HOWE GASTMEIER CHAPNIK LIMITED
2000 Argentia Road
Plaza 1, Suite 203
Mississauga, ON
L5N 1P7 Canada

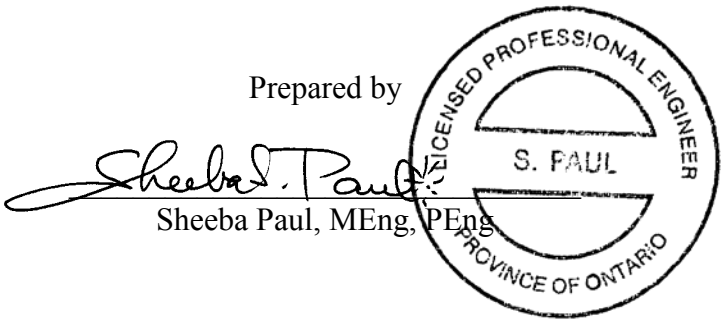
Tel: (905) 826-4044
Fax: (905) 826-4940

Noise Feasibility Study
2120 Hurontario Street and Grange Drive
City of Mississauga, Ontario

For

Gordon Woods Developments Limited
c/o Edenshaw development Limited
260 Brunel Road
Mississuaga, Ontairo

Prepared by



Sheeba Paul, MEng, PEng

Reviewed by

Bill Gastmeier, MASc, PEng

March 1, 2012

CONTENTS

1 INTRODUCTION AND SUMMARY

Howe Gastmeier Chapnik Limited (HGC Engineering) was retained by Gordon Woods Developments Limited to perform a Noise Feasibility Study for the proposed mixed use development at 2120 Hurontario Street and Grange Drive in the City of Mississauga, Ontario. The noise feasibility study is required as part of the approvals process by the City of Mississauga, specifically for Official Plan and Rezoning Amendment.

The subject property is located at the west side of Hurontario Street and east of Grange Drive, in the City of Mississauga. The development will consist of two buildings (31 storeys and 22 storeys) along with two blocks of 3 storey townhouses (24 units).

Road traffic on Hurontario Street and the Queen Elizabeth Way (QEW) are the main sources of noise impacting the site. Road traffic volumes were obtained from the City of Mississauga and from the Ministry of Transportation (MTO).

The results of this study indicate that with suitable noise control measures integrated into the design of buildings, it is feasible to achieve the indoor MOE guideline sound levels from the road traffic sources. The recommended noise control measures include appropriate wall and window glazing assemblies, and air-conditioning of residential suites so that windows can be kept closed. Physical mitigation in the form of acoustic screens or other localized landscaping features can be considered in the design of any potential outdoor living areas on the roof of the 7th floor podium to help create quieter zones.

A number of warning clauses will need to be included in the Development Agreements registered on titles and in purchase, sale and lease agreements to warn occupants of the transportation noise levels.

As this project is at an early stage of development, detailed noise studies for each residential building should be completed prior to building permit approval, to refine the acoustic recommendations. In addition, an acoustical consultant should review the mechanical drawings and details of demising constructions, when available, to help ensure that the noise impact of the development on the environment, and of the development on itself, are maintained within acceptable levels.

In summary, with suitable controls integrated into the building plans, it is concluded that this proposed development is feasible from the perspective of noise impact. Details of the assessment leading to this conclusion are provided herein.

2 SITE DESCRIPTION

The site is located on the west side of Hurontario Street, east of Grange Drive and north of Harborn Road, in the City of Mississauga, Ontario. A context plan is attached as Figure 1. The site plan prepared by Page + Steele IBI Group Architects dated October 24, 2011 is shown as Figure 2. The prediction locations [A] to [K] are also shown for reference purposes. The site is proposed to include two residential towers (a 31-storeys and 22-storeys), a 6-storey podium between the buildings, and two blocks of 3-storey townhouses along Grange Drive. Figure 3 shows the building sections of the proposed buildings. The ground floor is proposed to be retail. Level 7 includes amenity spaces, both indoor and outdoor, as indicated in Figure 4.

The area is considered to be Class I (urban) in terms of its acoustical environment. Figure 5 shows an aerial photo of the area. A site visit was made by HGC Engineering on January 24, 2012 to identify the significant noise sources in the vicinity. Road traffic on Hurontario Street and the QEW were confirmed to be the dominant noise sources. Secondary noise sources include typical urban hum, and general urban activities such as doors slamming, horns honking, etc.

To the southwest and west of the subject site are existing 3-storey townhomes and existing single detached dwellings. There are also high-rise residential buildings ranging in height from 15 – 24 storeys on the east side of Hurontario Street. There is an existing commercial plaza to the south of the subject site. The plaza includes a Starbucks, hair salon, dry cleaner, audiobooks, physiotherapy office, and Rabba Fine Foods at the corner of Hurontario and Harborn Road. There are some rooftop units on the roof of the commercial and retail uses, but these were not audible over road traffic sounds on Hurontario Street during the site visit. Nevertheless, a noise warning clause is recommended, as described in Section 4.4.

3 NOISE CRITERIA

3.1 Road Traffic Noise

Guidelines for acceptable levels of road traffic noise impacting indoor spaces are given in the MOE publication LU-131 "Noise Assessment Criteria in Land Use Planning, 1997", its Annex and its accompanying document “Requirements, Procedures and Implementation, 1997”. These criteria are listed in Table I below. The values in Table I are energy equivalent average sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table I: MOE Road Traffic Noise Criteria (dBA)

Area	Daytime L_{EQ} (16 hour) Road	Nighttime L_{EQ}(8 hour) Road
Outside Bedroom Windows	55 dBA	50 dBA
Outdoor Living Area	55 dBA	--
Inside Living/Dining Rooms	45 dBA	--
Inside Bedrooms	--	40 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

MOE guidelines.

The MOE guidelines allow the daytime sound levels in an Outdoor Living Area (OLA) to be exceeded by up to 5 dBA, without mitigation, provided that a clause warning future occupants of the potential noise concern is included to advise future owners or tenants through all offers of purchase and sale, and rental agreements. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to 60 dBA or less.

MOE guidelines require a central air conditioning or other ventilation system installed prior to occupancy as an alternative means of ventilation to open windows for dwellings where nighttime sound levels outside bedroom windows exceed 60 dBA or daytime sound levels exceed 65 dBA outside living room windows. Provision for air conditioning is required when nighttime sound levels at bedroom windows are in the range of 51 to 60 dBA. Sound attenuating building constructions are required when nighttime sound levels exceed 60 dBA at the plane of the bedroom window due to road noise. Warning clauses are required to notify future residents of possible sound level excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom window due to road traffic.

3.2 Road Traffic Data

Traffic data for Hurontario Street was obtained from the City of Mississauga, in the form of ultimate traffic data, and is provided in Appendix A. A day/night split of 90%/10% was used for Hurontario Street with a commercial vehicle percentage of 10% split into 5.5% medium trucks and 4.5% heavy trucks. The posted speed limit of 50 km/h was used for Hurontario Street along with a gradient of 2%, as indicated by the City.

Traffic data for the QEW at Hurontario Street was obtained from the Ministry of Transportation (MTO), in the form of Summer Annual Daily Traffic (SADT) values, and is provided in Appendix A. The data was projected to the year 2022 using a 2.5% growth rate. A commercial

vehicle percentage of 11.5% was also obtained from the MTO and split into 4.4% medium trucks and 7.1 heavy trucks. A day/night split of 88%/12% was used in the analysis, which is consistent with data received for the QEW near Brown's Line. Table II summarizes the traffic volume data used in this study.

Table II: Ultimate and Projected Road Traffic Data

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Hurontario Street – ultimate	Daytime	52 650	3 218	2 633	58 500
	Nighttime	5 850	358	293	6 500
	Total	**58 500**	**3 575**	**2 925**	**65 000**
QEW @ Hurontario Street – year 2022	Daytime	172 436	8 573	13 834	194 843
	Nighttime	23 514	1 169	1 886	26 570
	Total	**195 951**	**9 742**	**15 720**	**221 413**

3.3 Road Traffic Noise Predictions

To assess the levels of traffic noise that will impact the subject site in the future, predictions were made using STAMSON version 5.04, a computer algorithm developed by the MOE. This modelling software was used to predict the future road traffic sound levels (L_{EQ}) at the building façades. Sample STAMSON output is given in Appendix B.

Predictions of the traffic sound levels were made at the most impacted locations of the various facades. The results of these predictions are summarized in Table III. The distance setbacks of the buildings indicated on the site plan were used in the analysis, along with an aerial photo of the area to determine the distances to the roadways.

Table III: Future Daytime Sound Levels [dBA]

Prediction Location	Description	Daytime $L_{EQ(16)}$	Nighttime $L_{EQ(8)}$
[A]	East façade, Tower A	75	69
[B]	North façade, Tower A	70	64
[C]	South façade, Tower A	73	68
[D]	West façade, Tower A	70	64
[E]	Roof of Podium, potential outdoor amenity area, 7th floor *	68	NA
[F]	East façade, Tower B	73	67
[G]	North façade, Tower B	67	61
[H]	South façade, Tower B	73	67
[I]	West façade, Tower B	70	64
[J]	Townhouse block	62	55
[K]	Townhouse block	59	52

Note: * Sound level includes a 1.07 m high parapet wall

The predictions indicate that the traffic sound levels will exceed the outdoor MOE guidelines listed in Table I at the façades of the buildings in the proposed development. Recommendations to meet the indoor MOE guidelines are discussed below.

4 RECOMMENDATIONS FOR AIRBORNE NOISE CONTROL

The following discussion outlines preliminary recommendations for barriers, building façade constructions, alternative ventilation requirements, and warning clauses to achieve the noise criteria stated in Table I. These aspects will need to be studied further as the design of the building progresses, to help ensure an appropriate acoustical environment for the residents.

4.1 Outdoor Living Areas

The majority of residential units will have balconies less than 4 metres in depth (which are exempt from the definition of OLA under MOE guidelines).

A sound level prediction was performed on the roof of the 6-storey podium (prediction location [E]), since this area may be a potential outdoor amenity area. The predicted sound level at the 7th floor area will be 68 dBA, assuming a standard 1.07 m high solid parapet wall, dominated by Hurontario Street to the east. To reduce the sound level in this area to within 60 dBA, a 3 m high barrier would be required along the east and south edges with exposure to Hurontario Street and the QEW. This barrier height is preliminary. Specific requirements or alternative landscaping features may be considered during detail design to shield the terrace, or selected parts thereof which comprise the required outdoor amenity space.

4.2 Ventilation Requirements

High-Rise Buildings

The predicted sound levels at all the facades of the two towers are high enough that alternative ventilation systems must be provided to allow windows to remain closed. It is anticipated that central air conditioning systems will be provided in all suites in both towers.

Townhouses

The two townhouse blocks along Grange Drive (prediction locations [J] and [K]) will have nighttime sound levels at the plane of the bedroom windows between 51 and 60 dBA and the daytime sound levels at the plane of the living room windows between 56 and 65 dBA. To address these excesses, the MOE guidelines recommend that these dwelling units be equipped with a 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 lots. Window or through-the-wall air conditioning units are not recommended for any commercial or 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 MOE publication NPC-216, Residential Air Conditioning Devices. Inclusion of central air conditioning for these two blocks of townhouses will meet and exceed the requirement.

4.3 Building Constructions

Predicted sound levels at the building facades were used to determine preliminary sound insulation requirements for the building envelope.

4.3.1 Exterior Wall Constructions

From preliminary elevation information, the exterior walls of the buildings may include spandrel glass and/or metal panels within an aluminum window system. In this analysis, it has been assumed that sound transmitted through elements other than the glazing elements is negligible in comparison. Exterior walls that are not glazed should have sufficient acoustical insulation value such that the noise transmitted through is negligible in comparison with the windows. The exterior walls may include spandrel glass or metal panels within an aluminum window system. Sufficient sound insulation can typically be achieved by using a drywall assembly on separate

framing behind the spandrel panels. The recommended construction of this assembly depends on the details of the exterior spandrel panels as well as the relative wall areas versus the window areas in a given room. Further input regarding the design of the exterior walls can be provided during design development, if required.

4.3.2 Exterior Doors

There may be glazed exterior doors (sliding or swing) for entry onto the balconies from living/dining rooms and some bedrooms. The glazing areas on the doors are counted as part of the total window glazing area. All exterior doors should include good weather seals to reduce air infiltration to the minimum achievable levels.

4.3.3 Acoustical Requirements for Glazing

At the time of this report, floor plans and elevations are under development. Assuming a typical window to floor area of 60% (40% fixed and 20% operable) for the living rooms and 30% (25% fixed and 5% operable for the bedrooms), the minimum acoustical requirement for the basic window glazing, including glass in fixed sections, swing or sliding doors, and operable windows, is provided below.

Based on the projected sound levels at the building façade of Tower A, along the east side of the building, where suites are most exposed to the Hurontario Street, and extending back for some distance along the adjacent north and south façades, the fixed glazing for the living/dining rooms should achieve a sound transmission class (STC) rating of at least STC-37. For the bedrooms, the fixed glazing should achieve a sound transmission class (STC) rating of at least STC-34. If window areas are larger, more complex window constructions will be required; conversely, lower requirements would apply if window areas are smaller. Operable sections (doors and windows) may achieve installed ratings 2 – 3 points lower than these targets without significant degradation of effective performance.

Based on the projected sound levels at the building façade of Tower B which is setback from Hurontario Street, along the east side of the building, where suites are most exposed to the Hurontario Street, and extending back for some distance along the adjacent north and south façades, the fixed glazing for the living/dining rooms should achieve a sound transmission class (STC) rating of at least STC-35. For the bedrooms, the fixed glazing should achieve a sound transmission class (STC) rating of at least STC-32. If window areas are larger, more complex window constructions will be required; conversely, lower requirements would apply if window areas are smaller. Operable sections (doors and windows) may achieve installed ratings 2 – 3 points lower than these targets without significant degradation of effective performance.

Façades facing mainly north and south are slightly less impacted, and the façades facing west are even less impacted, and accordingly a greater amount of glazing or lesser window constructions could be tolerated while still meeting the indoor targets. Acoustical criteria for different facades can be optimized as part of the detail design of the building envelope, when detailed floor plans and elevations are available.

The townhouse units in the development will have nighttime sound levels at the plane of the bedroom windows that are less than 60 dBA and daytime sound levels at the façade that are less than 65 dBA, any exterior wall, and double glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the dwelling units.

Table IV indicates the minimum acoustical requirement for the basic window glazing, including glass in fixed sections, doors, and operable windows for each façade.

Table IV: Required Minimum Glazing STC for Specific Facades

Prediction Locations	Façade	Space	Glazing STC[1, 2]
[A]	East façade, Tower A	Living/Dining	37
		Bedroom	34
[B]	North façade, Tower A	Living/Dining	32
		Bedroom	30
[C]	South façade, Tower A	Living/Dining	35
		Bedroom	33
[D]	West façade, Tower A	Living/Dining	32
		Bedroom	30
[F]	East façade, Tower B	Living/Dining	35
		Bedroom	32
[G]	North façade, Tower B	Living/Dining	30
		Bedroom	30
[H]	South façade, Tower B	Living/Dining	35
		Bedroom	32
[I]	West façade, Tower B	Living/Dining	32
		Bedroom	30
[J], [K]	Townhouse block	Living/Dining	OBC
		Bedroom	OBC

Note:
[1] Based on 60% window to floor area ratio for living/dining rooms and 30% window to floor area ratio for bedrooms.
[2] STC requirement refers to fixed glazing. Operable doors and windows are assumed to provide slightly less sound insulation, however, tight weather seals should be provided to maintain the acoustical rating to the extent feasible.

Sample fixed window assemblies which may achieve the STC requirements are summarized in Table V below. Note that acoustic performance varies with manufacturer's construction details, and these are only guidelines to provide some indication of the type of glazing likely to be required. Acoustical test data for the selected assemblies should be requested from the suppliers, to ensure that the stated acoustic performance levels will be achieved by their assemblies.

Table V: Typical Fixed Window Constructions Satisfying Minimum STC Requirements

STC Requirement	Glazing Configuration (STC)
28 – 30	OBC
33	4(10)4
35/36	6(10)4, 5(16)4
37	6(13)4 , 6(20)5
38/39	6L(13)6, 6(25)6

In Table V, the numbers outside the parentheses indicate minimum pane thicknesses in millimetres and the number in parentheses indicates the minimum inter-pane gap in millimetres. "L" indicates a laminated pane. OBC indicates any glazing construction meeting the minimum requirements of the Ontario Building Code.

When detailed floor plans and elevations are available for the two residential towers, the glazing requirements should be verified based on actual window to floor area ratios.

4.4 Warning Clauses

MOE guidelines recommend that appropriate warning clauses be included in the Development Agreements, offers of purchase and sale and lease agreements; to inform future owners about noise concerns from transportation sources in the area. For residential suites in the proposed buildings, the following clauses are recommended.

High-Rise Buildings

(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 traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality's and the Ministry of the Environment's noise criteria.

(b) This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Ministry of Environment's noise criteria.

(c) Purchasers/tenants are advised that due to the proximity of this development to nearby retail and commercial facilities, sound levels from the facilities may at times be audible.

Townhouses

(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 traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality's and the Ministry of the Environment's noise criteria.

(b) This dwelling unit has been fitted with a forced air heating system and the ducting etc., was sized to accommodate central air conditioning. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the noise criteria of the Municipality and the Ministry of the Environment. (Note: The location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MOE publication NPC-216, Residential Air Conditioning Devices.)

(c) Purchasers/tenants are advised that due to the proximity of this development to nearby retail and commercial facilities, sound levels from the facilities may at times be audible.

5 CONCLUSIONS & SUMMARY OF RECOMMENDATIONS

Predictions of road traffic noise indicate sound level excesses at some facades which must be mitigated by including suitable glazing assemblies as recommended herein. Appropriate warning clauses should be included on the title to advise purchasers of the sources of noise in the area.

The following list summarizes the recommendations made in this report:

1. For the outdoor amenity space located on the roof of the 6-storey podium, integration of barriers, localized screens or alternative landscaping features should be considered during

detail design to create some quieter zones within the overall area.

2. Given the predicted daytime and night time sound levels from road traffic, central air conditioning is required for all units in the high-rise buildings. Forced air ventilation systems with ductwork sized for the future installation of central air conditioning by the occupant are required for the townhouses.

3. For the high-rise buildings, assuming typical window areas as described herein, glazing constructions should be selected to achieve the minimum acoustical performance values described in Section 4.3.3. More detailed specifications can be developed and/or optimization of glazing elements undertaken as the design progresses, to help achieve the required indoor noise targets. Exterior walls should be designed so that sound transmitted through them is negligible in comparison with sound transmitted through the glazing elements. For the townhouses, any building construction meeting the minimum requirements of the Ontario Building Code will provide sufficient acoustical insulation for the indoor spaces.

4. Warning clauses should be included in the Development Agreements registered on titles, and in purchase, sale and lease agreements, to inform future owners about noise concerns from transportation and commercial/retail sources in the area.

With the integration of such measures, compatibility of the proposed development with the surrounding environment is anticipated to be achieved. Hence the proposed development is considered to be feasible from a noise impact perspective.

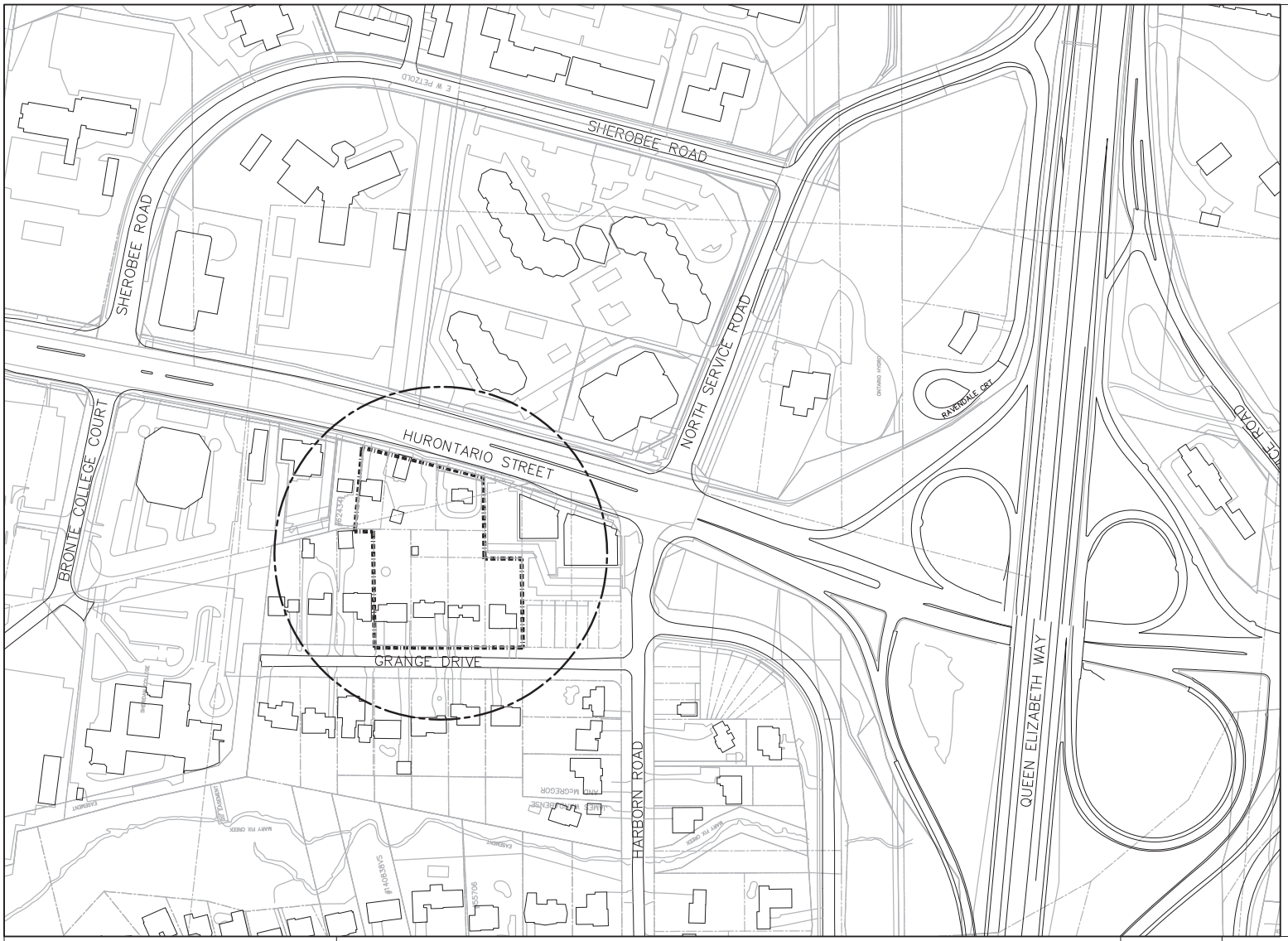
5.1 Implementation

To ensure that the noise control recommendations outlined above are properly implemented prior to registration, it is recommended that:

1) When individual buildings are being developed, a more comprehensive Noise Impact Study that considers the building façade design, suite layouts and shielding of any identified outdoor living areas (including grading information where applicable) should be performed. Prior to the issuance of building permits, detailed noise studies for each high-rise building should be performed to refine the acoustic recommendations, and

additional reviews as required to certify that such recommendations have been incorporated into the permit drawings and specifications.

2) Prior to the issuance of occupancy permits for this development, the City's building inspector or a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario shall certify that the noise control measures have been properly installed and constructed.



SITE STATISTICS
FLOOR -TO-SITE INDEX

SITE AREA 9,476 m² / 102,005 ft²

6 STOREY PODIUM:

TYPICAL FLOOR - 768 m² / 8,265 ft²
TOTAL PODIUM - 4,740 m² / 51,150 ft²

31 STOREY TOWER A:

TYPICAL FLOOR - 717 m² / 7,710 ft² - Zoning GFA
TOTAL TOWER - 22,227 m² / 239,257 ft²

22 STOREY TOWER B:

TYPICAL FLOOR - 675 m² / 7,280 ft² - Zoning GFA
TOTAL TOWER - 14,850 m² / 159,850 ft²

24 - 3 STOREY TOWNHOUSES :

TYPICAL TOWNHOUSE - 167 m² / 1,800 ft²
TOTAL TOWNHOUSES - 4,000² / 43,200 ft²

PROJECT TOTAL:

45,685 m² / 491,960 ft²

DENSITY - 45,685 m² : 9,476 m² = 4,82

U/G PARKING: ± 250 PARKING SPACES PER LEVEL

TOWER A - RESIDENTIAL UNITS - 281

TOWER B - RESIDENTIAL UNITS - 189

PODIUM - RESIDENTIAL UNITS - 50

TOTAL NUMBER OF UNITS - 520

3 STOREY TOWNHOUSES - 24

COMMERCIAL AREA AT GRADE - 910 m² / 9,790 ft²

PARKING AT GRADE - 54 CARS

APPLICANT:

GORDON WOODS DEVELOPMENT LIMITED

ISSUED FOR ZONING BY-LAW AMENDMENT APPLICATION

CONTEXT PLAN & SITE STATISTICS

PROJECT No. 28755 SCALE: 1 : 2500 OCTOBER 24, 2011

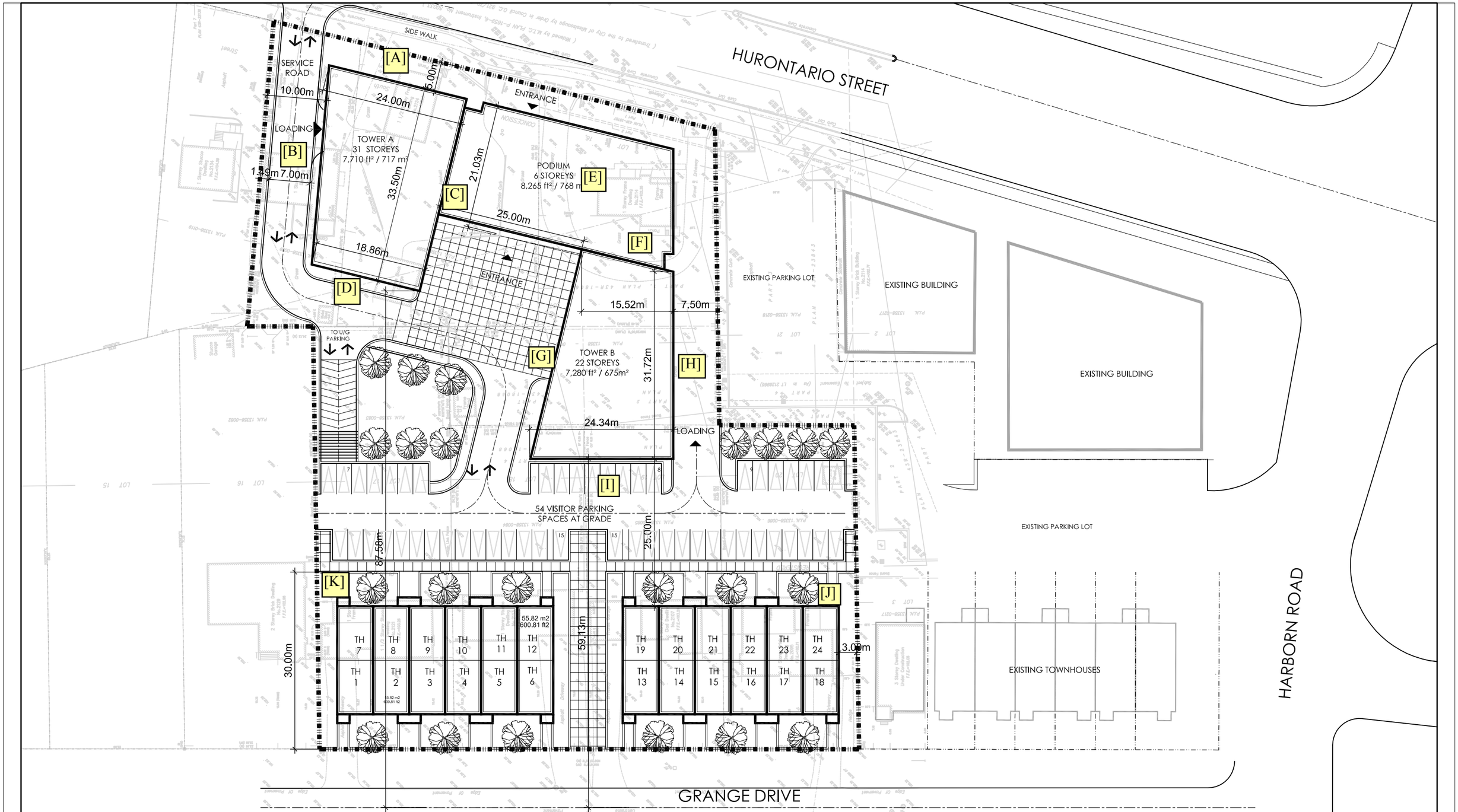
NORTH

PROPOSED 22 & 31 STOREY
RESIDENTIAL BUILDINGS @
HURONTARIO STREET
& GRANGE DRIVE
MISSISSAUGA, ONTARIO

DWG NO: 1

Page+Steele
IBI Group
Architects

Figure 1 - Context Plan



APPLICANT:

GORDON WOODS DEVELOPMENT LIMITED

ISSUED FOR ZONING BY-LAW AMENDMENT APPLICATION

SITE PLAN

PROJECT No. 28755 SCALE: 1 : 600 OCTOBER 24, 2011

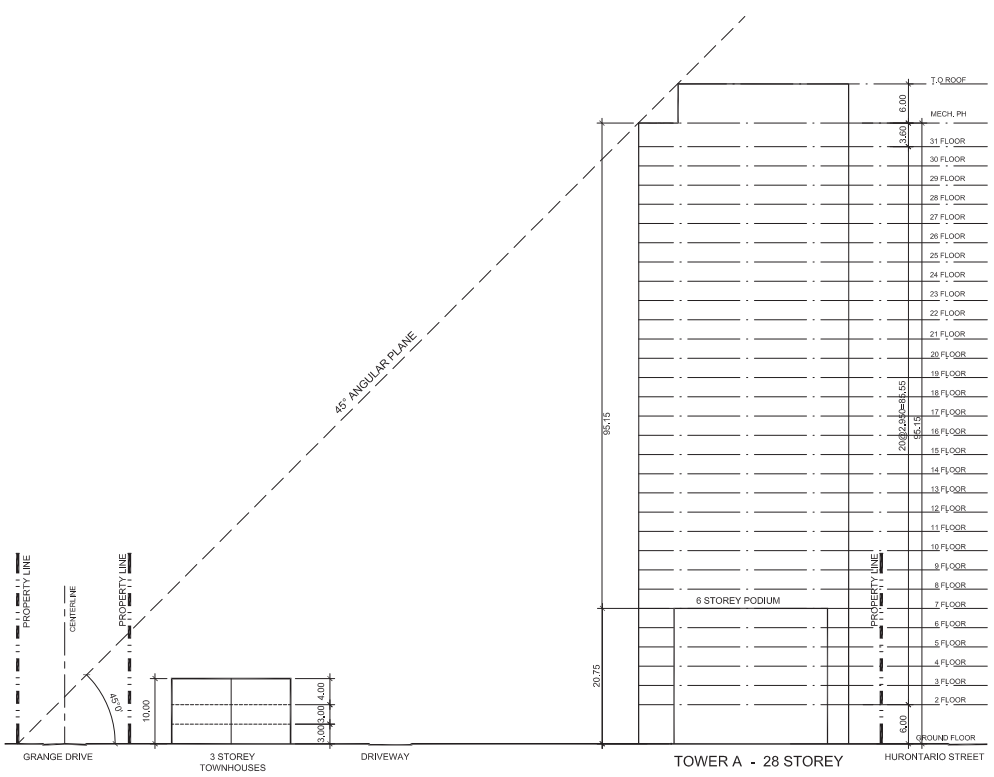
NORTH

PROPOSED 22 & 31 STOREY RESIDENTIAL BUILDINGS @ HURONTARIO STREET & GRANGE DRIVE MISSISSAUGA, ONTARIO

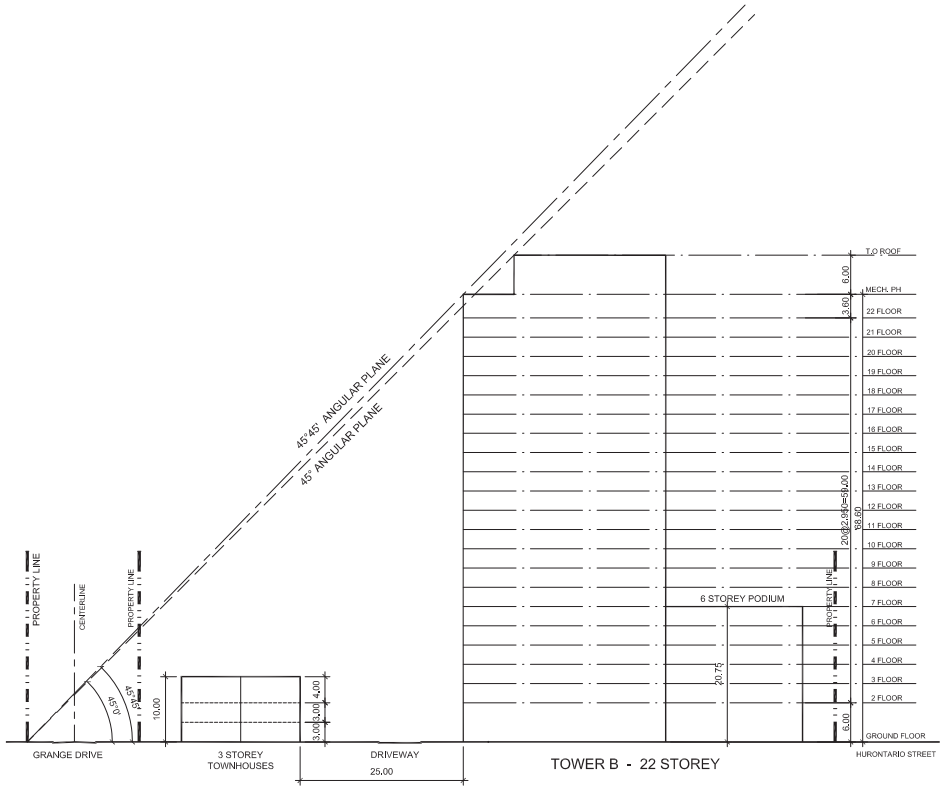
DWG NO: 2

Page+Steele IBI Group Architects

Figure 2 - Site Plan Showing Prediction Locations



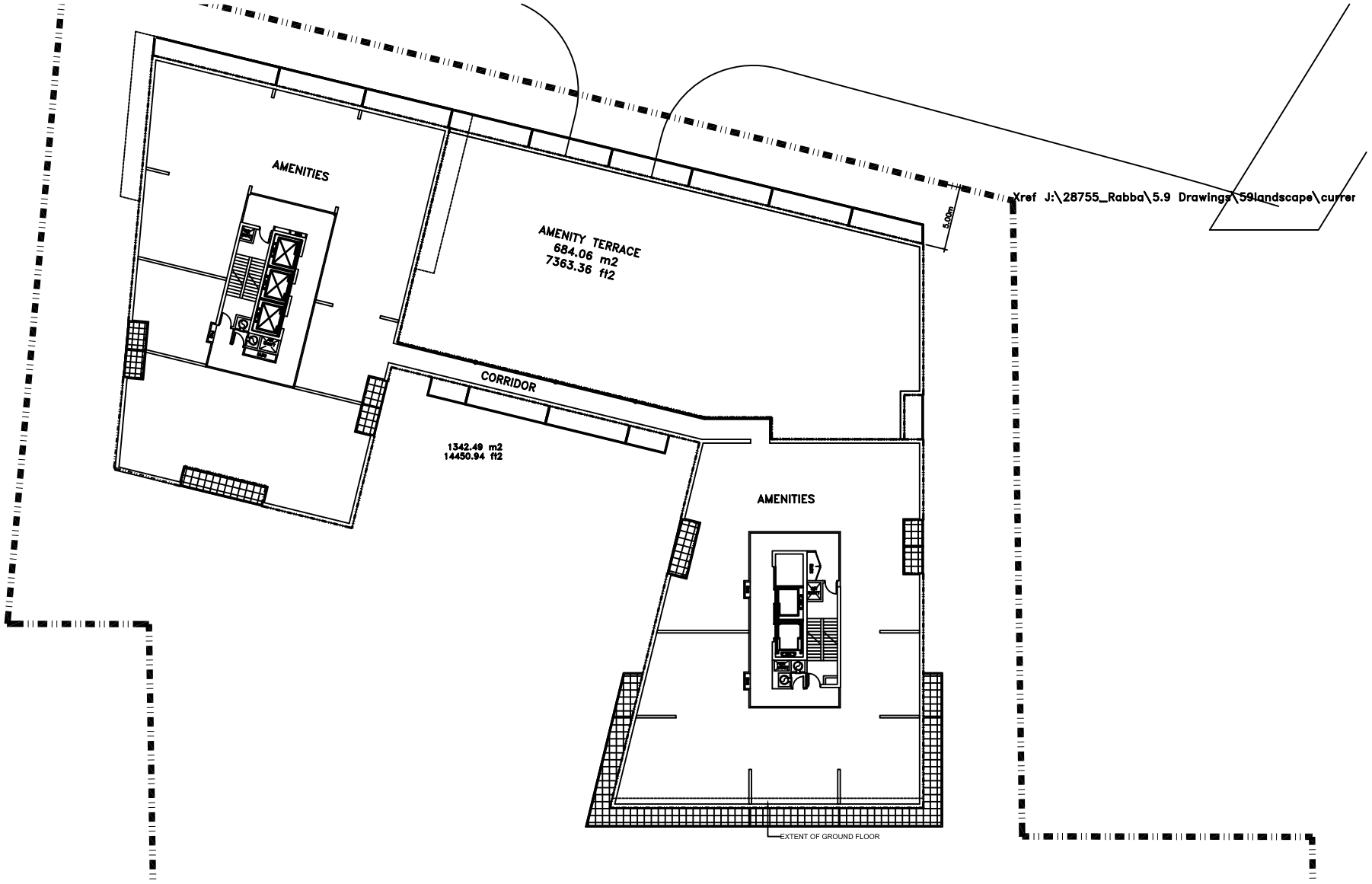
TOWER A - 31 STOREYS



TOWER B - 22 STOREYS

APPLICANT: GORDON WOODS DEVELOPMENT LIMITED	ISSUED FOR ZONING BY-LAW AMENDMENT APPLICATION ANGULAR PLANES DIAGRAMS PROJECT No. 28755 SCALE: 1 : 750 OCTOBER 24, 2011	NORTH	PROPOSED 22 & 31 STOREY RESIDENTIAL BUILDINGS @ HURONTARIO STREET & GRANGE DRIVE MISSISSAUGA, ONTARIO	DWG NO: 3 Page+Steele | IBI Group Architects

Figure 3 - Proposed Building Sections



7 FLOOR PLAN - AMENITY

300

Figure 4 - 7th Floor Amenity Space

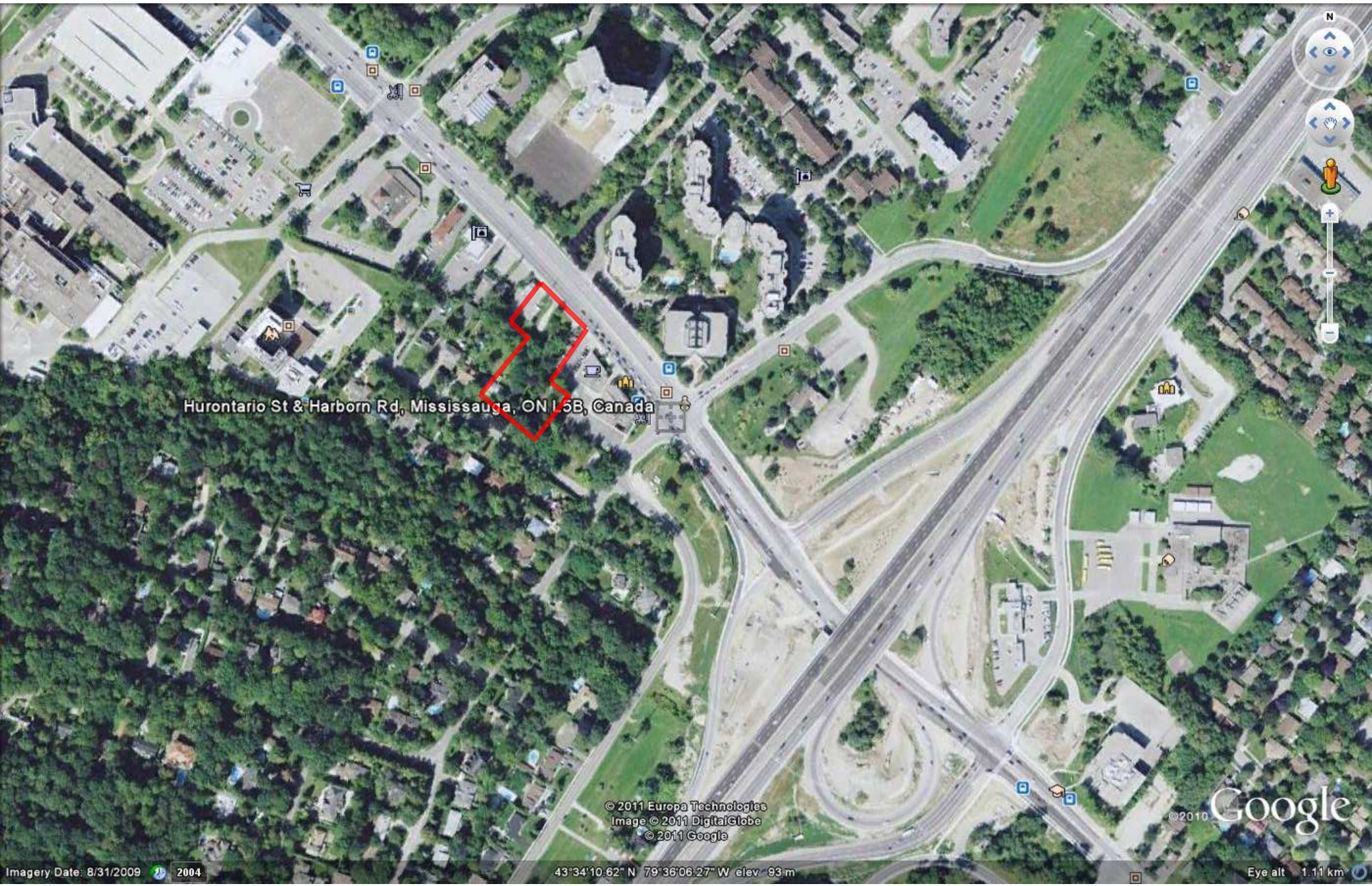


Figure 5 - Aerial Photo of Surrouding Area

APPENDIX A

Road Traffic Data

Date:	05-Jan-12

NOISE REPORT FOR PROPOSED DEVELOPMENT

CITY OF MISSISSAUGA

REQUESTED BY:	
Name:	Sheeba Paul
Company	HGC Engineering
Fax#:	(905) 826-4940
PREPARED BY:	
Name:	Loudel Uy
Tel#:	(905) 615-3200

Location:	Hurontario Street- between Sherobee Rd and QEW
Look Up ID#:	287

ON SITE TRAFFIC DATA

Specific	***Street Names***				
	Hurontario Street				
AADT:	65,000				
# of Lanes:	6 lanes				
% Trucks:	10%				
Medium/Heavy Trucks Ratio:	55/45				
Day/Night Traffic Split:	90/10				
Posted Speed Limit:	50km/h				
Gradient of Road:	2				
Ultimate R O W:	35				

Comments:

- Please consider that there is a proposed LRT project along Hurontario Street with existing lanes may be converted from 6 lanes to 4 lanes with 2 LRT lines in the middle. For more details call Matthew Williams (905) 615- 3200 ext. 5834
- Ultimate Traffic Data Only.

Highway	Location Description	Dist	Year	Patt Type	AADT	SADT	SAWDT	WADT	AR
			2002	C	150000	168000	169300	135000	1.1
			2003	C	154800	173400	174900	139300	1.0
			2004	C	158800	177400	178500	143300	0.9
			2005	C	162000	180400	181900	145500	0.8
			2006	C	153100	170100	171400	137700	0.9
			2007	C	154500	171700	174100	138800	0.8
			2008	C	137200	151400	149300	123100	1.1
QEW	HWY 10-HURONTARIO ST-IC-MISS	2.2	1988	UC	122500	128600	138400	115100	1.0
			1989	UC	126800	133100	143200	120400	1.0
			1990	UC	130850	140000	151700	124300	1.0
			1991	UC	128900	136600	148200	125000	0.8
			1992	UC	129800	137500	146600	119400	0.8
			1993	UC	137900	146200	155800	126900	1.1
			1994	UC	143700	152300	160900	132200	1.3
			1995	UC	144600	153300	160500	133000	1.2
			1996	UC	148100	157600	173300	140700	1.0
			1997	UC	151600	159200	177400	142500	0.8
			1998	UC	155100	165000	181500	147300	1.1
			1999	UC	157600	167700	184400	149700	0.9
			2000	UC	160500	170800	189100	150900	1.2
			2001	UC	163500	174900	192900	153700	0.8
			2002	UC	166500	177400	195900	155900	1.0
			2003	UC	169500	179700	200000	159300	0.9
			2004	UC	186500	197100	218500	176200	0.6
			2005	UC	175400	185600	205100	164500	0.7
			2006	UC	164300	173700	192000	154600	0.8
			2007	UC	153100	162400	177200	143600	1.2
			2008	C	142000	156700	154600	127400	1.3
QEW	PEEL RD 17-CAWTHRA RD-IC	1.8	1988	UC	124500	130700	140600	117000	0.9
			1989	UC	128750	135100	145400	122300	0.8
			1990	UC	132900	142200	154100	126200	0.6
			1991	UC	130900	138700	150500	126900	0.5
			1992	UC	131900	139800	149000	121300	0.8
			1993	UC	137350	145500	157900	131800	0.8
			1994	UC	137700	146000	154200	126700	0.8
			1995	UC	139600	148000	155000	128400	1.1
			1996	UC	141500	150600	165600	134400	0.9
			1997	UC	143400	150600	167800	134800	0.7
			1998	UC	152100	161800	178000	144500	0.7
			1999	UC	152600	162400	178500	145000	0.8
			2000	UC	155900	165900	183700	146500	0.7
			2001	UC	159200	170300	187900	149600	0.8
			2002	UC	162500	173100	191200	152100	0.7
			2003	UC	165700	175600	195500	155800	0.6

Sheeba Paul

From: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Sent: January-12-12 3:10 PM
To: Sheeba Paul
Cc: Bee, Christopher (MTO)
Subject: FW: commercial vehicle percentage request for QEW

To Sheeba Paul, HGC Engineering Ltd.

The "% commercial" for the latest year statistics available from MTO Head Office is yr. 2008.

The value is 11.5% for "% commercial" at QEW and Hurontario.
"% commercial" is defined as short trucks, buses, cars with trailer, long trucks, and specials (motorcycle, snowmobile, farm tractor) but NOT REGULAR CARS.

Thanks.

Christopher Bee
MTO CR Traffic office
Traffic information and Roadwork Scheduling Section (TIRSS)

From: Sheeba Paul [mailto:spaul@hgcengineering.com]
Sent: January 11, 2012 3:00 PM
To: Bee, Christopher (MTO)
Subject: re: commercial vehicle percentage request for QEW

Hi Christopher,

Please let me know if you have commercial vehicle percentages for the QEW near Hurontario Street.

Thank you!

Ms. Sheeba Paul, MEng. PEng.
HGC Engineering
Howe Gastmeier Chapnik Limited
2000 Argentia Road
Plaza One, Suite 203
Mississauga, Ontario, Canada L5N 1P7
Phone (905) 826-4044
Fax (905) 826-4940

From: Sheeba Paul
Sent: January-05-12 1:52 PM
To: 'Bee, Christopher (MTO)'
Subject: RE: commercial vehicle percentage request for QEW

HI Christopher,

HGC Engineering is performing a road traffic noise study at near the QEW and Hurontario Street (Hwy 10) in Mississauga, ON

http://maps.google.ca/maps?q=hurontario+street+and+harborn+road,+mississauga,+on&hl=en&ll=43.56982,-79.601912&spn=0.007571,0.020599&sll=43.567441,-79.598436&sspn=0.007572,0.020599&vpsrc=0&gl=ca&hnear=Hurontario+St+%26+Harborn+Rd,+Mississauga,+Peel+Regional+Municipality,+Ontario&t=m&z=16

Do you have commercial vehicle percentages for the QEW at Hurontario Street?

Thank you.

Ms. Sheeba Paul, MEng. PEng.
HGC Engineering
Howe Gastmeier Chapnik Limited
2000 Argentia Road
Plaza One, Suite 203
Mississauga, Ontario, Canada L5N 1P7
Phone (905) 826-4044
Fax (905) 826-4940

APPENDIX B

Sample Stamson Output

```
STAMSON 5.0        NORMAL REPORT        Date: 01-03-2012 09:57:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te                 Time Period: Day/Night 16/8 hours
Description:  Daytime and nighttime sound levels at prediction location
[A], East façade, Tower A

Road data, segment # 1: HurontarioSB (day/night)
-----------------------------------------------
Car traffic volume  : 26325/2925  veh/TimePeriod  *
Medium truck volume :  1609/179   veh/TimePeriod  *
Heavy truck volume  :  1316/146   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  32500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.50
    Heavy Truck  % of Total Volume     :   4.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: HurontarioSB (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  93.00 m
Reference angle           :   0.00

Road data, segment # 2: HurontarioNB (day/night)
-----------------------------------------------
Car traffic volume  : 26325/2925  veh/TimePeriod  *
Medium truck volume :  1609/179   veh/TimePeriod  *
Heavy truck volume  :  1316/146   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  32500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.50
    Heavy Truck  % of Total Volume     :   4.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: HurontarioNB (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  :  27.00 / 27.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  93.00 m
Reference angle           :   0.00

Road data, segment # 3: QEW (day/night)
---------------------------------------
Car traffic volume  : 172436/23514 veh/TimePeriod  *
Medium truck volume :  8573/1169  veh/TimePeriod  *
Heavy truck volume  : 13834/1886  veh/TimePeriod  *
Posted speed limit  :   100 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): 156700
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   4.40
    Heavy Truck  % of Total Volume     :   7.10
    Day (16 hrs) % of Total Volume     :  88.00

Data for Segment # 3: QEW (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 428.00 / 428.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  93.00 m
Reference angle           :   0.00

Results segment # 1: HurontarioSB (day)
---------------------------------------

Source height = 1.46 m

ROAD (0.00 + 71.90 + 0.00) = 71.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  71.90   0.00   0.00   0.00   0.00   0.00   0.00
71.90
```

```
------------------------------------------------------------------------
---

Segment Leq : 71.90 dBA

Results segment # 2: HurontarioNB (day)
---------------------------------------

Source height = 1.46 m

ROAD (0.00 + 69.35 + 0.00) = 69.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90     90   0.00  71.90   0.00  -2.55   0.00   0.00   0.00   0.00
69.35
------------------------------------------------------------------------
---

Segment Leq : 69.35 dBA

Results segment # 3: QEW (day)
------------------------------

Source height = 1.63 m

ROAD (0.00 + 68.78 + 0.00) = 68.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90      0   0.00  86.34   0.00 -14.55  -3.01   0.00   0.00   0.00
68.78
------------------------------------------------------------------------
---

Segment Leq : 68.78 dBA

Total Leq All Segments: 75.00 dBA

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

Source height = 1.46 m

ROAD (0.00 + 65.37 + 0.00) = 65.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90     90   0.00  65.37   0.00   0.00   0.00   0.00   0.00   0.00
65.37
```

```
------------------------------------------------------------------------
---

Segment Leq : 65.37 dBA

Results segment # 2: HurontarioNB (night)
----------------------------------------

Source height = 1.46 m

ROAD (0.00 + 62.82 + 0.00) = 62.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90     90   0.00  65.37   0.00  -2.55   0.00   0.00   0.00   0.00
62.82
------------------------------------------------------------------------
---

Segment Leq : 62.82 dBA

Results segment # 3: QEW (night)
--------------------------------

Source height = 1.63 m

ROAD (0.00 + 63.14 + 0.00) = 63.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90      0   0.00  80.70   0.00 -14.55  -3.01   0.00   0.00   0.00
63.14
------------------------------------------------------------------------
---

Segment Leq : 63.14 dBA

Total Leq All Segments: 68.70 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 75.00
                           (NIGHT): 68.70
```

```
STAMSON 5.0        NORMAL REPORT        Date: 01-03-2012 09:57:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: e.te                 Time Period: 16 hours
Description: Daytime sound level at prediction location [E], Roof of
Podium, potential outdoor amenity area, 7th floor, with 1.07 m high solid
parapet wall

Road data, segment # 1: HurontarioSB
-----------------------------------
Car traffic volume  : 19500 veh/TimePeriod
Medium truck volume :  1192 veh/TimePeriod
Heavy truck volume  :   975 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: HurontarioSB
----------------------------------
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  :  50.00 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.07 m
Elevation                 :  18.00 m
Barrier receiver distance :   3.00 m
Source elevation          :   0.00 m
Receiver elevation        :  18.00 m
Barrier elevation         :  18.00 m
Reference angle           :   0.00

Road data, segment # 2: HurontarioNB
-----------------------------------
Car traffic volume  : 19500 veh/TimePeriod
Medium truck volume :  1192 veh/TimePeriod
Heavy truck volume  :   975 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: HurontarioNB
----------------------------------
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  :  63.00 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
```

```
Barrier height            :   1.07 m
Elevation                 :  18.00 m
Barrier receiver distance :   3.00 m
Source elevation          :   0.00 m
Receiver elevation        :  18.00 m
Barrier elevation         :  18.00 m
Reference angle           :   0.00

Road data, segment # 3: QEW
---------------------------
Car traffic volume  : 130633 veh/TimePeriod
Medium truck volume :  6495 veh/TimePeriod
Heavy truck volume  : 10480 veh/TimePeriod
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: QEW
-------------------------
Angle1   Angle2           : -90.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 433.00 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 20.00 deg
Barrier height            :   1.07 m
Elevation                 :  18.00 m
Barrier receiver distance :   3.00 m
Source elevation          :   0.00 m
Receiver elevation        :  18.00 m
Barrier elevation         :  18.00 m
Reference angle           :   0.00

Results segment # 1: HurontarioSB
---------------------------------

Source height = 1.46 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.46 !        1.50 !        0.42 !        18.42

ROAD (0.00 + 58.14 + 0.00) = 58.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.06  70.60   0.00  -5.53  -0.16   0.00   0.00  -6.77
58.14
```

```
------------------------------------------------------------------------
---

Segment Leq : 58.14 dBA

Results segment # 2: HurontarioNB
---------------------------------

Source height = 1.46 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.46 !        1.50 !        0.64 !        18.64

ROAD (0.00 + 57.96 + 0.00) = 57.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90     90   0.06  70.60   0.00  -6.59  -0.16   0.00   0.00  -5.89
57.96
------------------------------------------------------------------------
---

Segment Leq : 57.96 dBA

Results segment # 3: QEW
------------------------

Source height = 1.63 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.50 !        1.38 !        19.38

ROAD (0.00 + 66.43 + 0.00) = 66.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90     20   0.05  85.14   0.00 -15.36  -2.26   0.00   0.00  -4.38
63.14*
   -90     20   0.12  85.14   0.00 -16.30  -2.41   0.00   0.00   0.00
66.43
------------------------------------------------------------------------
---

 * Bright Zone !
```

```
Segment Leq : 66.43 dBA

Total Leq All Segments: 67.54 dBA

TOTAL Leq FROM ALL SOURCES:       67.54
```

```
STAMSON 5.0        NORMAL REPORT        Date: 01-03-2012 09:57:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: h.te                 Time Period: Day/Night 16/8 hours
Description: Daytime and nighttime sound levels at prediction location
[H], South façade, Tower B

Road data, segment # 1: HurontarioSB (day/night)
-----------------------------------------------
Car traffic volume  : 26325/2925  veh/TimePeriod  *
Medium truck volume :  1609/179   veh/TimePeriod  *
Heavy truck volume  :  1316/146   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  32500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.50
    Heavy Truck  % of Total Volume     :   4.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: HurontarioSB (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.00 / 50.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  66.00 m
Reference angle           :   0.00

Road data, segment # 2: HurontarioNB (day/night)
-----------------------------------------------
Car traffic volume  : 26325/2925  veh/TimePeriod  *
Medium truck volume :  1609/179   veh/TimePeriod  *
Heavy truck volume  :  1316/146   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  32500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.50
    Heavy Truck  % of Total Volume     :   4.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: HurontarioNB (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  62.00 / 62.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  66.00 m
Reference angle           :   0.00

Road data, segment # 3: QEW (day/night)
---------------------------------------
Car traffic volume  : 172436/23514 veh/TimePeriod  *
Medium truck volume :  8573/1169  veh/TimePeriod  *
Heavy truck volume  : 13834/1886  veh/TimePeriod  *
Posted speed limit  :   100 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): 156700
    Percentage of Annual Growth        :   2.50
    Number of Years of Growth          :  14.00
    Medium Truck % of Total Volume     :   4.40
    Heavy Truck  % of Total Volume     :   7.10
    Day (16 hrs) % of Total Volume     :  88.00

Data for Segment # 3: QEW (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  : 378.00 / 378.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  66.00 m
Reference angle           :   0.00

Results segment # 1: HurontarioSB (day)
---------------------------------------

Source height = 1.46 m

ROAD (0.00 + 63.66 + 0.00) = 63.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
     0     90   0.00  71.90   0.00  -5.23  -3.01   0.00   0.00   0.00
63.66
```

```
------------------------------------------------------------------------
---

Segment Leq : 63.66 dBA

Results segment # 2: HurontarioNB (day)
---------------------------------------

Source height = 1.46 m

ROAD (0.00 + 62.73 + 0.00) = 62.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
     0     90   0.00  71.90   0.00  -6.16  -3.01   0.00   0.00   0.00
62.73
------------------------------------------------------------------------
---

Segment Leq : 62.73 dBA

Results segment # 3: QEW (day)
------------------------------

Source height = 1.63 m

ROAD (0.00 + 72.33 + 0.00) = 72.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
   -90     90   0.00  86.34   0.00 -14.01   0.00   0.00   0.00   0.00
72.33
------------------------------------------------------------------------
---

Segment Leq : 72.33 dBA

Total Leq All Segments: 73.28 dBA

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

Source height = 1.46 m

ROAD (0.00 + 57.13 + 0.00) = 57.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
---
     0     90   0.00  65.37   0.00  -5.23  -3.01   0.00   0.00   0.00
57.13
```

```
-------------------------------------------------------------------------
---

Segment Leq : 57.13 dBA

Results segment # 2: HurontarioNB (night)
-----------------------------------------

Source height = 1.46 m

ROAD (0.00 + 56.19 + 0.00) = 56.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  65.37   0.00  -6.16  -3.01   0.00   0.00   0.00
56.19
-------------------------------------------------------------------------
---

Segment Leq : 56.19 dBA

Results segment # 3: QEW (night)
--------------------------------

Source height = 1.63 m

ROAD (0.00 + 66.69 + 0.00) = 66.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  80.70   0.00 -14.01   0.00   0.00   0.00   0.00
66.69
-------------------------------------------------------------------------
---

Segment Leq : 66.69 dBA

Total Leq All Segments: 67.48 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 73.28
                           (NIGHT): 67.48
```

```
STAMSON 5.0        NORMAL REPORT        Date: 01-03-2012 09:58:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: j.te                 Time Period: Day/Night 16/8 hours
Description:  Daytime and nighttime sound levels at prediction location
[J], Townhouse block

Road data, segment # 1: HurontarioSB (day/night)
-----------------------------------------------
Car traffic volume  : 26325/2925  veh/TimePeriod  *
Medium truck volume :  1609/179   veh/TimePeriod  *
Heavy truck volume  :  1316/146   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  32500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.50
    Heavy Truck  % of Total Volume     :   4.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: HurontarioSB (day/night)
-----------------------------------------------
Angle1   Angle2           : -30.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  84.00 / 84.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   9.00 m
Reference angle           :   0.00

Road data, segment # 2: HurontarioNB (day/night)
-----------------------------------------------
Car traffic volume  : 26325/2925  veh/TimePeriod  *
Medium truck volume :  1609/179   veh/TimePeriod  *
Heavy truck volume  :  1316/146   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  32500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.50
    Heavy Truck  % of Total Volume     :   4.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: HurontarioNB (day/night)
------------------------------------------------
Angle1   Angle2           : -30.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  97.00 / 97.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   9.00 m
Reference angle           :   0.00

Results segment # 1: HurontarioSB (day)
---------------------------------------

Source height = 1.46 m

ROAD (0.00 + 59.01 + 0.00) = 59.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -30     90   0.39  71.90   0.00 -10.41  -2.49   0.00   0.00   0.00
59.01
-------------------------------------------------------------------------
---

Segment Leq : 59.01 dBA

Results segment # 2: HurontarioNB (day)
---------------------------------------

Source height = 1.46 m

ROAD (0.00 + 58.14 + 0.00) = 58.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -30     90   0.39  71.90   0.00 -11.28  -2.49   0.00   0.00   0.00
58.14
-------------------------------------------------------------------------
---

Segment Leq : 58.14 dBA

Total Leq All Segments: 61.61 dBA

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

Source height = 1.46 m

ROAD (0.00 + 52.47 + 0.00) = 52.47 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -30     90   0.39  65.37   0.00 -10.41  -2.49   0.00   0.00   0.00
52.47
-------------------------------------------------------------------------
---

Segment Leq : 52.47 dBA

Results segment # 2: HurontarioNB (night)
-----------------------------------------

Source height = 1.46 m

ROAD (0.00 + 51.60 + 0.00) = 51.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -30     90   0.39  65.37   0.00 -11.28  -2.49   0.00   0.00   0.00
51.60
-------------------------------------------------------------------------
---

Segment Leq : 51.60 dBA

Total Leq All Segments: 55.07 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.61
                           (NIGHT): 55.07
```