonry equivalent construction is required for the first row of dwellings within 100 m of the railway right-of-way.

The railways also provide minimum requirements for safety as well as sound and vibration for proposed residential developments located adjacent to their rights-of-way. These refer to minimum required setbacks, berms, fencing and warning clauses. The reader is referred to a copy of CP requirements for a new development adjacent to a principal main rail line, which is provided in Appendix A.

3.2 Traffic Sound Level Assessment

3.2.1 Road Traffic Data

Road traffic data for St. Catharines Street was obtained from the Region of Niagara in the form of annual summer average daily traffic (SADT) for the year 2017 and is included in Appendix B. The data was projected to the year 2044 using a 2.5%/year growth rate as per Region of Niagara guidelines. A calculated commercial vehicle percentage of 5.8% was split into 3.6% heavy trucks and 2.2% medium trucks. A day/night split of 90%/10% was used. A posted speed limit of 50 km/h was used in the analysis. Table 2 summarizes the traffic data.

Table 2: Projected Road Traffic Data to 2044

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
St. Catharines Street	Daytime	13 827	324	574	14 725
	Nighttime	1 536	36	64	1 636
	Total	**15 363**	**360**	**638**	**16 361**

3.2.2 Rail Traffic Data

Rail traffic data for the CP Hamilton Subdivision was obtained from HGC Engineering projects files originally obtained from CP railway personnel and is attached in Appendix C. The rail data was updated by referencing a list of at grade crossings on the Government of Canada's Open Data Portal generated by Transport Canada from March 2021. This line is used for freight operations only and is classified as a principal main line. The maximum permissible train speed in the area of the site is 80 kph (50 mph) for the freight trains along the mainline and 16 kph (10 mph) for freight trains along

the siding line. In conformance with CP assessment requirements, the maximum speeds, maximum number of cars and locomotives per train were used in the traffic noise analysis to yield a worst-case estimate of train noise. The data was projected to the year 2034 using a 2.5% per year growth rate. Table 3 summarises the CP rail traffic data used in the analysis.

Table 3: Rail Traffic Data Projected to Year 2034

Type of Train	Number of Trains Day/ Night	Number of locomotives	Number of cars	Max Speed (KPH)
Freight	5.6 / 9.6	4	129	80

3.2.3 Traffic Noise Predictions

To assess the levels of traffic noise which would impact the site in the future, traffic predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Sample STAMSON output is included in Appendix D.

Predictions of the traffic sound levels were made at the various façades with exposure to the roadway and railway and in the common outdoor living area. The predictions were performed at the fourth storey windows during the daytime hours and nighttime hours to investigate ventilation requirements. The results of these predictions are summarized in Table 4. The acoustic requirements may be subject to modifications if the site plan is changed significantly.

Table 4: Future Daytime Traffic Sound Levels, Without Mitigation [dBA]

Prediction Location	Description	Daytime – at Façade ($L_{EQ-16hr}$)		Daytime – at Façade Total ($L_{EQ-16hr}$)	Daytime – in OLA ($L_{EQ-16hr}$)
		Road	*Rail		
[A]	North façade of Block 6	<55	55	55	<55
[B]	North façade of townhouse block	<55	55	55	<55
[C]	South façade of Block 3	55	<55	55	<55
[D]	Common amenity space	--	--	--	<55

Note: *Train whistle noise included at façade

Table 5: Future Nighttime Traffic Sound Levels, Without Mitigation [dBA]

Prediction Location	Description	Nighttime – at Façade (L_{EQ-8hr})		Nighttime – at Façade Total (L_{EQ-8hr})
		Road	*Rail	
[A]	North façade of Block 6	<50	60	60
[B]	North façade of townhouse block	<50	60	60
[C]	South façade of Block 3	<50	<50	<50

Note: *Train whistle noise included at façade

3.3 Traffic Noise Recommendations

The predictions indicate that the future traffic sound levels will exceed MECP guidelines at the proposed residential development. Recommendations to address these excesses are discussed below.

3.3.1 Outdoor Living Areas

The predicted sound level in the all the amenity spaces throughout the site will be less than 55 dBA. No further mitigation is required.

3.3.2 Indoor Living Areas

Provision for the Future Installation of Air Conditioning

The predicted sound levels of the proposed townhouse blocks with exposure to the railway and roadway will be between 51 and 60 dBA during the nighttime hours and/or between 56 to 65 dBA during the daytime hours. To address these excesses, the MECP guidelines recommend that these dwelling units be equipped with forced air ventilation systems with ducts sized to accommodate the future installation of air conditioning by the occupant. The guidelines also recommend warning clauses for these dwellings.

Window or through-the-wall air conditioning units are not recommended for any residential units because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable.

3.3.3 Building Façade Constructions

Future rail traffic sound levels in the proposed development will exceed 55 dBA at night, due to rail noise. MECP guidelines recommend that the windows, walls and doors be designed so that the indoor sound levels comply with MECP noise criteria.

The required building components are selected based on the AIF value for rail traffic. To do so, calculations were performed to determine the acoustical insulation factors to maintain indoor sound levels within MECP guidelines. The calculation methods were developed by the National Research Council (NRC). They are based on the predicted future sound levels at the building façades, and the anticipated area ratios of the facade components (walls, windows and doors) and the floor area of the adjacent room.

Glazing Construction

Detailed floor plans and building elevations were not available at the time of this report, and window to floor area ratios of 50% (40% fixed, 10% operable) for living/dining rooms and bedrooms were assumed. The results are summarized in Table 6 below.

Table 6: Preliminary Minimum Glazing Requirements

Prediction Location	Description	*Minimum STC Requirement for Glazing
[A]	North façade of townhouse block	+STC-33
[B]	North façade of Block 1	+STC-33
[C]	South façade of Block 4	+OBC

Note: +Sound through windows and walls
*When detailed floor plans and building elevations are available, the glazing requirements should be refined.

Operable sections, including doors and operable windows, must be well-fitted and weather-stripped in order to achieve the upper range of target STC values. Note that window glazing and frame constructions can achieve these ratings, but vendor submittals with test data for the specific units proposed will be required to verify acceptable glazing products.

Further Review

When the detailed floor plans and elevations of the dwellings are available, an acoustical consultant should provide revised acoustical recommendations for the glazing constructions based on actual window to floor area ratios and should verify brick exterior wall construction.

3.3.4 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements and offers of purchase and sale for all units with anticipated traffic sound level excesses. Examples are provided below.

Suggested wording for buildings with sound level excesses the MECP criteria is given below:

Type A:

> Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and rail traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks.

Suggested wording for future dwellings requiring forced air ventilation systems is given below.

Type B:

> 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.

This sample clause is provided by the MECP as examples and can be modified by the Municipality as required.

CP's standard warning clause which is required for all residential developments located within 300 m of their mainline is given below.

Type C:

> Warning: Canadian Pacific Railways Company or its assigns or successors in interest has or have a right-of-way within 300 metres from the land subject hereof. There may be alteration to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwellings. CPR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way.

4 Assessment of Existing Stationary Sources of Sound on the Proposed Residential Buildings

4.1 Noise Source Description

There are a number of existing commercial facilities to the north, and west of the subject site. Figure 4 indicates the surrounding land uses. To the north of the railway are additional industrial land uses. The closest stationary noise sources along College Street were assessed.

HGC Engineering visited the subject site to observe the operations of these facilities and identify potentially significant sources of sound. From site observations, aerial photos and past experience with similar past projects, the noise sources identified to be potentially significant with respect to the subject site were determined.

John's Auto Supply

John's Auto Supply (John's) provides auto repair services and operates from 08:00 to 17:00 from Monday to Friday and from 08:00 to 12:00 on Saturdays. During the site visit it was noted that a bay door was open with some noise emanating from the door from activities within the shop.

Smithville Pizzeria

Smithville Pizzeria is located to the west of the site and operates from 11:00 to 22:00 from Monday to Saturday and from 15:00 to 21:00 on Sunday.

Other Industrial and Retail Facilities

Other facilities to the west include a print shop (Carruthers), as well as a commercial plaza further to the west of the site. Sounds from these sources were not audible at the subject site. Galaxy Pallets is further to the north of the subject site but is surrounded by existing residences which are closer. To the north of the railway are additional industrial land uses that are too far in distance from the subject site and have existing residences immediately south of the railway which are closer to the industrial uses. Sounds from these facilities were not considered further in this analysis.

4.2 Stationary Noise Criteria

In Ontario, the guidelines of the Ontario MECP form the basis of environmental noise assessment. MECP publication NPC-300, *Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning",* release date October 21, 2013 provides criteria for assessing the noise impact of stationary noise sources. The term Stationary Source is used to designate all noise sources at the site including mechanical equipment, conveyances, such as trucks when they are moving within the site boundaries. The MECP guidelines assess the noise impact of fluctuating sounds on an hourly energy equivalent (average) sound level basis, rather than on short-duration maximum sound levels. Hourly equivalent sound levels are denoted as the $L_{EQ\text{-}1hr}$.

The criteria are based on the background sound level at sensitive points of reception (which are typically residences) in the quietest hour that the source can be in operation. Background sound includes sound from road traffic and natural sounds, but excludes the sources under assessment. For relatively quiet areas where background sound may fall to low levels during some hours, NPC-300 stipulates various minimum limits. In Class 1 areas such as this, these limits are 50 dBA for daytime and evening hours (07:00 to 23:00) and 45 dBA at night (23:00 to 07:00) at the façade of the dwelling: and 50 dBA during the day and evening (07:00 to 23:00) in the OLA.

Typical ambient sound levels can be determined through prediction of road traffic volumes in areas where traffic sound is dominant. Where it can be demonstrated that the hourly ambient sound levels are greater than the exclusionary minimum limits listed above, the criterion becomes the lowest predicted one-hour L_{EQ} sound level during each respective period. At locations where the ambient sound levels are low, the exclusionary minimum criteria apply. The recommended criteria during the daytime and nighttime at each receptor are indicated in Table 7. In each case, the limits apply at any point on the property, and at residential window locations.

Table 7: Predicted Minimum Hourly Sound Levels and Noise Level Criteria at Receptors [dBA]

Receptor	Description	Criteria at Façade	
		Day/ Evening	Night
R1	Proposed 4-storey townhouse block	50	45
R2	Proposed 4-storey townhouse block	50	45
R3	Proposed 4-storey townhouse block	50	45

4.3 Stationary Source Assessment

Predictive noise modelling was used to assess the potential sound impact of the nearby land uses at the closest proposed sensitive receptors on the subject site. The noise prediction model was based on sound emission levels for the nearby land uses, assumed operational profiles (during the day and night), and established engineering methods for the prediction of outdoor sound propagation. These methods include the effects of distance, air absorption, and acoustical screening by barrier obstacles.

For the surrounding industries, source sound levels for typical equipment from HGC Engineering past project files, and assumed operational information (outlined below) were used as input to a predictive computer model (Cadna/A Version 2023 MR 2 build: 201.5366), in order to estimate the sound levels at the future residences. Cadna/A is a computer implementation of ISO Standard 9613-2, “Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation”, which takes into account attenuation due to distance (geometrical spreading), shielding by intervening structures, air attenuation and ground absorption. Table 8 below includes the sources levels used in the analysis.

Table 8: Source Sound Power Levels [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]							
	63	125	250	500	1k	2k	4k	8k
Auto Shop Bay Doors	80	79	82	84	87	85	85	88
Lennox 5-Ton (A-Weighted) - RTU	--	67	72	77	76	73	68	61
Pizzeria Exhaust Fan	85	89	93	86	89	82	74	69

The following information and assumptions were used in the analysis.

John's Auto Supply

- The height of the main building was assumed to be 8.0 m. The smaller building to the south was assumed to be 7.0 m
- Hours of operation for this facility are daytime only (08:00 to 17:00).

Smithville Pizzeria

- The height of the main building was assumed to be 3.0 m.
- Hours of operation for this facility are daytime only (11:00 to 22:00).

Receptors

- Proposed 4-storey residences in development.

Assumed daytime worst-case scenario:

- Noise emanating from three open bay doors with garage activities on the east side of John's Auto Supply for 10 minutes in an hour;
- All rooftop HVAC equipment operating for 40 minutes in an hour;
- Pizzeria exhaust operating for a full hour;

Assumed night-time worst-case scenario:

- All rooftop HVAC equipment operating for 20 minutes in an hour

Figure 5 indicates the location of the sound level sources and receptor locations.

4.4 Prediction Results Without Mitigation

The calculations consider the acoustical effects of distance and shielding by the buildings. Sound emission data/assumptions are contained above. The sound level results are summarized in the following table. Figures 6 and 7 show the daytime and nighttime sound level contours.

Table 9: Predicted Sound Levels from the Existing Commercial Buildings at the Sensitive Receptors [dBA]

Receptor	Description	Criteria at Façade (Day/Night)	SPL at Façade (Day/Night)
R1	Proposed 4-storey townhouse block	50 / 45	49 / 33
R2	Proposed 4-storey townhouse block	50 / 45	39 / <30
R3	Proposed 4-storey townhouse block	50 / 45	45 / 31

The results of this analysis indicate that the predicted sound levels due to activities at the nearby commercial facilities are expected to be within the MECP minimum exclusionary criteria. No further mitigation is required. Regardless, a noise warning clause should be included in purchase and tenancy agreements to inform future occupants of the existing and nearby commercial facilities. Suggested wording is included below:

Type D:

> Purchasers/tenants are advised that due to the proximity of nearby commercial facilities, sound from those facilities may at times be audible.

5 Discussion and Recommendations

We have the following recommendations with regard to noise control. Please refer to previous sections of this report where these recommendations are discussed in more detail.

1. Forced air ventilation systems with ducts sized for the future installation of air conditioning by the occupant is required for the proposed townhouse blocks with exposure to the railway. The location, installation and sound ratings of the air conditioning devices should comply with NPC-300.

2. Upgraded window glazing constructions are required for dwellings with exposure to the railway. For the remaining dwellings, any exterior building façade and window glazing constructions meeting the minimum requirements of the OBC will provide sufficient acoustical insulation for the indoor spaces of the proposed dwellings.

3. Warning clauses should be used to inform future residents of the traffic noise and presence of the nearby commercial facilities.

4. When detailed floor plans and building elevations are available for the future dwelling units with exposure to the railway, a detailed noise study should be performed to specify window glazing requirements with sufficient acoustical insulation for the dwelling units based on actual window to floor area ratios.

These recommendations are summarized in Table 10 below.

Table 10: Summary of Noise Control Requirements and Noise Warning Clauses

Prediction Locations	Unit	Acoustic Barrier	Ventilation Requirements	Type of Warning Clause	*Required STC
[A], [B]	Dwellings with exposure to railway	--	Forced Air	A, B, C, D	STC-33
[C]	Remaining dwellings	--	--	C, D	OBC

Notes:
-- no specific requirement
OBC – meeting the minimum requirements of the Ontario Building Code
* When detailed floor plans and building elevations are available, window glazing requirements should be refined based on actual window to floor area ratios

5.1 Implementation

To ensure that the noise control recommendations outlined above are fully implemented, it is recommended that:

1. When architectural plans and grading information is available for dwellings with exposure to the railway, an acoustical consultant shall review the plans to determine appropriate window constructions are provided.

2. Prior to the issuance of building permits for this development, the Municipality's building inspector or a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario should certify that the noise control measures have been properly incorporated.

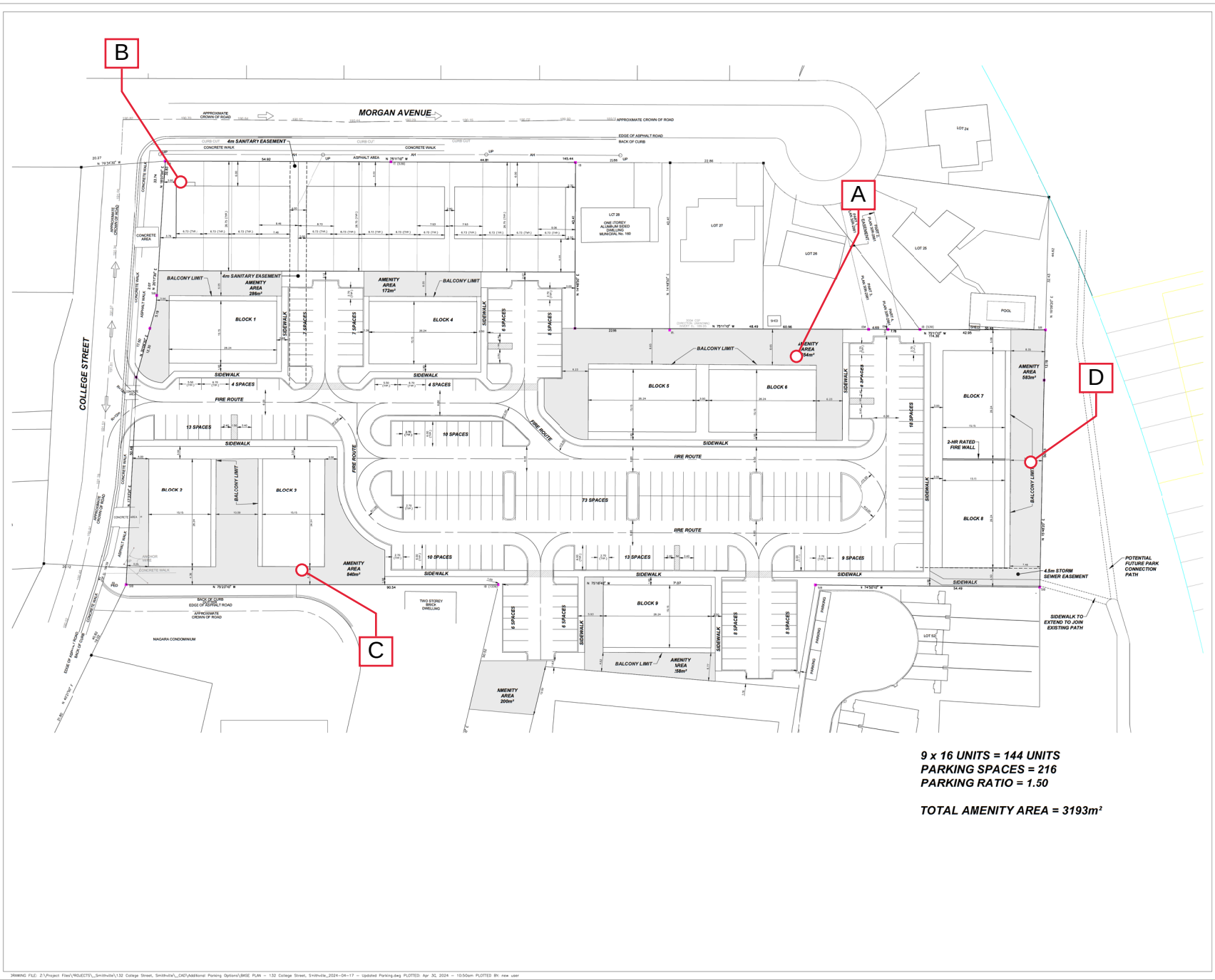
3. Prior to assumption of the subdivision, the Municipality's building inspector or a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario should certify that the noise control measures have been properly installed and constructed.

Limitations

This document was prepared solely for the addressed party and titled project or named part thereof, and should not be relied upon or used for any other project without obtaining prior written authorization from HGC Engineering. HGC Engineering accepts no responsibility or liability for any consequence of this document being used for a purpose other than for which it was commissioned. Any person or party using or relying on the document for such other purpose agrees, and will by such use or reliance be taken to confirm their agreement to indemnify HGC Engineering for all loss or damage resulting therefrom. HGC Engineering accepts no responsibility or liability for this document to any person or party other than the party by whom it was commissioned.

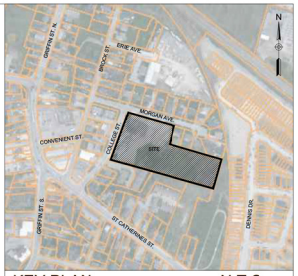
Any conclusions and/or recommendations herein reflect the judgment of HGC Engineering based on information available at the time of preparation, and were developed in good faith on information provided by others, as noted in the report, which has been assumed to be factual and accurate. Changed conditions or information occurring or becoming known after the date of this report could affect the results and conclusions presented.

Figure 1 - Key Plan



9 x 16 UNITS = 144 UNITS
PARKING SPACES = 216
PARKING RATIO = 1.50

TOTAL AMENITY AREA = 3193m²



KEY PLAN N.T.S.

BENCHMARK NOTE:
ELEVATION =
MONUMENT:

SITE BENCHMARK :
ELEVATION =

GENERAL NOTES:

1. TENDERER SHALL SATISFY THEMSELVES AS TO THE NATURE OF THE GROUND AND BID ACCORDINGLY.
2. ALL ROCK LINE INDICATIONS SHOWN ON THE PLAN MUST BE VERIFIED BY THE CONTRACTOR.
3. CONTRACTOR SHALL VERIFY LOCATIONS AND INVERTS OF ALL EXISTING SANITARY AND STORM SEWERS AND WATERMAINS, PRIVATE DRAINS AND WATER SERVICES, GAS MAINS, CABLE TV, HYDRO AND TELEPHONE DUCTS ETC AT START OF CONSTRUCTION.

NO:	DATE:	DESCRIPTION:
8	2024-04-30	REVISED PER CLIENT FEEDBACK
7	2024-04-17	REVISED PER CLIENT FEEDBACK
6	2024-01-30	REVISED PER CLIENT FEEDBACK
5	2024-01-24	REVISED PER PRE-CONSULTATION FEEDBACK
4	2023-12-11	REVISED PER CLIENT FEEDBACK
3	2023-12-08	REVISED PER CLIENT FEEDBACK
2	2023-09-16	REVISED PER CLIENT FEEDBACK
1	2023-07-12	REVISED PER CLIENT FEEDBACK
0	2023-07-05	NEW UNITS

REVISIONS

SEAL

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CLIENT:
2853972 ONTARIO INC.

MUNICIPALITY:
TOWNSHIP OF WEST LINCOLN

PROJECT NAME:
COLLEGE STREET SCHOOL

TITLE:
SITE CONCEPT PLAN

SCALE: 1:400	DATE: 2022-09-27
CHECKED BY: AS	DESIGNED BY: AS
DWG No: 22046PHE	SHEET No: 1

DRAWING FILE: Z:\Project Files\PROJECTS_Smithville\132 College Street, Smithville_CAD\Additional Parking Options\BASE PLAN – 132 College Street, Smithville_2024-04-17 – Updated Parking.dwg PLOTTED: Apr 30, 2024 – 10:50pm PLOTTED BY: new user

Figure 2 - Proposed Concept Plan Showing Prediction Locations

LEGEND

Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant is required

9 x 16 UNITS = 144 UNITS
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PARKING RATIO = 1.50

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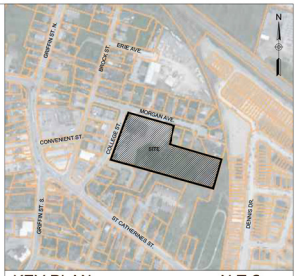

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3	2023-12-08	REVISED PER CLIENT FEEDBACK
2	2023-09-16	REVISED PER CLIENT FEEDBACK
1	2023-07-12	REVISED PER CLIENT FEEDBACK
0	2023-07-05	NEW UNITS

REVISIONS

SEAL

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TOWNSHIP OF WEST LINCOLN

PROJECT NAME:
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SCALE: 1:400	DATE: 2022-09-27
CHECKED BY: AS	DESIGNED BY: AS
DWG No: 22046PHE	SHEET No: 1

DRAWING FILE: Z:\Project Files\PROJECTS_Smithville\132 College Street, Smithville_CAD\Additional Parking Options\BASE PLAN - 132 College Street, Smithville_2024-04-17 - Updated Parking.dwg PLOTTED: Apr 30, 2024 - 10:50pm PLOTTED BY: new user

Figure 3 - Proposed Concept Plan Showing Ventilation Requirements

Figure 4 - Aerial Photo Showing Surrounding Land Uses

Figure 5: Aerial Photo Showing Noise Sources and Receptor Locations

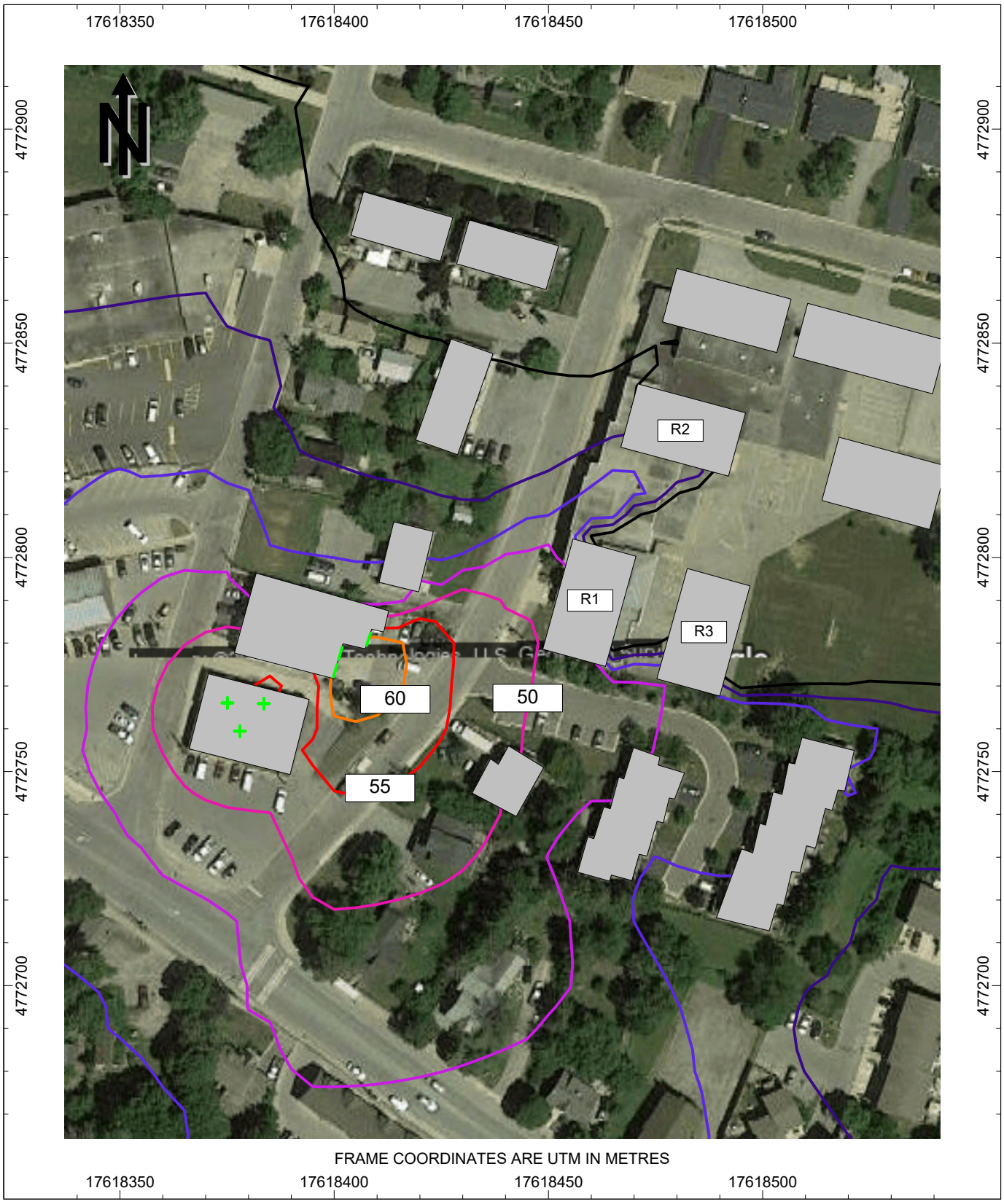

Figure 6: Daytime Sound Level Contours, dBA, at 10.5 m Height

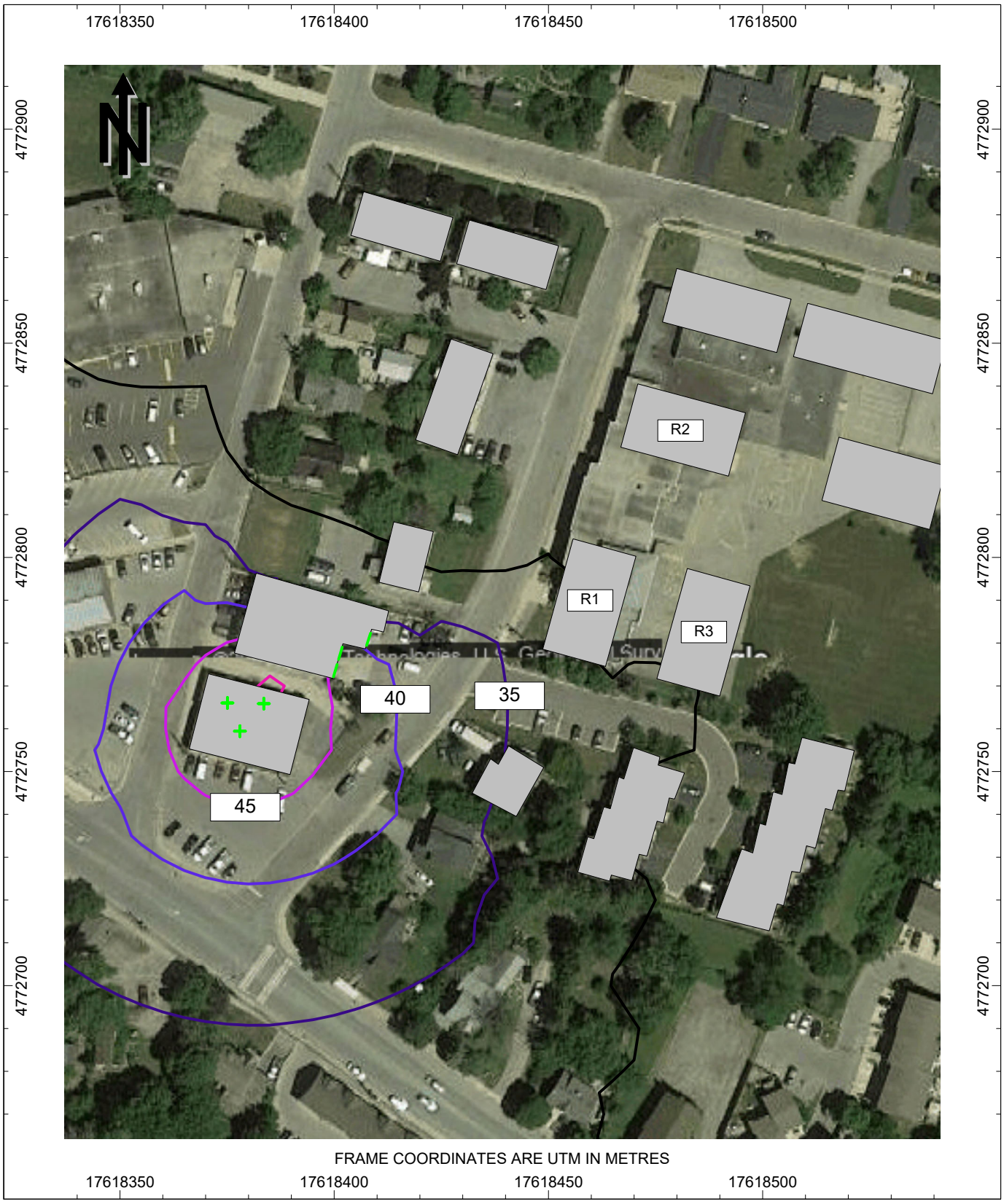

Figure 7: Nighttime Sound Level Contours, dBA, at 10.5 m Height

APPENDIX A

CP Principal Mainline Requirements

CANADIAN PACIFIC RAILWAY

PRINCIPAL MAIN LINE REQUIREMENTS

1. Berm, or combination berm and noise attenuation fence, having extensions or returns at the ends, to be erected on adjoining property, parallel to the railway right-of-way with construction according to the following:

   a) Minimum total height 5.5 metres above top-of-rail;
   b) Berm minimum height 2.5 metres and side slopes not steeper than 2.5 to 1.
   c) Fence, or wall, to be constructed without openings and of a durable material weighing not less than 20 kg. per square metre (4 lb/sq.ft.) of surface area.

   No part of the berm/noise barrier is to be constructed on railway property.

   A clause should be inserted in all offers of purchase and sale or lease, and be registered on title or included in the lease for each dwelling affected by any noise and vibration attenuation measures, advising that any berm, fencing, or vibration isolation features implemented are not to be tampered with or altered, and further that the owner shall have the sole responsibility for and shall maintain these features.

   Dwellings must be constructed such that the interior noise levels meet the criteria of the appropriate Ministry. A noise study should be carried out by a professional noise consultant to determine what impact, if any, railway noise would have on residents of proposed subdivisions and to recommend mitigation measures, if required. The Railway may consider other measures recommended by the study.

2. Setback of dwellings from the railway right-of-way to be a minimum of 30 metres. While no dwelling should be closer to the right-of-way than the specified setback, an unoccupied building, such as a garage, may be built closer. The 2.5 metre high earth berm adjacent to the right-of-way must be provided in all instances.

3. Ground vibration transmission to be estimated through site tests. If in excess of the acceptable levels, all dwellings within 75 metres of the nearest track should be protected. The measures employed may be:

   a) Support the building on rubber pads between the foundation and the occupied structure so that the maximum vertical natural frequency of the structure on the pads is 12 Hz;
   b) Insulate the building from the vibration originating at the railway tracks by an intervening discontinuity or by installing adequate insulation outside the building, protected from the compaction that would reduce its effectiveness so that vibration in the building became unacceptable; or
   c) Other suitable measures that will retain their effectiveness over time.

4. A clause should be inserted in all offers of purchase and sale or lease and in the title deed or lease of each dwelling within 300m of the railway right-of-way, warning prospective purchasers or tenants of the existence of the Railway's operating right-of-way; the possibility of alterations including the possibility that the Railway may expand its operations, which expansion may affect the living environment of the residents notwithstanding the inclusion of noise and vibration attenuating measures in the design of the subdivision and individual units, and that the Railway will not be responsible for complaints or claims arising from the use of its facilities and/or operations.

5. Any proposed alterations to the existing drainage pattern affecting railway property must receive prior concurrence from the Railway, and be substantiated by a drainage report to be reviewed by the Railway.

6. A 1.83 metre high chain link security fence be constructed and maintained along the common property line of the Railway and the development by the developer at his expense, and the developer is made aware of the necessity of including a covenant running with the lands, in all deeds, obliging the purchasers of the land to maintain the fence in a satisfactory condition at their expense.

7. Any proposed utilities under or over railway property to serve the development must be approved prior to their installation and be covered by the Railway's standard agreement.

APPENDIX B

Road Traffic Data

Victor Garcia

From: Rataul, Manny <Manny.Rataul@niagararegion.ca>
Sent: May 23, 2024 8:39 AM
To: Victor Garcia
Subject: RE: Traffic Data Verification

Hello Victor,

This is the most up-to-date data we have on file. We will not have an update to this location until October/November of this year.

Regards,
Manny Rataul, C.E.T., rcji
Project Manager Road Safety
Transportation Services Division, Niagara Region

Email: Manny.Rataul@niagararegion.ca
Address: 1815 Sir Isaac Brock Way St., Thorold ON, L2V4T7
www.niagararegion.ca

From: Victor Garcia <vgarcia@hgcengineering.com>
Sent: Thursday, May 23, 2024 6:34 AM
To: Rataul, Manny <Manny.Rataul@niagararegion.ca>
Subject: Traffic Data Verification

Hi Manny,

HGC Engineering is preparing an update to a noise study for a proposed development located at 132 College Street in West Lincoln, Ontario. A google link is included below for your reference:

https://maps.app.goo.gl/R5D8y7rKveZeAnvUA

We currently have the attached data, is this data still valid or should the data be updated?

Regards,

Victor Garcia, P.Eng
Associate

HGC Engineering NOISE | VIBRATION | ACOUSTICS
Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044 **e**: vgarcia@hgcengineering.com
Visit our website – www.hgcengineering.com **Follow Us** – LinkedIn | Twitter | YouTube

Victor Garcia

From: Rataul, Manny <Manny.Rataul@niagararegion.ca>
Sent: April 26, 2022 9:43 AM
To: Victor Garcia
Cc: Kanda, Seema
Subject: RE: Online Form - Traffic Data Request
Attachments: ATR - Hwy 20 St Catharines Street 2017.pdf; Traffic Information Request Form.pdf

Hello Victor,

Please see attached for ATR data for the requested segment below. The combined EB/WB SADT for 2017 was 8400 vehicles. The traffic data comes to a total of $85.00 (HST Included); our accounting department will be mailing an official invoice out to your office in the upcoming weeks. The traffic data request form is not an official invoice.

Regards,
Manny Rataul, C.Tech., rcji
Road Safety Technician
Transportation Services Division, Niagara Region

Phone: 905-980-6000 Ext. 3711
Email: Manny.Rataul@niagararegion.ca
Address: 1815 Sir Isaac Brock Way St., Thorold ON, L2V4T7
www.niagararegion.ca

From: Victor Garcia <vgarcia@hgcengineering.com>
Sent: Monday, April 25, 2022 10:03 AM
To: Rataul, Manny <Manny.Rataul@niagararegion.ca>
Subject: RE: Online Form - Traffic Data Request

Hi Manny,

Yes we would like to go ahead and purchase the data from 2017. If you could also pass along the SADT that would be great.

Thanks,

Victor Garcia, P.Eng
HGC Engineering NOISE | VIBRATION | ACOUSTICS
Howe Gastmeier Chapnik Limited
t: 905.826.4044

MH Corbin Traffic Analyzer Study
Computer Generated Summary Report
City: Niagara Region
Street: 699209 - EB
Location: 6829

A study of vehicle traffic was conducted with the device having serial number 134592. The study was done in the EB lane at 699209 - EB in Niagara Region, ON in county. The study began on 2017-05-30 at 12:00 AM and concluded on 2017-05-31 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 2,558 vehicles passed through the location with a peak volume of 80 on 2017-05-30 at [05:30 PM-05:45 PM] and a minimum volume of 0 on 2017-05-30 at [01:30 AM-01:45 AM]. The AADT count for this study was 2,558.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 50 - 55 KM/H range or lower. The average speed for all classifed vehicles was 53 KM/H with 68.47% vehicles exceeding the posted speed of 50 KM/H. 0.24% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 50KM/H and the 85th percentile was 61.73 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
126	226	424	791	441	240	107	57	25	18	6	0	0	0	0

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin.
Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 2275 which represents 92 percent of the total classified vehicles. The number of Small Trucks in the study was 73 which represents 3 percent of the total classified vehicles. The number of Trucks/Buses in the study was 51 which represents 2 percent of the total classified vehicles. The number of Tractor Trailers in the study was 62 which represents 3 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
1291	984	73	51	18	16	20	8							

CHART 2

HEADWAY

During the peak traffic period, on 2017-05-30 at [05:30 PM-05:45 PM] the average headway between vehicles was 11.111 seconds. During the slowest traffic period, on 2017-05-30 at [01:30 AM-01:45 AM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 18.00 and 47.00 degrees C.

MH Corbin Traffic Analyzer Study
Computer Generated Summary Report
City: Niagara Region
Street: 699209 - WB
Location: 6829

A study of vehicle traffic was conducted with the device having serial number 132657. The study was done in the WB lane at 699209 - WB in Niagara Region, ON in county. The study began on 2017-05-30 at 12:00 AM and concluded on 2017-05-31 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 4,974 vehicles passed through the location with a peak volume of 113 on 2017-05-30 at [12:15 PM-12:30 PM] and a minimum volume of 0 on 2017-05-30 at [01:30 AM-01:45 AM]. The AADT count for this study was 4,974.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 39 KM/H range or lower. The average speed for all classifed vehicles was 41 KM/H with 40.88% vehicles exceeding the posted speed of 50 KM/H. 0.08% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 39KM/H and the 85th percentile was 57.02 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
1783	404	691	1047	526	265	84	37	17	10	4	0	0	0	0

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin.
Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 4615 which represents 95 percent of the total classified vehicles. The number of Small Trucks in the study was 93 which represents 2 percent of the total classified vehicles. The number of Trucks/Buses in the study was 94 which represents 2 percent of the total classified vehicles. The number of Tractor Trailers in the study was 66 which represents 1 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
2495	2120	93	94	20	14	21	11							

CHART 2

HEADWAY

During the peak traffic period, on 2017-05-30 at [12:15 PM-12:30 PM] the average headway between vehicles was 7.895 seconds. During the slowest traffic period, on 2017-05-30 at [01:30 AM-01:45 AM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 18.00 and 45.00 degrees C.

Time/Class Report

Device ID: 134592	**Location:** 6829			**Raw Count:** 2,558	
Operator: MD	**Lane:** EB			**AADT Count:** 2,558	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - EB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[00:00-00:15]	3	1	0	0	0	0	0	0	4
[00:15-00:30]	2	1	0	0	0	0	1	0	4
[00:30-00:45]	3	1	0	0	0	0	0	0	4
[00:45-01:00]	1	1	0	0	0	0	0	0	2
	9	4	0	0	0	0	1	0	14
[01:00-01:15]	3	3	0	0	0	0	0	0	6
[01:15-01:30]	1	1	0	0	0	0	0	0	2
[01:30-01:45]	0	0	0	0	0	0	0	0	0
[01:45-02:00]	0	1	0	0	0	0	0	0	1
	4	5	0	0	0	0	0	0	9
[02:00-02:15]	0	0	0	0	0	0	0	0	0
[02:15-02:30]	2	1	0	0	0	0	0	0	3
[02:30-02:45]	1	1	0	1	0	0	0	0	3
[02:45-03:00]	0	1	1	0	0	0	0	0	2
	3	3	1	1	0	0	0	0	8
[03:00-03:15]	0	0	0	0	0	0	0	0	0
[03:15-03:30]	0	1	0	0	0	0	0	0	1
[03:30-03:45]	0	0	0	0	0	0	0	0	0
[03:45-04:00]	0	1	0	0	0	0	0	0	1
	0	2	0	0	0	0	0	0	2
[04:00-04:15]	2	1	0	0	0	0	0	0	3
[04:15-04:30]	2	0	1	0	0	1	0	0	4
[04:30-04:45]	0	0	0	0	0	0	1	0	1
[04:45-05:00]	0	0	0	0	0	0	0	0	0
	4	1	1	0	0	1	1	0	8
[05:00-05:15]	0	0	0	0	0	0	0	0	0
[05:15-05:30]	0	2	2	1	0	0	0	0	5
[05:30-05:45]	0	2	0	0	0	0	0	0	2
[05:45-06:00]	3	5	0	0	0	0	0	0	8
	3	9	2	1	0	0	0	0	15
[06:00-06:15]	5	5	3	1	0	0	0	0	14
[06:15-06:30]	12	8	2	0	0	0	0	0	22
[06:30-06:45]	10	8	2	0	1	0	0	1	22
[06:45-07:00]	10	4	1	0	0	1	0	0	16
	37	25	8	1	1	1	0	1	74
[07:00-07:15]	11	14	1	0	0	0	1	0	27
[07:15-07:30]	17	11	0	0	0	0	1	0	29
[07:30-07:45]	19	8	1	0	0	0	0	0	28

Time/Class Report

Device ID: 134592	**Location:** 6829			**Raw Count:** 2,558	
Operator: MD	**Lane:** EB			**AADT Count:** 2,558	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - EB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[07:45-08:00]	11	14	0	0	0	1	0	0	26
	58	47	2	0	0	1	2	0	110
[08:00-08:15]	21	16	3	3	0	0	0	0	43
[08:15-08:30]	16	13	2	1	0	0	0	0	32
[08:30-08:45]	15	10	1	3	0	0	0	0	29
[08:45-09:00]	16	20	0	0	1	0	0	0	37
	68	59	6	7	1	0	0	0	141
[09:00-09:15]	19	17	2	0	0	1	0	1	40
[09:15-09:30]	13	10	0	0	1	0	2	0	26
[09:30-09:45]	14	21	0	0	0	1	1	0	37
[09:45-10:00]	18	12	4	0	0	1	0	0	35
	64	60	6	0	1	3	3	1	138
[10:00-10:15]	17	14	3	2	0	2	1	1	40
[10:15-10:30]	12	17	1	3	1	0	1	0	35
[10:30-10:45]	23	17	0	2	0	0	0	0	42
[10:45-11:00]	14	14	0	2	0	0	1	0	31
	66	62	4	9	1	2	3	1	148
[11:00-11:15]	21	12	1	0	0	0	0	0	34
[11:15-11:30]	16	12	0	2	0	0	0	0	30
[11:30-11:45]	13	10	1	1	1	0	0	0	26
[11:45-12:00]	19	22	0	0	0	1	1	0	43
	69	56	2	3	1	1	1	0	133
[12:00-12:15]	18	11	2	1	0	0	1	1	34
[12:15-12:30]	18	20	2	3	0	0	0	0	43
[12:30-12:45]	23	18	2	2	0	1	1	0	47
[12:45-13:00]	16	14	2	1	0	0	0	1	34
	75	63	8	7	0	1	2	2	158
[13:00-13:15]	22	12	1	1	1	0	0	0	37
[13:15-13:30]	21	13	0	1	0	0	0	2	37
[13:30-13:45]	20	16	6	0	1	0	0	0	43
[13:45-14:00]	15	14	2	1	0	0	1	0	33
	78	55	9	3	2	0	1	2	150
[14:00-14:15]	16	18	1	2	2	0	1	0	40
[14:15-14:30]	24	15	0	1	1	0	0	0	41
[14:30-14:45]	20	18	0	2	1	0	0	0	41
[14:45-15:00]	17	15	2	0	1	0	0	0	35
	77	66	3	5	5	0	1	0	157

Time/Class Report

Device ID: 134592	**Location:** 6829			**Raw Count:** 2,558	
Operator: MD	**Lane:** EB			**AADT Count:** 2,558	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - EB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[15:00-15:15]	31	19	3	1	0	0	0	0	54
[15:15-15:30]	19	19	2	0	1	0	0	1	42
[15:30-15:45]	21	22	2	2	0	0	0	0	47
[15:45-16:00]	33	20	1	1	0	0	0	0	55
	104	80	8	4	1	0	0	1	198
[16:00-16:15]	22	15	2	1	2	2	0	0	44
[16:15-16:30]	29	29	0	0	0	0	0	0	58
[16:30-16:45]	41	23	2	2	0	0	1	0	69
[16:45-17:00]	36	19	1	0	0	0	1	0	57
	128	86	5	3	2	2	2	0	228
[17:00-17:15]	36	25	4	0	0	0	1	0	66
[17:15-17:30]	38	28	0	0	0	0	0	0	66
[17:30-17:45]	46	26	0	1	2	1	0	0	76
[17:45-18:00]	24	9	0	0	1	0	0	0	34
	144	88	4	1	3	1	1	0	242
[18:00-18:15]	25	22	0	0	0	2	1	0	50
[18:15-18:30]	25	13	0	1	0	0	0	0	39
[18:30-18:45]	20	24	0	1	0	0	0	0	45
[18:45-19:00]	19	15	0	1	0	0	0	0	35
	89	74	0	3	0	2	1	0	169
[19:00-19:15]	17	11	2	0	0	0	0	0	30
[19:15-19:30]	9	9	0	1	0	0	0	0	19
[19:30-19:45]	12	14	0	0	0	0	0	0	26
[19:45-20:00]	11	12	0	0	0	0	0	0	23
	49	46	2	1	0	0	0	0	98
[20:00-20:15]	20	13	0	1	0	0	0	0	34
[20:15-20:30]	15	9	0	0	0	0	0	0	24
[20:30-20:45]	18	8	0	0	0	1	0	0	27
[20:45-21:00]	23	9	0	0	0	0	0	0	32
	76	39	0	1	0	1	0	0	117
[21:00-21:15]	16	9	0	0	0	0	0	0	25
[21:15-21:30]	10	10	0	0	0	0	0	0	20
[21:30-21:45]	10	3	0	0	0	0	0	0	13
[21:45-22:00]	10	8	1	0	0	0	1	0	20
	46	30	1	0	0	0	1	0	78
[22:00-22:15]	10	3	1	0	0	0	0	0	14
[22:15-22:30]	9	2	0	0	0	0	0	0	11
[22:30-22:45]	6	3	0	1	0	0	0	0	10

Time/Class Report

Device ID: 134592	**Location:** 6829			**Raw Count:** 2,558	
Operator: MD	**Lane:** EB			**AADT Count:** 2,558	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - EB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[22:45-23:00]	1	7	0	0	0	0	0	0	8
	26	15	1	1	0	0	0	0	43
[23:00-23:15]	3	3	0	0	0	0	0	0	6
[23:15-23:30]	9	5	0	0	0	0	0	0	14
[23:30-23:45]	2	1	0	0	0	0	0	0	3
[23:45-00:00]	0	0	0	0	0	0	0	0	0
	14	9	0	0	0	0	0	0	23
05-30-2017 12:00 AM									
05-31-2017 12:00 AM	1291	984	73	51	18	16	20	8	2461

Time/Class Report

Device ID: 132657	**Location:** 6829			**Raw Count:** 4,974	
Operator: MD	**Lane:** WB			**AADT Count:** 4,974	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - WB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[00:00-00:15]	0	2	0	0	0	0	0	0	2
[00:15-00:30]	4	0	0	0	0	0	0	0	4
[00:30-00:45]	6	2	0	0	0	0	0	0	8
[00:45-01:00]	1	0	1	0	0	0	0	0	2
	11	4	1	0	0	0	0	0	16
[01:00-01:15]	1	1	0	0	0	0	0	0	2
[01:15-01:30]	0	2	1	0	0	0	0	0	3
[01:30-01:45]	0	0	0	0	0	0	0	0	0
[01:45-02:00]	0	0	0	0	0	0	0	0	0
	1	3	1	0	0	0	0	0	5
[02:00-02:15]	1	0	0	0	0	0	0	0	1
[02:15-02:30]	1	1	0	0	0	0	0	0	2
[02:30-02:45]	0	2	0	0	0	0	0	0	2
[02:45-03:00]	1	1	0	0	0	0	0	0	2
	3	4	0	0	0	0	0	0	7
[03:00-03:15]	0	0	0	0	0	0	0	0	0
[03:15-03:30]	0	3	1	0	0	0	0	1	5
[03:30-03:45]	4	2	0	0	0	0	0	0	6
[03:45-04:00]	2	2	1	0	0	0	0	1	6
	6	7	2	0	0	0	0	2	17
[04:00-04:15]	3	0	0	0	0	1	0	0	4
[04:15-04:30]	5	3	1	0	0	0	0	0	9
[04:30-04:45]	7	6	0	0	0	0	0	0	13
[04:45-05:00]	5	2	1	0	0	0	1	0	9
	20	11	2	0	0	1	1	0	35
[05:00-05:15]	6	9	2	1	0	0	0	0	18
[05:15-05:30]	12	9	2	0	0	1	0	0	24
[05:30-05:45]	30	16	0	0	0	0	0	0	46
[05:45-06:00]	18	16	0	1	1	0	0	0	36
	66	50	4	2	1	1	0	0	124
[06:00-06:15]	23	20	1	1	0	0	0	0	45
[06:15-06:30]	25	16	5	3	0	2	0	0	51
[06:30-06:45]	33	23	3	4	0	0	0	0	63
[06:45-07:00]	27	36	4	2	0	1	0	1	71
	108	95	13	10	0	3	0	1	230
[07:00-07:15]	35	35	0	4	0	0	1	0	75
[07:15-07:30]	32	29	1	3	0	0	0	0	65
[07:30-07:45]	36	29	0	1	1	0	0	0	67

Time/Class Report

Device ID: 132657	**Location:** 6829			**Raw Count:** 4,974	
Operator: MD	**Lane:** WB			**AADT Count:** 4,974	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - WB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[07:45-08:00]	41	50	1	5	0	0	0	1	98
	144	143	2	13	1	0	1	1	305
[08:00-08:15]	32	41	2	4	0	0	0	0	79
[08:15-08:30]	42	37	1	5	0	0	0	0	85
[08:30-08:45]	34	37	3	1	1	0	0	0	76
[08:45-09:00]	46	39	0	2	0	0	0	0	87
	154	154	6	12	1	0	0	0	327
[09:00-09:15]	31	30	0	0	0	0	0	0	61
[09:15-09:30]	37	30	0	2	0	0	1	0	70
[09:30-09:45]	43	22	2	1	0	1	1	1	71
[09:45-10:00]	39	40	1	1	0	0	0	0	81
	150	122	3	4	0	1	2	1	283
[10:00-10:15]	33	34	1	1	1	0	1	0	71
[10:15-10:30]	35	33	3	1	0	0	0	0	72
[10:30-10:45]	28	30	1	1	0	0	0	0	60
[10:45-11:00]	36	31	3	2	1	1	0	0	74
	132	128	8	5	2	1	1	0	277
[11:00-11:15]	28	34	1	0	1	1	2	0	67
[11:15-11:30]	33	35	3	3	0	0	0	0	74
[11:30-11:45]	38	29	3	0	1	0	1	0	72
[11:45-12:00]	45	36	1	0	0	0	1	0	83
	144	134	8	3	2	1	4	0	296
[12:00-12:15]	32	44	2	1	0	0	0	1	80
[12:15-12:30]	62	42	3	2	1	0	0	2	112
[12:30-12:45]	58	36	3	1	0	1	0	0	99
[12:45-13:00]	41	23	1	1	0	0	2	0	68
	193	145	9	5	1	1	2	3	359
[13:00-13:15]	38	25	0	1	0	0	0	0	64
[13:15-13:30]	35	27	2	1	0	1	1	0	67
[13:30-13:45]	31	31	1	1	1	0	0	1	66
[13:45-14:00]	29	40	3	2	1	1	2	0	78
	133	123	6	5	2	2	3	1	275
[14:00-14:15]	39	34	1	2	0	0	0	0	76
[14:15-14:30]	39	36	2	0	1	1	0	0	79
[14:30-14:45]	44	38	2	4	0	0	0	0	88
[14:45-15:00]	50	32	5	1	0	1	1	0	90
	172	140	10	7	1	2	1	0	333

Time/Class Report

Device ID: 132657	**Location:** 6829			**Raw Count:** 4,974	
Operator: MD	**Lane:** WB			**AADT Count:** 4,974	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - WB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[15:00-15:15]	34	35	0	2	0	0	1	1	73
[15:15-15:30]	47	35	2	0	0	0	0	0	84
[15:30-15:45]	49	42	1	2	0	0	1	0	95
[15:45-16:00]	43	33	1	3	1	0	0	0	81
	173	145	4	7	1	0	2	1	333
[16:00-16:15]	44	46	2	0	0	0	1	0	93
[16:15-16:30]	42	31	0	1	2	0	0	0	76
[16:30-16:45]	54	42	1	3	0	0	0	0	100
[16:45-17:00]	58	45	5	0	1	0	0	0	109
	198	164	8	4	3	0	1	0	378
[17:00-17:15]	48	30	0	1	0	0	0	0	79
[17:15-17:30]	49	32	0	2	0	0	1	0	84
[17:30-17:45]	53	29	0	2	0	0	0	0	84
[17:45-18:00]	35	47	0	2	0	1	0	1	86
	185	138	0	7	0	1	1	1	333
[18:00-18:15]	37	31	0	1	0	0	0	0	69
[18:15-18:30]	35	27	0	2	0	0	0	0	64
[18:30-18:45]	36	22	0	1	2	0	0	0	61
[18:45-19:00]	36	35	0	0	1	0	0	0	72
	144	115	0	4	3	0	0	0	266
[19:00-19:15]	25	25	0	0	1	0	0	0	51
[19:15-19:30]	35	27	1	0	0	0	0	0	63
[19:30-19:45]	22	26	0	0	0	0	0	0	48
[19:45-20:00]	26	20	2	1	0	0	0	0	49
	108	98	3	1	1	0	0	0	211
[20:00-20:15]	33	26	0	0	0	0	0	0	59
[20:15-20:30]	38	19	1	0	0	0	0	0	58
[20:30-20:45]	29	24	0	0	0	0	0	0	53
[20:45-21:00]	30	23	0	0	0	0	0	0	53
	130	92	1	0	0	0	0	0	223
[21:00-21:15]	21	16	0	0	0	0	0	0	37
[21:15-21:30]	11	14	0	0	0	0	1	0	26
[21:30-21:45]	17	18	1	1	0	0	0	0	37
[21:45-22:00]	14	10	0	0	0	0	1	0	25
	63	58	1	1	0	0	2	0	125
[22:00-22:15]	11	15	0	1	1	0	0	0	28
[22:15-22:30]	12	10	0	1	0	0	0	0	23
[22:30-22:45]	8	6	0	0	0	0	0	0	14

Time/Class Report

Device ID: 132657	**Location:** 6829			**Raw Count:** 4,974	
Operator: MD	**Lane:** WB			**AADT Count:** 4,974	
Begin: 05-30-2017 12:00 AM	**Street:** 699209 - WB			**AADT Factor:** 1	
End: 05-31-2017 12:00 AM	**City:** Niagara Region			**Speed Limit:** 50	
Hours: 24.00	**County:**				
Period (min): 15	**State:** ON				

Date And Time Range	< to 15	16 to 25	26 to 32	33 to 42	43 to 51	52 to 61	62 to 71	72 to >	Total
Tue,05-30-2017									
[22:45-23:00]	10	5	0	1	0	0	0	0	16
	41	36	0	3	1	0	0	0	81
[23:00-23:15]	5	4	1	0	0	0	0	0	10
[23:15-23:30]	5	3	0	0	0	0	0	0	8
[23:30-23:45]	4	3	0	0	0	0	0	0	7
[23:45-00:00]	2	1	0	1	0	0	0	0	4
	16	11	1	1	0	0	0	0	29
05-30-2017 12:00 AM									
05-31-2017 12:00 AM	2495	2120	93	94	20	14	21	11	4868

APPENDIX C

Rail Traffic Data

800 - 1290 Central Parkway West
Mississauga, Ontario
Canada L5C 4R3

T 905 803 3429
E josie_tomei@cpr.ca

September 10, 2019

Via email: vgarcia@hgcengineering.com

Victor Garcia
HGC Engineering
2000 Argentia Road
Plaza One, Suite 203
Mississauga, Ontario L5N 1P7

Dear Sir/Madam:

Re: Rail Traffic Volumes, CP Mileage 37.88, Hamilton Subdivision, S Grimsby Road 5, Smithville

This is in reference to your request for rail traffic data in the vicinity of S Grimsby Road 5 in the City of Smithville. The study area is located at mile 37.88 of our Hamilton Subdivision, which is classified as a Principal Main line.

The information requested is as follows:

1. Number of freight trains between 0700 & 2300: 3
   Number of freight trains between 2300 & 0700: 6

2. Maximum cars per train freight: 129

3. Number of locomotives per train: 2 to 4

4. Maximum permissible train speed: 50 mph on main
   10 mph on siding

5. The whistle signal is sounded approaching public grade crossings through the study area and may also be sounded if deemed necessary by the train crew for safety reasons at any time.

6. There is 1 main line track with continuously welded rail and 1 siding track.

The information provided is based on recent rail traffic. Variations of the above may exist on a day-to-day basis. Specific measurements may also vary significantly depending on customer needs.

Yours truly,

Josie Tomei SR/WA
Specialist Real Estate Sales & Acquisitions – Ontario

Rank	TC Number	Railway Co	Region	Province	Access	Jurisdiction	Mile	Subdivision	Spur Mile	Spur Name	Location	Latitude	Longitude	Road Auth	Protection	Accident	Fatality	Injury	Total Trains	Vehicles Da	Train Max S	Road Speed	Lanes	Tracks	IsUrban
2466	33551	CP	ONT	ON	Public	F	37.31	Hamilton			Station Stre	43.10276	-79.5452	Niagara, Re	Active - FLE	0	0	0	11	5000	50	60	2	2	Y

APPENDIX D

Sample STAMSON 5.04 Output

STAMSON 5.0 NORMAL REPORT Date: 11-06-2024 06:39:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours

Description: North facade of Block 6

Rail data, segment # 1: CP (day/night)

Train Type	Trains (Left)	Trains (Right)	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
* 1.	2.8/4.8	2.8/4.8	80.0	4.0	129.0	Diesel	Yes

* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No	Name	Unadj. Trains Left	Right	Annual % Increase	Years of Growth
1.		2.0/3.5	2.0/3.5	2.50	13.00

Data for Segment # 1: CP (day/night)

Angle1 Angle2	-90.00 deg	90.00 deg
Wood depth	0	(No woods.)
No of house rows	0 / 0	
Surface	1	(Absorptive ground surface)
Receiver source distance	231.00 / 231.00 m	
Receiver height	10.50 / 10.50 m	
Topography	1	(Flat/gentle slope; no barrier)
Whistle Angle	60 deg	Track 1
Reference angle	0.00	

Results segment # 1: CP (day)

LOCOMOTIVE (0.00 + 53.58 + 0.00) = 53.58 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.31	69.99	-15.62	-0.80	0.00	0.00	0.00	53.58

WHEEL (0.00 + 45.58 + 0.00) = 45.58 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	63.46	-16.86	-1.02	0.00	0.00	0.00	45.58

LEFT WHISTLE (0.00 + 46.44 + 0.00) = 46.44 dBA

```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
     0     60   0.31  67.10 -15.62  -5.05   0.00   0.00   0.00  46.44
-------------------------------------------------------------------

RIGHT WHISTLE (0.00 + 39.06 + 0.00) = 39.06 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
    60     74   0.31  67.10 -15.62 -12.42   0.00   0.00   0.00  39.06
-------------------------------------------------------------------

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: CP (night)
------------------------------

LOCOMOTIVE (0.00 + 58.93 + 0.00) = 58.93 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.31  75.34 -15.62  -0.80   0.00   0.00   0.00  58.93
-------------------------------------------------------------------

WHEEL (0.00 + 50.93 + 0.00) = 50.93 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.42  68.81 -16.86  -1.02   0.00   0.00   0.00  50.93
-------------------------------------------------------------------

LEFT WHISTLE (0.00 + 51.79 + 0.00) = 51.79 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
     0     60   0.31  72.45 -15.62  -5.05   0.00   0.00   0.00  51.79
-------------------------------------------------------------------

RIGHT WHISTLE (0.00 + 44.41 + 0.00) = 44.41 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
    60     74   0.31  72.45 -15.62 -12.42   0.00   0.00   0.00  44.41
-------------------------------------------------------------------

Segment Leq : 60.35 dBA

Total Leq All Segments: 60.35 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00 dBA
                           (NIGHT): 60.35 dBA
```

STAMSON 5.0 NORMAL REPORT Date: 11-06-2024 06:39:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: c.te Time Period: Day/Night 16/8 hours

Description: South facade of Block 3

Road data, segment # 1: St Catharine (day/night)

Car traffic volume : 13827/1536 veh/TimePeriod *
Medium truck volume : 324/36 veh/TimePeriod *
Heavy truck volume : 574/64 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): 8400
Percentage of Annual Growth : 2.50
Number of Years of Growth : 27.00
Medium Truck % of Total Volume : 2.20
Heavy Truck % of Total Volume : 3.90
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: St Catharine (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 106.00 / 106.00 m
Receiver height : 10.50 / 10.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: St Catharine (day)

Source height = 1.41 m

ROAD (0.00 + 54.63 + 0.00) = 54.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	67.42	0.00	-11.83	-0.97	0.00	0.00	0.00	54.63

Segment Leq : 54.63 dBA

Total Leq All Segments: 54.63 dBA

Results segment # 1: St Catharine (night)

Source height = 1.41 m

ROAD (0.00 + 48.11 + 0.00) = 48.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	60.90	0.00	-11.83	-0.97	0.00	0.00	0.00	48.11

Segment Leq : 48.11 dBA

Total Leq All Segments: 48.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.63 dBA
(NIGHT): 48.11 dBA