ENVIRONMENTAL NOISE & VIBRATION IMPACT STUDY

PROPOSED RESIDENTIAL DEVELOPMENT
2169 & 2175 Ghent Avenue, City of Burlington

Prepared for:

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EXECUTIVE SUMMARY

Vintec Acoustics Inc. was retained by Corbett Land Strategies on behalf of Mr. Ryan Small to prepare an environmental noise and vibration impact study for the proposed residential development located on 1754 m^2 of land at 2169 & 2175 Ghent Avenue in Burlington, ON. The proposed development shall comprise of two (2) 3-storey residential buildings to be located at the northwest side of Ghent Avenue and Pearson Street, south of Prospect Street. The proposed development has made provision for 2 outdoor landscaped amenity areas on the northwest and in-between the two proposed buildings and as well as terraces and balconies.

This study provides an assessment of the anticipated site noise impact from road traffic conducted in accordance with the Ministry of Environment, Conservation and Parks (MECP) guideline NPC-300 [1]. The main noise sources with noise impact potential on the proposed project are road traffic on Ghent Avenue, Prospect Street and Fairview Street. Ghent/Prospect traffic volume data was obtained from City of Burlington's Transportation Services Department; and data for Fairview Street was obtained through City of Burlington's Open Data website. A factor of 2% annual road traffic growth was considered to project the road traffic for the year 2033. An assessment of the road traffic noise impacts on the proposed development was completed by examining the individual and cumulative acoustic contributions of the respective vehicular transportation corridors.

Consideration has also been given to other transportation noise sources; namely, rail traffic located about 620m to the north of the property. Rail traffic data information was obtained from previous studies [2] which included rail right-of-way documentation provided by Metrolinx and CN Rail. Future rail traffic was projected by a 2.5% annual growth rate. The CNR Aldershot Rail Yard is located about 4km from the project site and is thus an insignificant noise consideration.

Applicable noise control measures, which include warning clauses, have been recommended such that the MECP road noise guidelines are met for the project. The recommended noise control measures are typical of residential developments adjacent to arterial roadways, local roads, and transportation corridors within the study area. As required by the City of Burlington, this feasibility study has also considered the potential noise impact of the project on the area, impact considerations for neighbouring commercial, and institutional facilities on the proposed project and the potential noise impact of the project on itself.

In conclusion, the noise impact from the proposed development on the surrounding areas is expected to meet the applicable limits defined in NPC 300; as it can be adequately controlled by the guidelines and acoustic design recommendations that have been described in this report.

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1.0 INTRODUCTION

Vintec Acoustics Inc. was retained by Corbett Land Strategies on behalf of Mr. Ryan Small to prepare an environmental noise and vibration impact study for the proposed residential development located on 1754 m^2 of land at 2169 & 2175 Ghent Avenue in Burlington, ON. The proposed development shall comprise of two (2) 3-storey residential buildings to be located at the northwest side of Ghent Avenue and Pearson Street, south of Prospect Street.

This study provides an assessment of the anticipated site noise impact from road traffic conducted in accordance with the Ministry of Environment, Conservation and Parks (MECP) guideline NPC-300 [1]. The main noise sources with noise impact potential on the proposed project are road traffic on Ghent Avenue, Prospect Street and Fairview Street. Ghent/Prospect traffic volume data was obtained from City of Burlington's Transportation Services Department; and data for Fairview Street was obtained through City of Burlington's Open Data website. A factor of 2% annual road traffic growth was considered to project the road traffic for the year 2033.

Consideration has also been given to other transportation noise sources; namely, rail traffic located about 620m to the north of the property. The CNR Aldershot Rail Yard is located about 4km from the project site and is an insignificant consideration for the subject site. Rail traffic data information was obtained from previous studies [2] which included rail right-of-way documentation provided by Metrolinx and CN Rail. Future rail traffic was projected by a 2.5% annual growth rate.

An assessment of the transportation noise impacts on the proposed development was completed by examining the individual and cumulative contributions from the respective vehicular transportation corridors. Applicable noise control measures, which include consideration of façade design, ventilation, warning clauses; and which are typical for residential developments adjacent to transportation corridors, shall be determined such that the noise guidelines defined In NPC 300 are met for the project study area.

The proposed residential development shall be located at 2169 & 2175 Ghent Avenue, Burlington, ON. The development and study area are illustrated in Figure 1ab, the key plan, study area satellite photo and site plan, respectively. Figure 2 illustrates the designated noise sensitive receptors that have been identified for analysis purposes.

The proposed development comprises of twelve (12) residential units and two (2) Amenity or Outdoor Living Areas (OLA). It is understood that the proposed project does not feature any common indoor amenities. The proposed development has made provision for outdoor landscaped areas on the northwest and southeast portions of the subject lands as well as the subject terraces and balconies. Since the proposed balconies are less than 4m in depth and other provisions for protected outdoor space have been made in the project, the balconies are therefore exempted from requiring any acoustic treatment.

This feasibility study has also considered the effect of the project on itself and the effect of the project on the environment. With respect to the latter, a residential project such as 2169 & 2175 Ghent Avenue will likely comprise grade (i.e., parking exhaust/ventilation, transformer, gas meter) and rooftop/grade level mechanical equipment. The project's potential noise impact on the

existing community has thus been examined with respect to planned mechanical/electrical equipment. Our analysis will demonstrate that with the selection of quiet mechanical equipment and/or the implementation of noise abatement measures, the proposed project is not expected to be a significant noise contributor in the community.

2.0 NOISE CRITERIA – NOISE IMPACT OF THE ENVIRONMENT ON THE PROJECT

Along with road and rail transportation noise, the study also considers the noise impact of neighbouring commercial and industrial facilities on the proposed development. The applicable noise guidelines for new residential development within the City of Burlington are based on the MECP publication NPC-300 [1], for environmental noise assessment in land use planning.

2.1 Outdoor Noise Criteria-Transportation Noise

The daytime noise criterion defined in NPC-300 for designated outdoor amenity, outdoor living areas, (OLA) is 55 dBA for vehicular transportation corridors, i.e., road and rail noise sources. Where it is not technically, economically, or administratively feasible to meet the 55 dBA limit, sound levels of up to 60 dBA are permissible with warning clauses. Where the daytime sound level is greater than 60 dBA, noise control measures are usually required to reduce the sound level to 60 dBA or less.

The proposed development has made provision for outdoor landscaped areas on the northwest and southeast portions of the subject lands as well as terraces and balconies. It is proposed to ensure that sound levels within the development are within acceptable limits, as defined by NPC-300.

The residential units in the project have been designed with an integrated balcony/terrace as shown in Figure 2. Typically, balconies in residential multi-storey buildings are not considered to be designated Outdoor living areas, OLAs, that require acoustic protection unless both of the following conditions exist:

1. they are at least 4m in depth and
2. there is no provision for other protected or indoor amenity space within the development.

The proposed development does not have any provision for indoor amenities and some provision has been made for common outdoor landscaped space. The balcony/terraces within the proposed project are less than 4m in depth; hence, they are not considered to be OLAs that require protection from transportation noise impact, as defined in MECP publication NPC-300. Notwithstanding, this study shall demonstrate that the noise levels at the balconies are in effect, compliant with the NPC 300 requirements.

2.2 Indoor Noise Criteria

For road traffic noise sources, the indoor sound level limits for the living/dining areas are 45 dBA during daytime hours (7:00 am – 11:00 pm). For bedrooms and sleeping quarters, the indoor sound level limit is 40 dBA during night-time hours (11:00 pm- 7:00 am). By comparison, the

indoor sound level requirement for rail noise impact is 5 dB(A) more restrictive; however, this is a non-issue for this project as the acoustic environment of the study area for the proposed project is dictated by vehicular traffic on Prospect Street and Ghent Avenue.

2.3 Exterior Building Facade Noise Criteria

The ventilation requirements defined by MECP, and the Ontario Building Code (OBC) indicate that a residential unit must be provided with forced air heating with provision for central air conditioning, where it is found that the sound levels at the exterior of the building facades (i.e., plane of window) exceed 55 dBA at living/dining room windows during daytime hours: and 50 dBA at bedroom windows during night-time periods. Central air conditioning must be incorporated into the building design prior to occupancy for conditions where sound levels exceed the 55/50 dBA plane of window criterion by more than 10 dB(A); specifically, 65 dBA at living/dining room windows and 60 dBA at bedroom windows. Warning clauses are also applicable as central air conditioning is being proposed for the project, and the appropriate noise warning clause requirements shall also be specified accordingly.

2.4 Noise Criteria for Stationary Sources

For non-transportation sources, consideration has been given to neighbouring residential area, i.e., equipment such as rooftop HVAC, deliveries, process noise and activity, exhaust noise, etc. These facilities include the Tom Thomas Public School, and the Optimist Park located along Prospect Street. The Burlington GO station is located about 600m to the northwest, and the Aldershot Rail Yard is located about 4.4km to the west of the proposed development site; and the significant setback distance and buffer render these as insignificant noise contributors to the proposed development site. The proposed development has therefore been examined based on MECP publications NPC-300. The applicable MECP noise criteria at a given point of reception (POR) are dictated by the Guidelines defined in Publication NPC-300 [1]; in this case for a Class 1 Area. Based on the site-specific features of the property, it is in an urban area and is thus designated as a Class 1 site as defined by MECP publication, NPC-300.

These guidelines state that the one-hour sound exposures (Leq, 1 hour) from stationary noise sources in Class 1 areas, at the plane of an open window, shall not exceed the greater of:

- the higher of 50 dBA or background noise between 0700h and 1900h.
- the higher of 50 dBA (47 dBA for Class 2) or background noise between 1900h and 2300h; and
- the higher of 45 dBA or background noise between 2300h and 0700h.

All off site stationary noise sources are significantly set back from the proposed project site as defined by MECP D-6 and they are thus not expected to present a significant noise impact the proposed project.

2.5 Potential Noise Impact of the Development on the Environment

The city also requires an assessment of the noise impact of the proposed development on the existing environment. In this regard, the noise levels from outdoor mechanical equipment such as rooftop equipment, parking exhaust fans, etc. should not exceed the NPC-300 limits defined

by MECP. The proposed development shall include equipment which has been assessed for potential impacts to existing sensitive receptors which are in the existing residential neighbourhood and within the proposed project. The proposed mechanical/electrical equipment for the project is therefore expected to include mechanical air handling, air-cooled condensers, parking exhaust provision, a 300 to 500 kVa transformer, gas metering and occasional garbage deliveries. Noise emission targets and potential abatement measures shall be defined for the site-specific case.

2.6 Potential Noise Impact of the Development on Itself

In a multi-rise residential project, the impact of the project on itself is an important consideration. Architectural and mechanical equipment noise and vibration control is often required to ensure an acceptable living environment. The potential noise impact of the project on itself, for 2169 & 2175 Ghent Avenue considers the following possible scenarios:

1. Airborne noise heard between suites and across demising partitions.
2. Airborne, structure borne noise from mechanical/electrical and garbage room equipment.
3. Activity generated noise in common element spaces as may be heard in suites.

Building code and best practices requirements shall be followed to ensure minimal potential noise impacts from activity generated noise within the building and the individual residential units. Adherence to best practices for acoustic review is also recommended regarding the certification of construction drawings and the certification, acoustic performance testing and verification for the “as built” condition of the proposed apartment building.

3.0 NOISE IMPACT ASSESSMENT

The main sources of transportation noise affecting the proposed development include vehicular traffic of Prospect Street and Fairview Street. The sound levels at the proposed development due to road and rail traffic were calculated using the MECP software STAMSON, Version 5.04 [2].

3.1 Road Traffic Data

The total vehicle count data of Ghent Avenue and Prospect Street was obtained from City of Burlington’s Transportation Services Department. AADT volume of Fairview Street was obtained through City of Burlington’s Open Data website. In all cases, a conservative annual growth rate of 2% was used to project the AADT volume for the year 2033. The data provided is summarized in Table 1 and presented in Appendix C. For Fairview Street, vehicle classifications comprise of automobiles, medium and heavy trucks with a conservative proportion of 94%/3%/3% assigned accordingly.

The STAMSON program predicts the 24-hour Leq for the respective road segments. The daytime and nighttime levels have been determined accordingly by applying adjustment factors of +1 dB(A) and -3 dB(A) (Fairview) and -5 dBA (Ghent/Prospect) which is representative of the traffic split for arterial and local roads in an urban/suburban study area. In addition, the posted speed limit has also been used in this assessment.

The road gradients in the study area are all less than 2%. The details of road traffic data provided by the city as well as STAMSON calculation samples are provided in Appendix C. The STAMSON input for automobile volume on Ghent Avenue and Prospect Street has been assessed conservatively as it is greater than the actual AADT volumes for these roads. Additionally, Burlington GO station is located about 620m from the proposed development site; however, the setback was conservatively set at 500m due again to STAMSON's limitation of a maximum distance allowance of 500m. This results in an additional -1.5 dB(A) propagation loss from 500 to 620m. The projected road traffic volume data acquired as per the noted methodology was developed and applied to predict the applicable sound levels with the STAMSON program and the results are included in Table 2 in Appendix A. To reiterate, because of applying the above methodology, the sound levels that have been predicted using STAMSON are slightly conservative, thus providing some margin of safety. Warning Clauses A and B, as shown in Appendix D, will be required to inform the building owner and future tenants/occupants of potential noise impact from the transportation corridors in the area.

3.2 Rail Traffic Data

Commuter rail traffic for the GO/Metrolinx Transit Oakville Division was referenced from previous information provided [2]. The Metrolinx Transit rail traffic data was forecasted to the year 2033 using a growth rate of 2.5% compounded annually. It is noteworthy that since the beginning of 2016, Metrolinx had made significant revisions to its forecasts, including anticipation that Metrolinx services along the CN Oakville Subdivision will comprise of a mix of diesel and electric trains within at least a 10-year time horizon.

The study also addresses freight and passenger rail traffic with referenced information previously provided by CN Rail, which is contained in the Appendix of this report. This rail data is expressed as respective volumes for rail cars, locomotives for each train type and has similarly been projected to the year 2033 by applying a 2.5% per annum growth rate. Due to the significant setback distance and buffer between the development and rail corridor, rail noise levels are not a significant contributor in this site-specific case.

3.3 Noise Impact of the Development on the Environment

The city also requires an assessment of the noise impact of the project on the existing environment. In this regard, the noise levels from outdoor mechanical equipment such as roof top equipment, parking exhaust fans, etc. shall not exceed the NPC-300 limits defined by MECP. Noise sensitive receptors are located around the building to the north/west and south/east. The recommended equipment for consideration includes parking exhaust provision, potential rooftop air handling equipment, grade mounted 300to 500 kVa transformer with an estimated NEMA CSA 9/17 sound rating of less than 59 dBA, gas metering and occasional garbage deliveries. The anticipated rooftop mechanical equipment, if applicable, is expected to have a sound power of about 85 dBA sound power (sound pressure level of about 75 dBA at 1m). The air condensers are likely to be 2 to 3-ton units rated at about 75 dBA sound power, or a sound pressure of about 65 dBA at 1m; and gas metering sound power under the worst case is expected to have a

maximum sound power of 55 to 60 dBA (sound pressure less than 45 to 50 dBA worst case); hence very likely to be an insignificant contributor of noise levels at the nearest receptors located about 5 to 15m from the respective sources. Please note that garbage pick-up is an essential service that is typically exempt from meeting any specific noise ordinance by the Municipality.

Noise controls such as quiet equipment selection and silenced inlet/outlet conditions will ensure low noise impact potential. This will entail selection of equipment that is typically rated at less than 75 dBA at 1m for rooftop sources and less than typically below 65 dBA at 1m for grade level sources or as required subject to final equipment selection. The proposed equipment shall meet these acoustic requirements to ensure compliance with City noise ordinances, as per NPC 300.

For some equipment, such as parking exhaust fans or air handling intakes, meeting the subject sound targets may entail the installation of silencers or acoustic louvres into the design of the subject equipment. Based on a preliminary review, the grade level parking is expected to have sufficient ventilation by virtue of its open design. If it is proposed to employ supplementary exhaust fans, quiet fans should be selected with a sound power target of about 75 dBA or less. Furthermore, the fans shall have a smooth/flat sound spectra such that overall sound levels should be less than about 65 dBA at 1m as noted. Quiet fan selection, acoustic barriers and/or silencing provision such as duct silencers and/or acoustic louvres are typically the most effective means of assuring low noise levels. The fan backpressure capability shall be reviewed and verified to be sufficient to withstand any pressure drop. Acoustic louvres, silencer assemblies and acoustic barriers can be provided by Swegon, VAW, VG Engineering, Kinetics, or an approved equivalent. The proposed mechanical equipment has not yet been finalized and any selection shall be part of any shop submittal review.

3.4 Noise Impact of the Development on Itself

3.4.1 Guidelines and Criteria

The proposed development is required to satisfy the general requirements of the Ontario Building Code. The construction of the partitions within a residential building shall meet the following minimum STC (Sound Transmission Class) requirements; however, we recommend that a 5 dB margin be applied as a best practice.

Suite/Suite – Wall or Floor	STC of 50 **(55 recommended)**
Suite/Elevator Hoist or Refuse Chute, Garbage Room	STC of 55 **(60 recommended)**

The noise associated with the mechanical/electrical equipment operation should satisfy the NC (Noise Criteria) recommended by ASHRAE (American Society of Heating and Air-conditioning Engineers HVAC Handbook). The criteria as follows.

Living Rooms, Dining Rooms, Dens	NC-30 to 35
Bedrooms	NC-25 to 30
Kitchens, Bathrooms	NC-35 to 40

3.4.2 Recommendations

Although design details of the buildings are beyond the scope of this noise & vibration impact feasibility study, there are several general guidelines, which should be considered to minimize noise impact potential and to ensure acceptable noise levels for future occupants and tenants of the proposed apartment building.

- A vibration isolation system and an acoustic barrier ceiling in the suite will likely be required for the mechanical spaces located above dwelling units (e.g., mechanical rooms located in the penthouse).

  The walls between garbage rooms (if any) and adjacent suites are recommended to have an STC rating of 60. Also, the entire run of the vibration isolated garbage chute (if any) should be straight with a least 2" insulation around its perimeter.

  Similarly, the walls between elevator shafts and adjacent suites are recommended to have minimum STC rating of 60.

  It is recommended that an acoustic review of the proposed wall schedule be undertaken to ensure that Building Code and best practice requirements are satisfied.

- It is understood that this project will not have a standby generator.
- Pipe risers should be separated from suites with a wall construction providing a minimum STC of 55.
- All major pipe risers should be vibration isolated from walls and floors.
- All pipes penetrating through the wall or floors should do so through an enlarged sleeve penetration. There should be no mechanical contact between the two, thus avoiding the transfer of vibration to the structure. All sleeve penetrations should also be stuffed with insulation and sealed on both sides with non-hardening caulk.
- Noise propagation from the mechanical equipment, particularly supply fans, pumps, and air conditioning equipment should be verified to ensure the execution of appropriate acoustic isolation.
- All mechanical equipment should be installed with adequate vibration isolation.
- In addition, it is recommended that an acoustic review of the proposed mechanical equipment be undertaken to ensure compatibility amongst the subject residential units.
- Please note that construction (also architectural and mechanical) drawings and the "as built" condition of the project shall be tested as required to confirm acoustic performance in meeting the relevant building code and best practice requirements for acoustical design.

4.0 INDOOR AND OUTDOOR NOISE REQUIREMENTS

4.1 Outdoor Noise Levels

The project includes provision of Northwest and Southeast Planter for ground floor units 1-5 as outdoor living areas (OLA). The estimated southeast OLA noise level will be about 56 dB(A), slightly above the 55 dB(A) sound level target as defined by NPC 300 for an OLA, and within the 60 dB(A) threshold.

Warning Clauses A and B, as shown in Appendix D, will thus be required to inform future building owner/occupants within the new development of potential noise from the transportation sources in the area.

4.2 Indoor Noise Levels

The predicted sound levels due to vehicular traffic at the key receptor areas are summarized in Table 2 for both daytime and night-time conditions. Exterior wall and window glazing that meets the minimum requirements defined by the Ontario Building Code will suffice for the suites, particularly at the lower floor levels of the project. For instance, a double-glazed thermal pane window system such as 6-13-6 mm (i.e., pane-gap-pane) which is a standard construction should suffice for the project as identified in the project as noted in Table 2.

Since the predicted daytime and nighttime sound levels of the proposed building exceed MECP's NPC-300 requirements, central air conditioning is required for noise control reasons (and is proposed to be provided) and therefore Warning Clause B, as described in Appendix D applies.

4.3 Noise Impact of the Development on the Environment

The noise levels from outdoor mechanical equipment such as roof top mechanical equipment, parking exhaust fans, etc. should not exceed the sound level limits defined by MECP in NPC-300. In the site-specific case, rooftop equipment shall comprise of make-up air unit(s) (MUA), air handlers and a 300 to 500 kVA transformer (rated at less than 59 dBA as per CSA 9/17). The subject equipment is in the range of 15m from the nearest receptors and is thus compliant acoustically when consideration is given to both horizontal setback, height, and relative receptor/source shieling. Any rooftop equipment will be shielded from nearby receptors because of the building roof/sightline arrangement . An appropriate sound limit at the nearest receptors is about 45 dBA. These limits will entail that the subject equipment meets specific sound level targets to ensure that noise levels at the nearest receptors are within the NPC 300 limits.

Noise controls such as quiet equipment selection and silenced inlet/outlet conditions will ensure low noise impact potential. This will entail selection of equipment that is typically rated at less than 75 dBA at 1m for rooftop sources and less than 65 dBA at 1m for grade level sources. Sound from equipment shall be free of any tonal noise characteristics, as required. The proposed equipment shall meet these acoustic requirements to ensure compliance with City noise

ordinances, as defined by NPC 300. The proposed equipment will be reviewed by the acoustic consultant when more information is provided.

Sound barriers, acoustic louvres or silencers can be provided by Swegon, VAW, VG Engineering, Kinetics, or an approved equivalent. Data is not yet available as selections for proposed mechanical equipment have not yet been completed. Based on this preliminary assessment, and given judicious equipment selection for low noise, it is expected that there will not be any impact of the proposed development on the existing environment. It is noteworthy that any proposed equipment selections, arrangement modifications, silencer selections as well as any issued shop drawings of same shall be reviewed and approved by the acoustic consultant.

4.4 Noise Impact of the Development on the Environment

Conceptual noise and vibration control guidelines pertaining to the elements of the proposed residential building are presented in section 3.4 of this noise impact study. It should be noted that limited information on the building (i.e., no detailed description of proposed building construction or proposed mechanical and electrical equipment) was available at the time that this report was prepared. Final equipment selection and specification review, and review of architectural, mechanical, and electrical drawings is recommended to ensure compliance with the appropriate Building Code and best practices requirements, as outlined in this report.

5.0 CONCLUSIONS

A noise impact assessment of the traffic noise from the subject transportation corridors in proximity to the proposed development was undertaken by assessing the individual contributions of both the various nearby local roads and distant major transportation corridors. Applicable noise control measures include warning clause provisions, as outlined herein.

The study has also assessed the acoustic requirements of planned mechanical and electrical (M&E) equipment for the proposed development. The rationale is to ensure that sound levels from M&E equipment meet the applicable MECP requirements. Based on the proximity of existing residential land surrounding the project, specific sound targets have been defined and noise abatement provision (i.e., quiet equipment selection, barriers, acoustic louvres, silencers, etc.) may be required for planned M&E equipment, namely parking garage exhaust provisions, transformer selection, and air condenser and air handling equipment selection.

6.0 REFERENCES

1. Ontario MECP, NPC- 300, Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning.
2. Environmental Noise Impact Feasibility Study, Proposed Residential Development, 105 Plains Road East, Burlington, ON., Vintec Acoustics, December 2022.
3. Ministry of the Environment Publication D-6, Compatibility between Industrial Facilities and Sensitive Land Uses, July 1995.
4. Ministry of the Environment's STAMSON/STEAM Computer Programme, (Version 5.04), 1989.
5. Guidelines for New Development in Proximity to Railway Operations, Railway Association of Canada/Federation of Canadian Municipalities, DIALOG, May 2013.
6. Railway Noise Measurement and Reporting Methodology, Canada Transport Agency, Minister of Public Works & Government Services Canada, August 2011.
7. ISO 9613-2:1996, Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.

APPENDIX A SUMMARY Tables

Table 1: Projected Traffic Volumes

Parameters	Ghent Avenue	Prospect Street	Fairview Street
Projected 2033 AADT: Automobile	2101	4933	40299
Projected 2033 AADT: Medium Truck	410	963	1286
Projected 2033 AADT: Heavy Trucks	51	120	1286
Speed Limit (km/hr)	40	40	60
Grade	<2%	<2%	<2%

Table 2: Projected Rail Traffic Volumes

Type of Train	Volumes	Max Power	Max Consist Of	Max Speed (kph)
Freight	9	4	140	96
Way Freight	6	4	25	96
Passenger	13	2	10	153
1D Commuter	68	1	12	153

Table 3: Calculated Noise Level due to Projected Traffic dBA & LAeq

Time	Receptors	Height (m)	Resultant dB(A)	Ghent Leq	Prospect Leq	Fairview Leq	Rail Leq
Daytime Leq	POR 1 (1F)	1.5	56.4	56.2	38.4	31.3	40.2
	POR 1 (2F)	4.5	56.5	56.3	39.1	32.7	41.6
	POR 1 (3F)	7.5	56.7	56.5	39.9	34.2	43.2
	POR 2 (3F)	7.5	55.4	54.6	44.2	35.6	44.5
	POR 3 (3F)	7.5	55.4	54.6	44.2	35.6	44.5
	OLA 2	1.5	45.0	41.2	38.3	31.2	40.2
	POR 4 (3F)	7.5	52.5	50.8	44.2	35.6	44.5
	POR 5 (3F)	7.5	52.5	50.8	44.2	35.6	44.5
	POR 6 1(F) / OLA 1	1.5	43.7	37.1	38.3	31.2	40.2
	POR 6 (2F)	4.5	44.8	37.6	39.1	32.6	41.6
	POR 6 (3F)	7.5	46.0	38.2	39.9	34.1	43.1
Nighttime Leq	POR 1 (1F)	1.5	50.4	50.2	32.4	25.3	34.2
	POR 1 (2F)	4.5	50.5	50.3	33.1	26.7	35.6
	POR 1 (3F)	7.5	50.7	50.5	33.9	26.2	37.2
	POR 2 (3F)	7.5	49.5	48.6	38.2	29.6	38.5
	POR 3 (3F)	7.5	49.5	48.6	38.2	29.6	38.5
	OLA 2	1.5	39.0	35.2	32.3	25.2	34.2
	POR 4 (3F)	7.5	46.5	44.8	38.2	29.6	38.5
	POR 5 (3F)	7.5	46.5	44.8	38.2	29.6	38.5
	POR 6 1(F) / OLA 1	1.5	37.7	31.1	32.3	25.2	34.2
	POR 6 (2F)	4.5	38.8	31.6	33.1	26.6	35.6
	POR 6 (3F)	7.5	40.0	32.2	33.9	28.1	37.1

Note: Exterior wall and window glazing that meets the minimum requirements defined by the Ontario Building Code, such a standard thermal double-glazed pane, 6-13-6 mm (i.e., pane-gap-pane) will suffice for the project.

APPENDIX B REPORT FIGURES & PROJECT DRAWINGS

Figure 1a: Site Plan showing Proposed Living Development

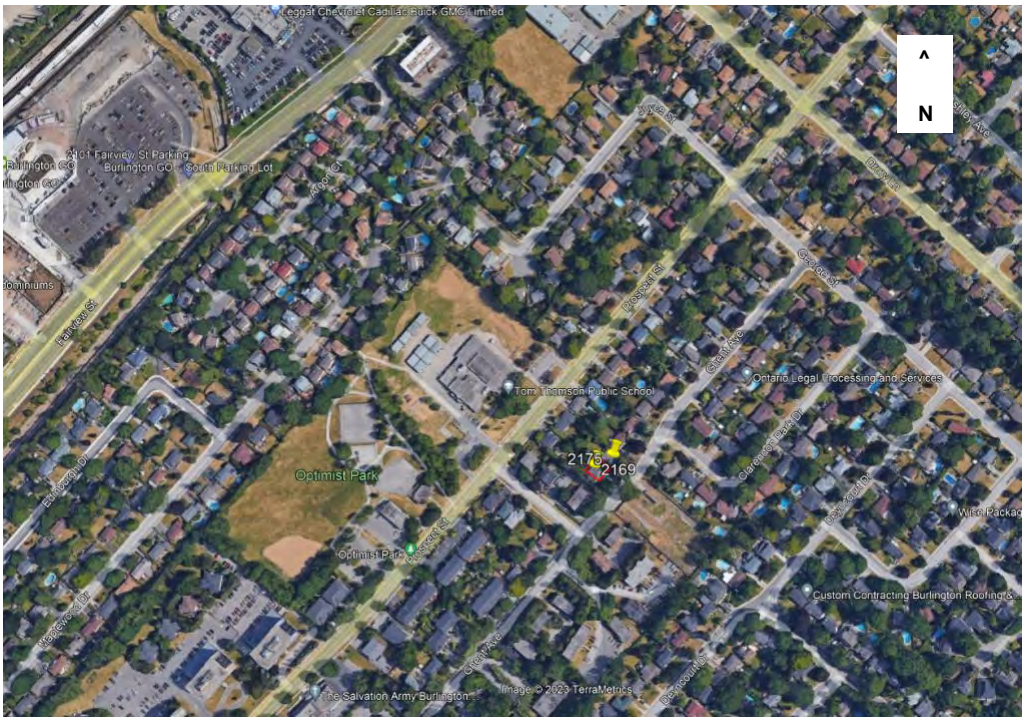


Figure 1b: Site Plan showing Development Layout

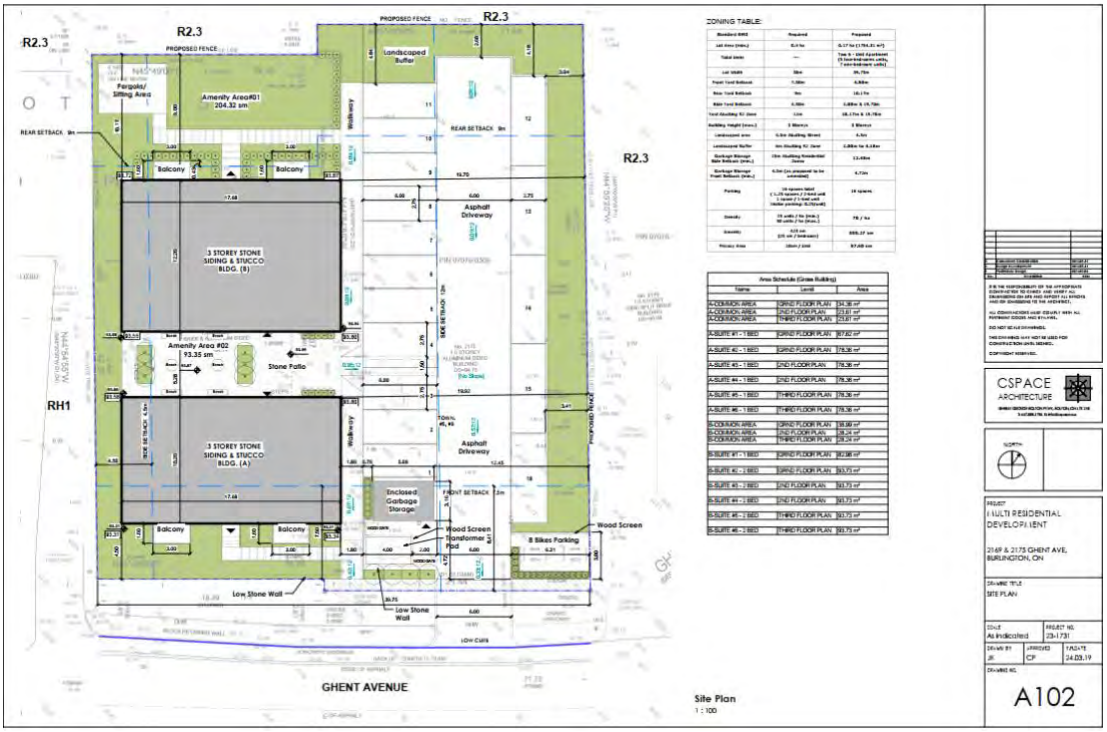
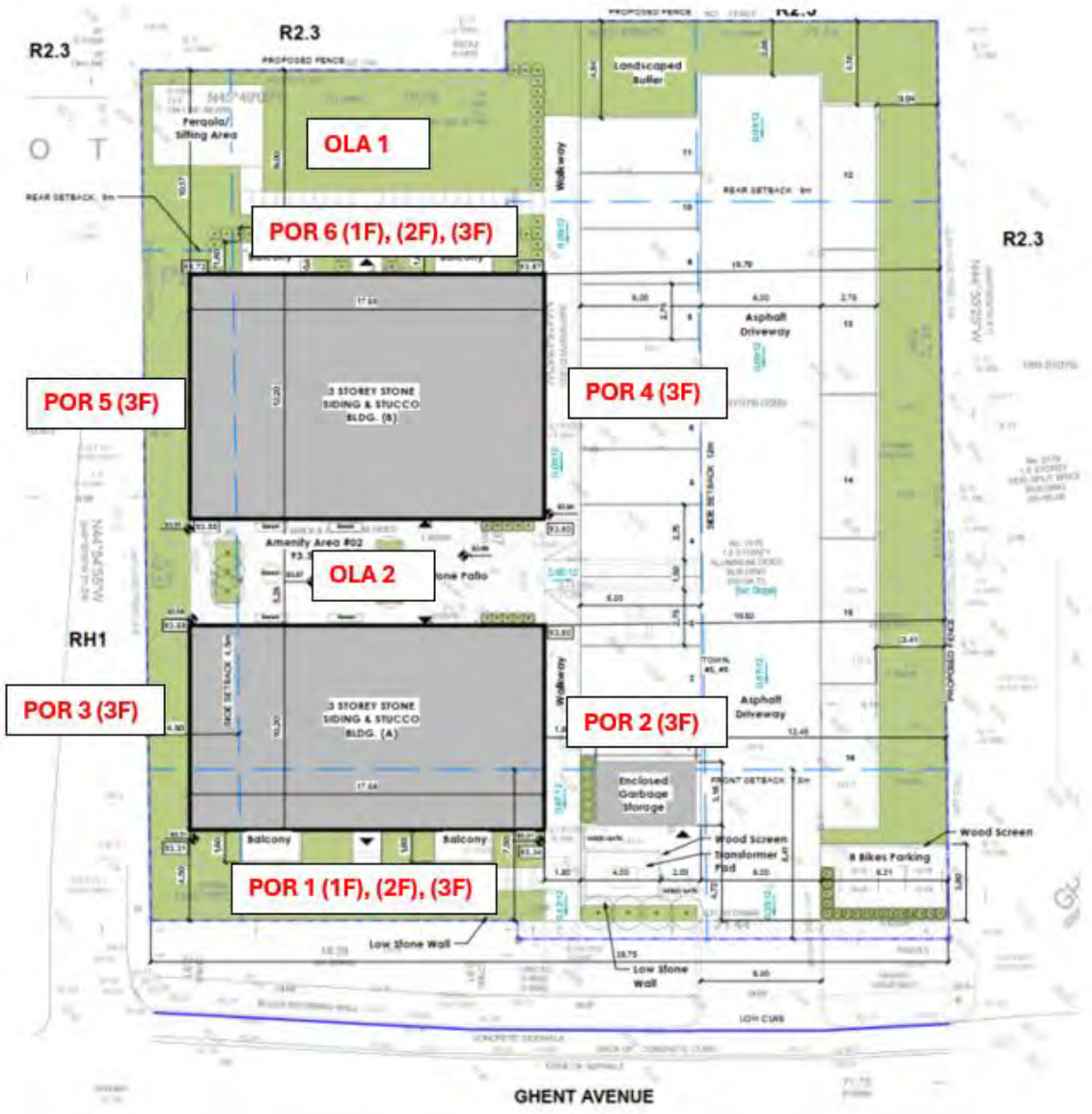
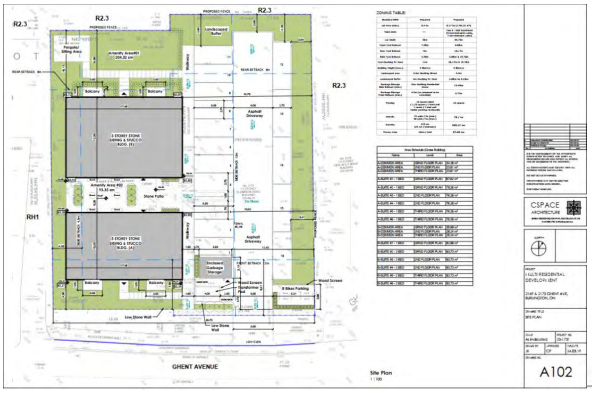


Figure 2: Designated Receptor Locations



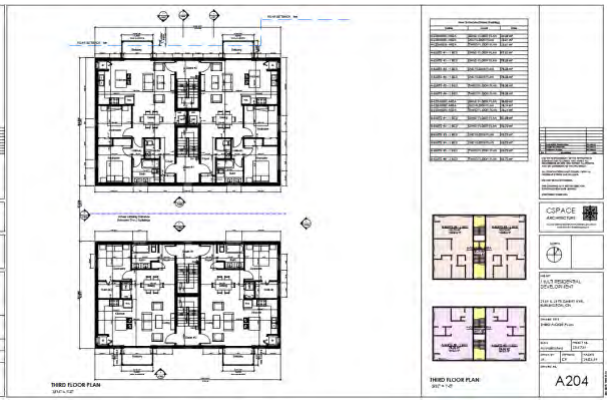
Site Plan Approval, City of Burlington
Mr. Ryan Small care of Corbett Land Strategies

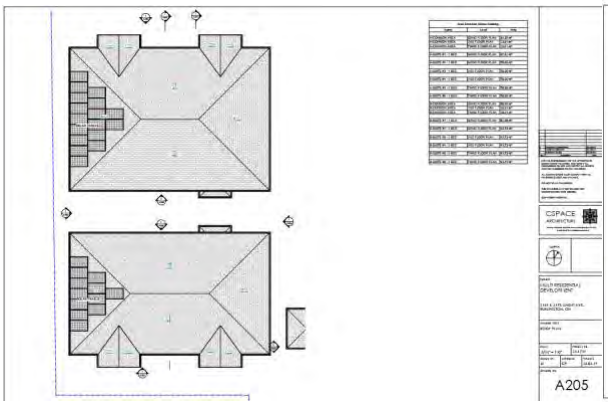
Project Drawings

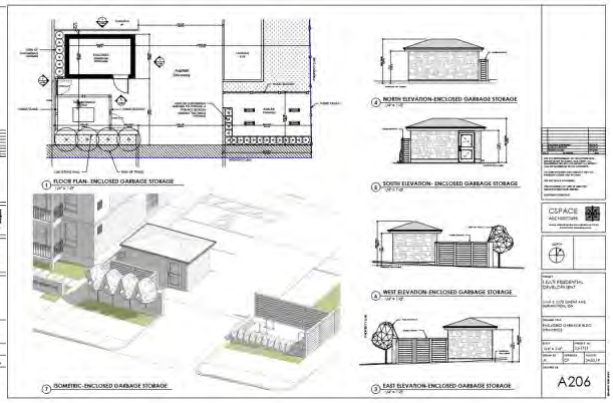












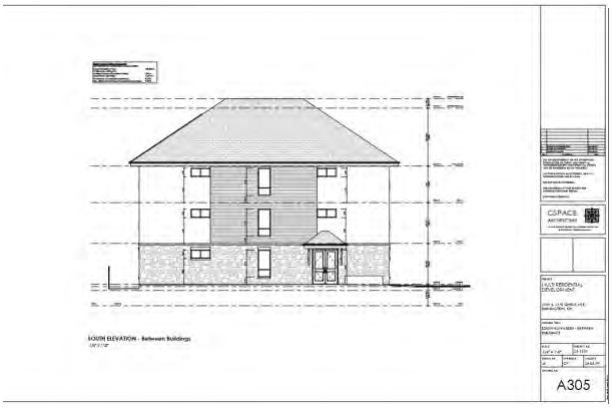
Site Plan Approval, City of Burlington
Mr. Ryan Small care of Corbett Land Strategies

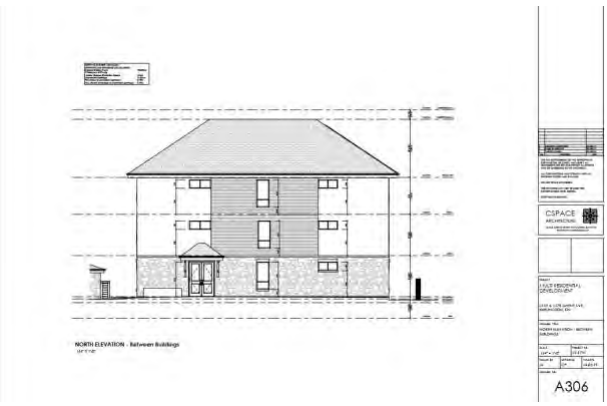




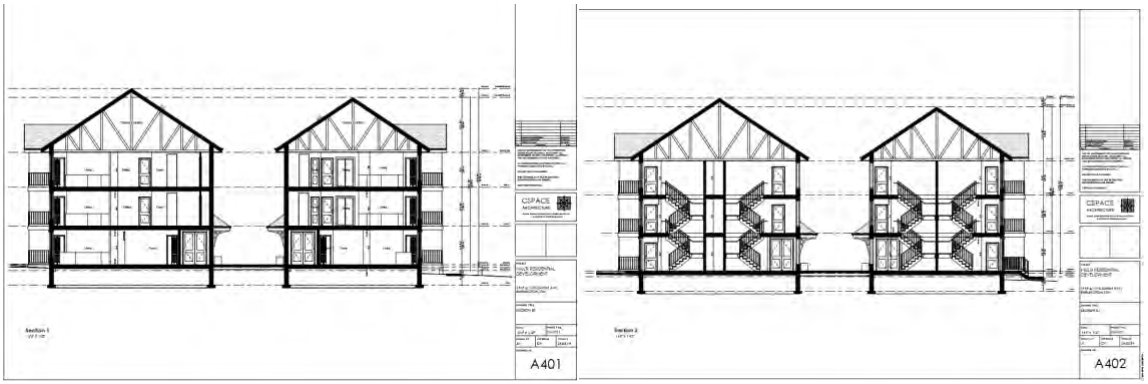


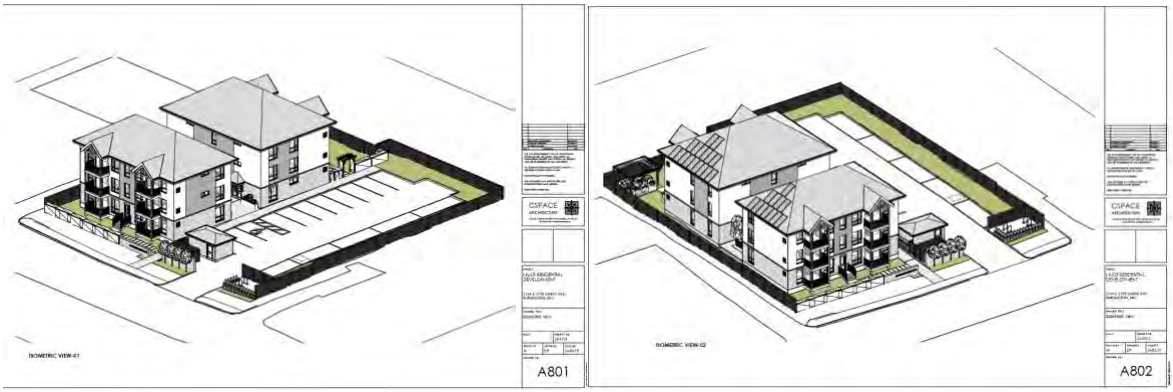


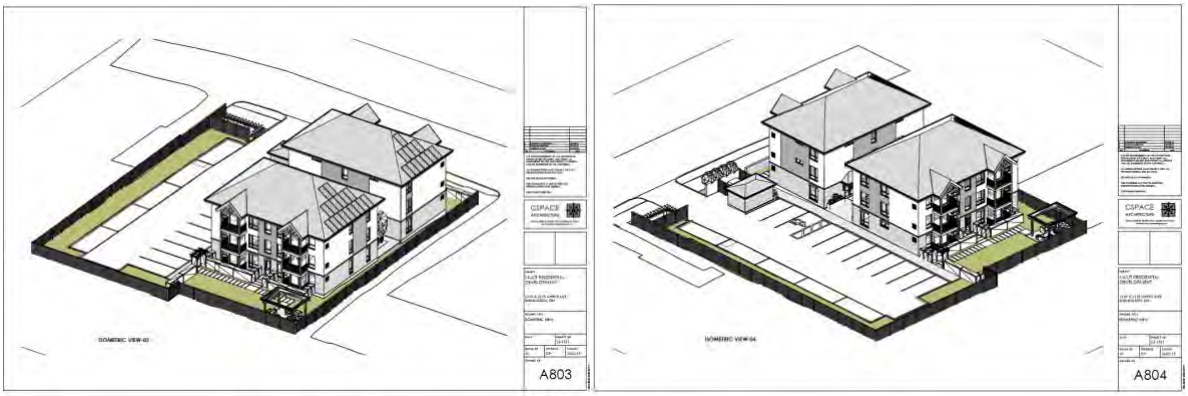




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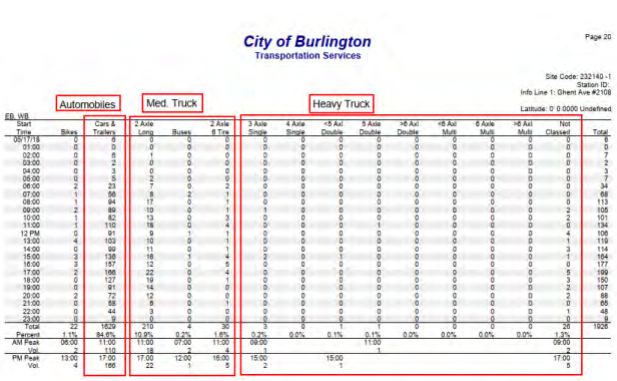






APPENDIX C **SAMPLE ROAD AND RAIL TRAFFIC DATA & STAMSON/STEAM CALCULATIONS**

Ghent Avenue:



City of Burlington
Transportation Services

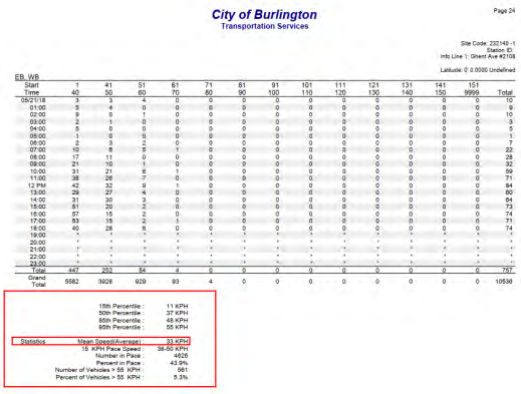
Page 20

Site Code: 232140 -1
Station ID:
Info Line 1: Ghent Ave #2108
Latitude: 0° 0.0000 Undefined

Automobiles | Med. Truck | Heavy Truck

EB, WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>5 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
09/17/18	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
06:00	2	23	7	0	2	0	0	0	0	0	0	0	0	0	34
07:00	1	56	8	2	1	0	0	0	0	0	0	0	0	0	68
08:00	1	94	17	0	1	0	0	0	0	0	0	0	0	0	113
09:00	2	69	10	0	1	1	0	0	0	0	0	0	2	0	105
10:00	1	82	13	0	3	0	0	0	0	0	0	0	2	0	101
11:00	1	110	16	0	4	0	0	0	1	0	0	0	2	0	134
12 PM	0	91	9	1	1	0	0	0	0	0	0	0	4	0	106
13:00	4	103	10	0	1	0	0	0	0	0	0	0	1	0	119
14:00	0	99	11	0	1	0	0	0	0	0	0	0	3	0	114
15:00	3	138	16	1	4	2	0	1	0	0	0	0	1	0	164
16:00	3	157	12	0	5	0	0	0	0	0	0	0	0	0	177
17:00	2	166	22	0	4	0	0	0	0	0	0	0	5	0	199
18:00	0	127	19	0	1	0	0	0	0	0	0	0	3	0	150
19:00	0	91	14	0	0	0	0	0	0	0	0	0	2	0	107
20:00	2	72	12	0	0	0	0	0	0	0	0	0	2	0	88
21:00	0	58	5	0	1	0	0	0	0	0	0	0	0	0	66
22:00	0	44	3	0	0	0	0	0	0	0	0	0	1	0	48
23:00	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
Total	22	1629	210	4	36	3	0	1	1	0	0	0	0	26	1928
Percent	1.1%	84.5%	10.9%	0.2%	1.9%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	1.3%	
AM Peak	06:00	11:00	11:00	07:00	11:00	09:00			11:00					09:00	
Vol.	2	110	16	2	4	1			1					2	
PM Peak	13:00	17:00	17:00	12:00	15:00	15:00		15:00						17:00	
Vol.	4	166	22	1	5	2		1						5	



City of Burlington
Transportation Services

Page 24

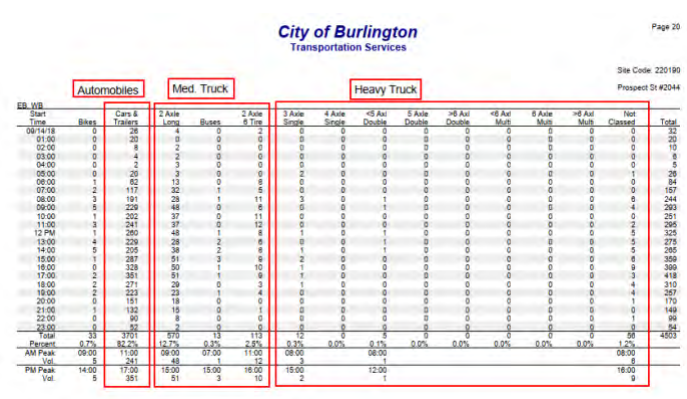
Site Code: 232140 -1
Station ID:
Info Line 1: Ghent Ave #2108
Latitude: 0° 0.0000 Undefined

EB, WB

Start Time	1 40	41 50	51 60	61 70	71 80	81 90	91 100	101 110	111 120	121 130	131 140	141 150	151 9999	Total
09/21/18	3	3	4	0	0	0	0	0	0	0	0	0	0	10
01:00	5	4	0	0	0	0	0	0	0	0	0	0	0	9
02:00	9	0	1	0	0	0	0	0	0	0	0	0	0	10
03:00	2	1	0	0	0	0	0	0	0	0	0	0	0	3
04:00	5	0	0	0	0	0	0	0	0	0	0	0	0	5
05:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:00	2	3	2	0	0	0	0	0	0	0	0	0	0	7
07:00	10	8	5	1	0	0	0	0	0	0	0	0	0	22
08:00	17	11	6	0	0	0	0	0	0	0	0	0	0	28
09:00	21	10	1	0	0	0	0	0	0	0	0	0	0	32
10:00	31	21	6	1	0	0	0	0	0	0	0	0	0	59
11:00	38	26	7	0	0	0	0	0	0	0	0	0	0	71
12 PM	42	32	9	1	0	0	0	0	0	0	0	0	0	84
13:00	29	27	4	0	0	0	0	0	0	0	0	0	0	60
14:00	31	30	3	0	0	0	0	0	0	0	0	0	0	64
15:00	31	20	2	0	0	0	0	0	0	0	0	0	0	73
16:00	57	15	2	0	0	0	0	0	0	0	0	0	0	74
17:00	53	15	3	0	0	0	0	0	0	0	0	0	0	71
18:00	40	26	6	0	0	0	0	0	0	0	0	0	0	74
19:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	447	259	55	3	0	0	0	0	0	0	0	0	0	757
Grand Total	5582	3626	929	89	4	0	0	0	0	0	0	0	0	10230

Statistics	
15th Percentile :	11 KPH
50th Percentile :	37 KPH
85th Percentile :	48 KPH
95th Percentile :	55 KPH
Mean Speed(Average) :	33 KPH
15 KPH Pace Speed :	36-50 KPH
Number in Pace :	4626
Percent in Pace :	43.9%
Number of Vehicles > 55 KPH :	561
Percent of Vehicles > 55 KPH :	5.3%

Prospect Street:



City of Burlington
Transportation Services

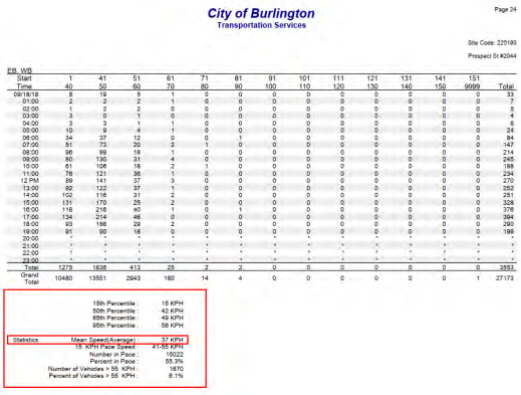
Page 20

Site Code: 220190
Prospect St #2044

Automobiles | Med. Truck | Heavy Truck

EB, WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>5 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
09/14/18	0	26	4	0	2	0	0	0	0	0	0	0	0	0	32
01:00	0	20	0	0	0	0	0	0	0	0	0	0	0	0	20
02:00	0	8	2	0	0	0	0	0	0	0	0	0	0	0	10
03:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	8
04:00	0	2	3	0	0	0	0	0	0	0	0	0	0	0	5
05:00	0	20	3	0	0	2	0	0	0	0	0	0	0	1	26
06:00	1	52	13	0	8	0	0	0	0	0	0	0	0	0	84
07:00	2	117	32	1	5	0	0	0	0	0	0	0	0	0	157
08:00	3	191	28	1	11	3	0	1	0	0	0	0	0	6	244
09:00	5	229	48	0	6	0	0	1	0	0	0	0	0	4	293
10:00	1	202	37	0	11	0	0	0	0	0	0	0	0	0	251
11:00	3	241	37	0	12	0	0	0	0	0	0	0	0	2	295
12 PM	1	260	48	1	6	1	0	0	1	0	0	0	0	5	325
13:00	4	229	28	2	6	0	0	1	0	0	0	0	0	5	275
14:00	5	205	38	2	6	1	0	0	1	0	0	0	0	5	265
15:00	1	287	51	3	9	2	0	0	0	0	0	0	0	6	359
16:00	0	328	50	1	10	1	0	0	0	0	0	0	0	9	399
17:00	2	351	51	1	9	1	0	0	0	0	0	0	0	3	418
18:00	2	271	29	0	3	1	0	0	0	0	0	0	0	4	310
19:00	2	223	23	1	4	0	0	0	0	0	0	0	0	4	257
20:00	0	151	18	0	0	0	0	0	0	0	0	0	0	1	170
21:00	1	132	15	0	1	0	0	0	0	0	0	0	0	0	149
22:00	0	90	8	0	0	0	0	0	0	0	0	0	0	1	99
23:00	0	52	2	0	0	0	0	0	0	0	0	0	0	0	54
Total	33	3701	570	13	113	12	0	5	0	0	0	0	0	56	4503
Percent	0.7%	82.2%	12.7%	0.3%	2.5%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	
AM Peak	09:00	11:00	09:00	07:00	11:00	08:00			08:00					08:00	
Vol.	5	241	48	1	12	3			1					6	
PM Peak	14:00	17:00	15:00	15:00	16:00	15:00			12:00					16:00	
Vol.	5	351	51	3	10	2			1					9	



City of Burlington
Transportation Services

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Site Code: 220190
Prospect St #2044

EB, WB

Start Time	1 40	41 50	51 60	61 70	71 80	81 90	91 100	101 110	111 120	121 130	131 140	141 150	151 9999	Total
09/18/18	8	19	5	1	0	0	0	0	0	0	0	0	0	33
01:00	2	2	3	0	0	0	0	0	0	0	0	0	0	7
02:00	1	2	2	0	0	0	0	0	0	0	0	0	0	5
03:00	3	0	1	0	0	0	0	0	0	0	0	0	0	4
04:00	3	3	1	1	0	0	0	0	0	0	0	0	0	8
05:00	10	9	4	1	0	0	0	0	0	0	0	0	0	24
06:00	34	37	12	0	0	1	0	0	0	0	0	0	0	84
07:00	51	73	20	2	1	0	0	0	0	0	0	0	0	147
08:00	96	99	19	1	0	0	0	0	0	0	0	0	0	214
09:00	80	130	31	4	0	0	0	0	0	0	0	0	0	245
10:00	61	108	18	2	1	0	0	0	0	0	0	0	0	188
11:00	78	121	36	1	0	0	0	1	0	0	0	0	0	234
12 PM	89	141	37	3	0	0	0	0	0	0	0	0	0	270
13:00	92	122	37	1	0	0	0	0	0	0	0	0	0	252
14:00	102	116	31	2	0	0	0	0	0	0	0	0	0	251
15:00	131	170	25	2	0	0	0	0	0	0	0	0	0	328
16:00	118	215	40	1	0	1	0	0	0	0	0	0	0	376
17:00	134	214	46	0	0	0	0	0	0	0	0	0	0	394
18:00	93	166	29	2	0	0	0	0	0	0	0	0	0	290
19:00	91	99	16	0	0	0	0	0	0	0	0	0	0	199
20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1275	1636	413	25	2	2	0	0	0	0	0	0	0	3353
Grand Total	10480	13551	2943	180	14	4	0	0	0	0	0	0	1	27173

Statistics	
15th Percentile :	15 KPH
50th Percentile :	42 KPH
85th Percentile :	49 KPH
95th Percentile :	56 KPH
Mean Speed(Average) :	37 KPH
15 KPH Pace Speed :	41-55 KPH
Number in Pace :	18022
Percent in Pace :	55.3%
Number of Vehicles > 55 KPH :	1870
Percent of Vehicles > 55 KPH :	6.1%

Site Plan Approval, City of Burlington
Mr. Ryan Small care of Corbett Land Strategies

Metrolinx/CN Rail Data:

Date: 2022/11/21 Project Number: OAK-34.78 – Waterdown Road Burlington, ON

Dear Vince:

Re: Train Traffic Data – CN Oakville Subdivision near Waterdown Road in Burlington, ON

The following is provided in response to Vince's 2022/10/04 request for information regarding rail traffic in the vicinity of the Aldershot GO Station near Waterdown Road in Burlington, ON at approximately Mile 34.78 on CN's Oakville Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

***Maximum train speed is given in Miles per Hour**

	0700-2300			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	5	140	60	4
Way Freight	4	25	60	4
Passenger	13	10	80	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	4	140	60	4
Way Freight	2	25	60	4
Passenger	0	10	80	2

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN's Oakville Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are no at-grade crossing in the immediate vicinity of the study area. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The triple mainline track is considered to be continuously welded rail throughout the study area. The presence of six (6) switches located at Mile 33.18, 33.23, 33.24, 33.29,

Page 2

33.31 and mile 33.35 may exacerbate the noise and vibration caused by train movements. The location is near CN's Aldershot Yard and train movements may exacerbate extra noise and vibration. Be advised, that any development within 1000m of a yard should take extra measures to understand and assess noise impacts and the creation of noise due to CN operations within the yard as this is not reflected in the data provided.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Adjacent Development, Canadian National Railway Properties at Proximity@cn.ca should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,

Umair Naveed

Umair Naveed
Project Officer Public Works – Eastern Canada
Permits.gld@cn.ca

Hi Vince,

Further to your request dated October 25, 2022, the subject lands (105 Plains Rd E, Burlington) are located within 300 metres of the CN Oakville Subdivision (which carries Lakeshore West GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 83 trains. The planned detailed trip breakdown is listed below:

	1 Diesel Locomotive	2 Diesel Locomotive		1 Diesel Locomotive	2 Diesel Locomotive
Day (0700-2300)	60	11	Night (2300-0700)	8	4

The current track design speed near the subject lands is 95 mph (153 km/h).

There are no *anti-whistling by-laws* in affect near the subject lands.
Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.
Regards,

Tara

CN

Train Count Data

System Engineering
Engineering Services
1 Administration Road
Concord, ON, L4K 1B9
T: 905.669.1264
F: 905.760.3405

TRANSMITTAL

To: Destinataire:	Vintec Acoustics 6-2400 Dundas St. W, Mississauga ON L5K 2R8	Project:	OAK-34.78 - Waterdown Road Burlington, ON
Att'n:	Vince Gambino	Routing:	vgambino@vintecacoustics.com
From: Expéditeur:	Umair Naveed	Date:	2022/11/21
Cc:	Adjacent Development CN via e-mail		

☐ Urgent ☐ For Your Use ☐ For Review ■ For Your Information ☐ Confidential

Re: Train Traffic Data – CN Oakville Subdivision near Waterdown Road in Burlington, ON

Please find attached the requested Train Traffic Data; this data does not reflect GO Metrolinx Traffic. The application fee in the amount of **$500.00** +HST will be invoiced.

Should you have any questions, please do not hesitate to contact the undersigned at permits.gld@cn.ca.

Sincerely,

Umair Naveed

Umair Naveed
Officer Public Works – Eastern Canada
Permits.gld@cn.ca

STAMSON Sample Calculation: POR 1 (3F)

STAMSON 5.0 NORMAL REPORT Date: 19-10-2001 09:50:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: SEPOR111.te Time Period: 24 hours
Description:

Rail data, segment # 1: Oakville

Train ! Trains ! Speed !# loc !# Cars! Eng !Cont
Type ! !(km/h) !/Train!/Train! type !weld
---+---+---+---+---+---+---
* 1. Freight ! 11.8/1.3 ! 96.0 ! 4.0 !140.0 !Diesel! No
* 2. Way Freight ! 7.9/1.3 ! 96.0 ! 4.0 ! 25.0 !Diesel! No
* 3. Passenger ! 17.1/1.3 ! 150.0 ! 2.0 ! 10.0 !Diesel! No
* 4. 1D Commuter ! 89.2/1.3 ! 150.0 ! 1.0 ! 12.0 !Diesel! No
* 5. 2D Commuter ! 19.7/1.3 ! 150.0 ! 2.0 ! 8.0 !Diesel! No

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

Train type: ! Unadj. ! Annual % ! Years of !
No Name ! Trains ! Increase ! Growth !
---+---+---+---+
1. Freight ! 9.0/1.0 ! 2.50 ! 11.00 !
2. Way Freight ! 6.0/1.0 ! 2.50 ! 11.00 !
3. Passenger ! 13.0/1.0 ! 2.50 ! 11.00 !
4. 1D Commuter ! 68.0/1.0 ! 2.50 ! 11.00 !
5. 2D Commuter ! 15.0/1.0 ! 2.50 ! 11.00 !

Data for Segment # 1: Oakville

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 7
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 500.00 m
Receiver height : 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
No Whistle
Reference angle : 0.00

Results segment # 1: Oakville

LOCOMOTIVE (0.00 + 41.26 + 0.00) = 41.26 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.41	78.75	-21.40	-0.99	0.00	-15.10	0.00	41.26

WHEEL (0.00 + 34.99 + 0.00) = 34.99 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	74.28	-23.00	-1.19	0.00	-15.10	0.00	34.99

Segment Leq : 42.18 dBA
Total Leq All Segments: 42.18 dBA

Road data, segment # 1: Ghent

Car traffic volume : 2101 veh/TimePeriod *
Medium truck volume : 410 veh/TimePeriod *
Heavy truck volume : 51 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Ghent

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.25 m
Receiver height : 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
Road data, segment # 2: Prospect

Car traffic volume : 4933 veh/TimePeriod *
Medium truck volume : 963 veh/TimePeriod *
Heavy truck volume : 120 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Prospect

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 83.70 m
Receiver height : 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Fairview

Car traffic volume : 40299 veh/TimePeriod *
Medium truck volume : 1286 veh/TimePeriod *
Heavy truck volume : 1286 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Fairview

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 7
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 441.57 m
Receiver height : 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Ghent

Source height = 1.19 m
ROAD (0.00 + 55.46 + 0.00) = 55.46 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
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-90 90 0.49 56.72 0.00 -0.11 -1.15 0.00 0.00 0.00 55.4----------
Segment Leq : 55.46 dBA
Results segment # 2: Prospect

Source height = 1.19 m
ROAD (0.00 + 38.96 + 0.00) = 38.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.49	60.43	0.00	-11.12	-1.15	0.00	-9.20	0.00	38.96

Segment Leq : 38.96 dBA
Results segment # 3: Fairview

Source height = 1.32 m

ROAD (0.00 + 33.16 + 0.00) = 33.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.49	71.34	0.00	-21.82	-1.15	0.00	-15.21	0.00	33.16

Segment Leq : 33.16 dBA
Total Leq All Segments: 55.58 dBA
TOTAL Leq FROM ALL SOURCES: 55.78

APPENDIX D WARNING CLAUSES

**Please note that Warning clause recommendations and wording suggested by MECP are subject to change and represent specific wording that may be required or desired by the Municipality and/or other review agencies.*

CLAUSE A

"Purchasers are advised that despite the inclusion of noise control features in this development area and within the dwelling units, noise due to increasing road traffic may be of concern, occasionally interfering with the activities of the occupants as the noise levels may exceed the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks."

CLAUSE B

"This dwelling unit has been supplied with forced air heating sized to accommodate 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 Municipality's and the Ministry of the Environment, Conservation and Parks noise criteria."