

Environmental Noise Assessment 80 Thomas Street Mississauga, Ontario

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1.0 INTRODUCTION

Novus Environmental Inc. (Novus) was retained by Dunpar Homes to conduct an Environmental Noise Assessment for the proposed residential development to be located at 80 Thomas Street development in Mississauga, Ontario. This assessment is in support of the Zoning By-law Amendment (ZBA).

1.1 Nature of the Subject Lands

The proposed development is located at 80 Thomas Street, on the northwest corner of the Thomas Street and Joymar Drive intersection in Mississauga, Ontario. The site is currently occupied by a vacant manufacturing plant undergoing demolition.

The proposed development is a seventeen (17) block townhouse complex, each townhouse consisting of three (3) storeys, an above grade basement, and private terraces/rooftop decks. An outdoor amenity area at grade (a tot lot) is also included in the proposed development.

A copy of the site plan, floor plans and elevations are included in **Appendix A**.

1.2 Nature of the Surroundings

The site is located on the northwest corner of the Thomas Street and Joymar Drive intersection.

Immediately surrounding the development to the east are single storey commercial buildings including auto repair and auto body shops. Residential buildings (townhouses and single detached homes) exist immediately north, south and west of the site, while a school is located north beyond the immediate surroundings.

The CP Galt Subdivision rail line is located northeast of the development, along with the GO Streetsville station and parking.

The topography immediately surrounding the proposed development is considered to be essentially flat.

A context plan is shown in **Figure 1**.

PART 1: IMPACTS OF THE ENVIRONMENT ON THE DEVELOPMENT

In assessing potential impacts of the environment on the proposed development, the focus of this report is to assess the potential for:

- 1) Transportation noise impacts from road; and
- 2) Transportation noise and vibration impacts from the rail line.
- 3) Stationary noise impacts from surrounding Industrial facilities.

2.0 TRANSPORTATION NOISE IMPACTS

2.1 Transportation Noise Sources

Transportation noise sources of interest with the potential to produce noise at the proposed development are:

- Roadway traffic along Thomas Street and Joymar Drive;
- GO Train traffic from the Milton Line; and
- CP Galt Subdivision Freight train traffic.

Sound exposure levels at the development due to these sources have been predicted, and this information has been used to identify façade, ventilation, and warning clause requirements.

2.2 Surface Transportation Noise Criteria

2.2.1 MOECC Publication NPC-300

Noise Sensitive Developments

Ministry of the Environment and Climate Change (MOECC) Publication NPC-300 provides sound level criteria for noise sensitive developments. The applicable portions of NPC-300 are Part C – Land Use Planning and the associated definitions outlined in Part A – Background. **Table 1 to Table 4** below summarizes the applicable surface transportation (road and rail) criteria limits.

Location Specific Criteria

Table 1 summarizes criteria in terms of energy equivalent sound exposure (L_{eq}) levels for specific noise-sensitive locations. Both outdoor and indoor locations are identified, with the focus of outdoor areas being communal amenity spaces. Indoor criteria vary with sensitivity of the space. As a result, Bedroom areas have more stringent criteria than Living / Dining room spaces.

Table 1: MOECC Publication NPC-300 Sound Level Criteria for Road and Rail Noise

Type of Space	Time Period	Energy Equivalent Sound Exposure Level $L_{eq}^{[5]}$ (dBA)		Assessment Location
		Road	Rail ^[1]	
Outdoor Living Area (OLA)	Daytime (0700-2300h)	55	55	Outdoors ^[2]
Living / Dining Room ^[3]	Daytime (0700-2300h)	45	40	Indoors ^[4]
	Night-time (2300-0700h)	45	40	Indoors ^[4]
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors ^[4]
	Night-time (2300-0700h)	40	35	Indoors ^[4]

Notes: [1] Whistle noise is excluded for OLA noise assessments, and included for Living / Dining Room and Sleeping Quarter assessments.
 [2] Road and Rail noise impacts are to be combined for assessment of OLA impacts.
 [3] Residence area Dens, Hospitals, Nursing Homes, Schools, Daycares are also included. During the nighttime period, Schools and Daycares are excluded.
 [4] An assessment of indoor noise levels is required only if the criteria in **Table 1** are exceeded.
 [5] L_{eq} – the energy equivalent sound exposure level, integrated over the time period shown.

Outdoor Amenity Areas

Table 2 summarizes the noise mitigation requirements for communal outdoor amenity areas (“Outdoor Living Areas” or “OLAs”). This would include the ground level patios and communal amenity areas on the podium roof.

Table 2: MOECC Publication NPC-300 Outdoor Living Area Mitigation Requirements

Time Period	Equivalent Sound Level in Outdoor Living Area (dBA)	Ventilation Requirements
Daytime (0700-2300h)	≤ 55	• None
	55 to 60 incl.	• Noise barrier OR • Warning Clause A
	> 60	• Noise barrier to reduce noise to 55 dBA OR
		• Noise barrier to reduce noise to 60 dBA and Warning Clause B

Ventilation and Warning Clauses

Table 3 summarizes requirements for ventilation where windows potentially would have to remain closed as a means of noise control. Despite implementation of ventilation measures where required, if sound exposure levels exceed the guideline limits in **Tables 3 and 4**, warning clauses advising future occupants of the potential excesses are required.

Warning clauses also apply to the OLA where an excess of up to 5 dBA over the 55 dBA OLA limit is often acceptable to many, particularly in the context of an urban environment. The OLA warning clause requirements are also summarized in **Table 3**.

Warning Clause requirements are also required by CP and Metrolinx for developments within 300 m of their railway rights-of-way.

Table 3: MOECC Publication NPC-300 Ventilation & Warning Clause Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - Leq (dBA)		Ventilation and Warning Clause Requirements ^[2]
		Road	Rail ^[1]	
Outdoor Living Area	Daytime (0700-2300h)	56 to 60 incl.		Type A Warning Clause
		≤ 55		None
	Daytime (0700-2300h)	56 to 65 incl.		Forced Air Heating with provision to add air conditioning + Type C Warning Clause
		> 65		Central Air Conditioning + Type D Warning Clause
	Night-time (2300-0700h)	51 to 60 incl.		Forced Air Heating with provision to add air conditioning + Type C Warning Clause
		> 60		Central Air Conditioning + Type D Warning Clause

Notes: [1] Rail whistle noise is excluded.

[2] Road and Rail noise is combined for determining Ventilation and Warning Clause requirements.

Building Shell Requirements

Table 4 provides sound level thresholds which if exceeded, require the building shell and components (i.e., wall, windows) to be designed and selected accordingly to ensure that the **Table 1** indoor sound level criteria are met.

Table 4: MOECC Publication NPC-300 Building Component Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - Leq (dBA))		Component Requirements
		Road	Rail ^[1]	
Plane of Window	Daytime (0700-2300h)	> 65	> 60	Designed/ Selected to Meet Indoor Requirements ^[2]
	Night-time (2300-0700h)	> 60	> 55	

Notes: [1] Including whistle noise.

[2] Building component requirements are assessed separately for Road and Railway noise. The resultant sound isolation parameter is required to be combined to determine an overall acoustic parameter.

In addition to the building component criteria outlined in **Table 4**, NPC-300 also includes a façade construction requirement for rail noise only, outlined in **Table 5**. The façade construction requirements are necessary only if the development is located in the first row of dwellings.

Table 5: MOECC Publication NPC-300 Rail Noise Façade Requirements

Assessment Location	Distance to Railway	Leq – 24hr ^{[1] [2]} (dBA)	Noise Control Requirement
Plane of Bedroom Window	Less than 100 m	≤ 60	No additional requirement
		> 60	Brick Veneer or Acoustic Equivalent Required
	Greater than 100 m	≤ 60	No additional requirement
		> 60	No additional requirement

Notes: [1] Assessed for developments located within the first row of dwellings.

[2] Including whistle noise.

Summary of Guidelines

In summary, roadway noise impacts are to be predicted at the plane-of-window for the proposed development. Providing the plane-of-window sound levels exceed the daytime and nighttime sound levels indicated in **Table 4**, the determination of the building façade components is required for meeting the indoor sound level criteria outlined in **Table 1**. In addition, the ventilation requirements and warning clauses are determined, as outlined in **Table 3**, based on the plane-of-window noise levels.

2.2.2 Region of Peel

The Region of Peel guidelines include the General Guidelines for the Preparation of Acoustical Reports in the Region of Peel, dated November 2012 (ROP Guidelines). In general, the Region of Peel guidelines are consistent with the MOECC NPC-300 guidelines. Therefore, the guidelines have not been re-iterated again.

2.3 Traffic Data and Future Projections

2.3.1 Roadway Traffic Data

Road traffic data was obtained from the ROP Guidelines. Commercial traffic breakdown (medium trucks / heavy trucks) was obtained from traffic counts, provided by NexTrans Consulting, the transportation consultants for the project. Copies of all traffic data used can be found in **Appendix B**. **Table 6** summarizes the road traffic volumes used in the analysis.

Table 6: Summary of Road Traffic Data Used in the Transportation Noise Analysis

Roadway Link	Ultimate Traffic Volumes (AADT) ^[1]	Day/ Night Volume Split ^[2]		Commercial Traffic Breakdown ^[4]		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Thomas Street	32,400	29,711	2,689	2.4%	0%	50
Joymar Drive	16,200	14,855	1,345	1.8%	0%	40

Notes: [1] Region of Peel Ultimate Traffic Volumes were applied.
 [2] The Day/Night split was determined from historic data at Novus.
 [3] Commercial Traffic Break-down was obtained from Turning Movement Counts for Joymar Drive and Thomas Street provided by NexTrans Consulting.

2.3.2 Railway Traffic Data

Railway traffic data for the GO Milton Line was unavailable from Metrolinx at the time of the assessment. Historical Metrolinx railway traffic data for a similar line was used in the analysis.

Rail traffic data for the Canadian Pacific Railway (CP) was obtained from CP. A growth rate of 2.5% was applied to the rail data.

Copies of the rail traffic data is provided in **Appendix B**. The rail traffic data used in the assessment is summarized in **Table 7**.

Table 7: Summary of 2026 Rail Traffic Data Used in the Transportation Noise Analysis

Rail Subdivision	Train Type	No. of Engines	No. of Cars	No. of Trains		Maximum Speed (km/h)
				Daytime (7am to 11pm)	Night-time (11pm to 7am)	
GO Milton Line	Electric GO Train Commuter	1	60	148	32	54 ^[1]
CP Galt	Diesel Freight Train	2	12	31	12	80

Notes: [1] An average speed of 54 km/hr was observed for GO Trains approaching and departing at a distance of approx. 1 km from the GO station.

Warning bells from the GO Trains approaching and departing the station were included in the assessment.

2.4 Projected Sound Levels

Future (2026) road traffic sound levels at the proposed development were predicted using Cadna/A, a commercially available noise propagation modelling software. Sound levels were predicted along the facades of the townhouse blocks using the “building evaluation” feature of Cadna/A. This feature allows for noise levels to be predicted across the entire façade of a structure.

Roadways were modelled as line sources of sound, with sound emission rates calculated using the ORNAMENT algorithms, the road traffic noise model of the MOECC. These predictions are equivalent to those made using the MOECC’s ORNAMENT, RT/Custom or STAMSON v5.04 road traffic noise models.

Future rail operation sound levels at the proposed development were predicted using the FTA/FRA modelling algorithms included in Cadna/A. FTA reference sound levels were used for diesel-electric locomotives, electric locomotive, and rail cars.

Noise from warning bells associated with the GO train were modelled starting at a distance of 1000 m from the station platform, based on observations made by Novus personnel. As the FTA/FRA reference sound levels are for warning horns, and not the typical bells associated with the GO trains, an adjustment was applied. An adjustment of -14 dBA was used, based on the historical Novus sound data for a GO Train bell (approx. L_{Max} of 96 dBA at 15 m).

Predicted worst-case façade sound levels are presented in **Table 8**. The transportation façade sound levels were predicted for the facades of each townhouse block with and without bells. **Figures 2 and 3** show the transportation impacts, including bells, for the daytime and night-time periods, respectively. Transportation impacts, excluding bells, were predicted for the daytime and night-time periods in **Figures 4 and 5**, respectively.

Table 8: Summary of Maximum Predicted Transportation Sound Levels by Block

Townhouse Block	Roadway Sound Levels ^[1]		Railway Sound Levels ^{[1], [2]}		Combined Road and Rail – Incl Bells ^{[1], [3]}		Combined Road and Rail – Excl Bells ^{[1], [3]}	
	L _{eq} Day (dBA)	L _{eq} Night (dBA)	L _{eq} Day (dBA)	L _{eq} Night (dBA)	L _{eq} Day (dBA)	L _{eq} Night (dBA)	L _{eq} Day (dBA)	L _{eq} Night (dBA)
Block A	62	55	58	56	63	58	62	56
Block B	62	54	59	56	63	58	62	57
Block C	62	54	62	59	64	60	62	58
Block D	61	54	62	59	64	60	62	58
Block E	48	41	54	51	55	51	52	49
Block F	53	45	52	49	54	49	53	47
Block G	51	43	51	49	53	49	52	47
Block H	39	31	49	46	49	46	45	43
Block I	35	28	48	45	48	45	44	42
Block J	40	32	50	47	51	48	47	44
Block K	42	35	54	52	55	52	52	49
Block L	46	38	55	53	56	53	53	50
Block M	61	53	61	58	63	59	62	57
Block N	61	53	61	58	63	59	62	57
Block O	61	53	61	59	64	59	62	57
Block P	47	39	54	52	55	52	52	49
Block Q	47	39	54	51	55	51	51	48
Block R	46	38	52	49	53	50	20	47

Notes: [1] Level represents the maximum impact on all façades.

[2] Noise impacts from warning bells are included.

[3] Level represents the maximum combined road and rail impact. Maximum roadway plus railway sound levels may not sum to maximum combined, as locations of maxima vary.

2.5 Façade Recommendations

An assessment of indoor noise levels is required providing the façade sound levels due to road traffic exceed 65 dBA during the daytime and 60 dBA during the night-time periods.

Similarly, an indoor noise levels are assessed providing façade sound levels due to rail traffic exceed 60 dBA during the daytime and 55 dBA during the night-time.

Based on the railway noise levels shown in **Table 8**, façade sound levels were predicted to exceed 55 dBA during the night-time on the façades of Blocks A, B, C, D, M, N and O. Therefore, an assessment of glazing requirements is necessary for meeting the indoor sound level requirements outlined in **Table 1**.

Indoor sound levels and required facade Sound Transmission Classes (STCs) were estimated at the facades identified above using the procedures outlined in National Research Council Building Practice Note BPN-56.

Required STC ratings were estimated for a representative worst-case space for each of the single-row townhouse units and back-to-back townhouse units. Worst-case impacts are predicted to occur in the following spaces:

- Dining room, kitchen and living room in east end unit of Block M (single row townhouse block);
- Smaller, second floor bedroom in east end unit of Block C (single townhouse block); and
- Living room, kitchen, and larger second floor bedroom of the southeast end unit of Block O (back to back townhouse block).

Based on the façade calculations, OBC glazing (STC29) is considered to be sufficient for the assessed worst-case façades. Therefore, upgraded glazing is not required for any townhouse blocks within the development. Detailed façade Calculations are provided in **Appendix C**.

The Acoustical requirements should be reviewed as part of the final design prior to the issuance of building permit drawings.

2.6 Outdoor Living Area

Outdoor living areas (OLA) of the proposed development are as follows:

- Roof Top Decks on back-to-back townhouse blocks (Blocks H, I, K, N, O, P, Q and R)
- Outdoor Amenity Area at grade (a tot lot), along the east side of the development; and
- Elevated Private Terraces on 1st floor of townhouses along the single-row townhouses along the north side of the development (Blocks K, L and M).

Based on a review of the current development floor plans, the private terraces, other than those on the 1st floor of townhouses along the north side of the development, do not meet the MOECC minimum depth requirements of 4 m, and are not considered to be OLAs / open space for the purposes of the guidelines.

Assessment locations are shown in **Figure 6**. The assessment considered only the worst-case Roof Top Deck OLAs (i.e. closest in distance to stationary and transportation noise sources).

The predicted noise impacts from the combined roadways and rail line (noise impacts from warning bells are excluded) are illustrated in **Figure 6** and summarized in the following table:

Table 9: Summary of Road and Rail Noise Impacts - OLAs

Location	Transportation Impacts	Applicable Guideline Limit	Meets Criteria?
	L _{eq} Day (dBA) ^[1]	L _{eq} Day (dBA) ^[2]	(Yes/No)
Grade-level Outdoor Amenity Area (at grade)	56	60	Yes
North Side 1 st Floor Private Terraces	59	60	Yes
Block H Roof Top Deck – East	52	60	Yes
Block I Roof Top Deck – East	51	60	Yes
Block J Roof Top Deck – East	52	60	Yes
Block N Roof Top Deck – Northeast	58	60	Yes
Block N Roof Top Deck – Southeast	58	60	Yes
Block O Roof Top Deck – Northeast	58	60	Yes
Block O Roof Top Deck – Southeast	58	60	Yes
Block P Roof Top Deck – East	55	60	Yes
Block Q Roof Top Deck – East	55	60	Yes
Block R Roof Top Deck – East	54	60	Yes

Notes: [1] Noise impacts from warning bells are excluded

[2] Sound levels up to 60 dBA are allowed with the use of a Type A Warning Clause.

Unmitigated sound levels at the assessed OLAs are predicted to be below 60 dBA. Noise mitigation in the form of noise barriers is not required for the OLAs of the proposed development.

2.7 Ventilation and Warning Clause Requirements

2.7.1 Residential Units

The requirement to include ventilation and warning clauses is summarized in **Table 3**. Based on the predicted sound levels, warning clauses are required to be included in agreements of purchase and sale or lease and rental agreements for the residential units.

Forced air heating with provisions for future installation of central air conditioning, and a **Type C** warning clause, is required for all affected units with façade sound levels from rail traffic that are between 56 and 65 dBA during the daytime, or between 51 and 60 dBA during night-time hours. This includes Blocks A, B, C, D, M, N and O.

In addition, CP and Metrolinx / GO Transit Warning Clauses are also required for all townhouse blocks.

The required warning clauses are outlined in **Appendix D**.

2.7.1 Outdoor Amenity Areas

A **Type A** warning clause related to the increased sound levels for the outdoor amenity areas is required where predicted sound levels are between 55 and 60 dBA. Based on the predicted impacts at worst-case OLAs, this affects Bocks M, N, O, P, Q and R. See **Appendix D** for the **Type A** warning clause.

3.0 STATIONARY SOURCE NOISE IMPACTS

A review has been conducted for the potential impacts on the development from “stationary” industrial/commercial noise sources.

Novus completed a site visit on September 28, 2016 to the development lands and surrounding area. The purpose of the site visit was to identify local industries and to understand the potential for noise impacts on the proposed development. The site was found to be primarily surrounded by commercial and residential lands.

3.1 Guidelines Considered in This Assessment

The following guidelines and requirements were considered in this assessment:

- MOECC Guideline D-6 – Compatibility Between Industrial Facilities And Sensitive Land Uses
- MOECC Noise Guideline Publication NPC-300 – Environmental Noise Guideline, Stationary and Transportation Sources

3.2 MOECC Guideline D-6 Requirements

The D-series of guidelines were developed by the MOECC in 1995 as guidance for recommended separation distances and other control measures for land use planning proposals to prevent or minimize ‘adverse effects’ from the encroachment of incompatible land uses where a facility either exists or is proposed. The guideline specifically addresses issues of odour, dust, noise and litter.

Adverse effect is a term defined in the *Environmental Protection Act* and “means one or more of

- Impairment of the quality of the natural environment for any use that can be made of it,
- Injury or damage to property or to plant or animal life,
- Harm or material discomfort to any person,

- An adverse effect on the health of any person,
- Impairment of the safety of any person,
- Rendering any property or plant or animal life unfit for human use,
- Loss of enjoyment of normal use of property, and
- Interference with the normal conduct of business”.

To minimize the potential to cause an adverse effect, areas of influence and recommended minimum setback distances were included within the guidelines. Guideline D-6 “Compatibility Between Industrial Facilities and Sensitive Land Uses” is specific to industrial uses in proximity to more sensitive land uses such as the proposed Residential development. The areas of influence and recommended separation distances from the guidelines are provided in **Table 10**.

Table 10: Guideline D-6 – Potential Influence Areas and Recommended Minimum Setback Distances for Industrial Land Uses

Industry Classification	Area of Influence	Recommended Minimum Setback Distance
Class I – Light Industrial	70 m	20 m
Class II – Medium Industrial	300 m	70 m
Class III – Heavy Industrial	1000 m	300 m

Industrial categorization criteria are supplied in Guideline D-6-2, and are shown in the following table:

Table 11: Guideline D-6 – Industrial Categorization Criteria

Category	Outputs	Scale	Process	Operations / Intensity	Possible Examples
Class 1	<ul style="list-style-type: none"> • Noise: Sound not audible off-property • Dust: Infrequent and not intense • Odour: Infrequent and not intense • Vibration: No ground-borne vibration on plant property 	<ul style="list-style-type: none"> • No outside storage • Small-scale plant or scale is irrelevant in relation to all other criteria for this Class 	<ul style="list-style-type: none"> • Self-contained plant or building which produces/ stores a packaged product • Low probability of fugitive emissions 	<ul style="list-style-type: none"> • Daytime operations only • Infrequent movement of products and/ or heavy trucks 	<ul style="list-style-type: none"> • Electronics manufacturing and repair • Furniture repair and refinishing • Beverage bottling • Auto parts supply • Packaging and crafting services • Distribution of dairy products • Landry and linen supply

Category	Outputs	Scale	Process	Operations / Intensity	Possible Examples
Class 2	<ul style="list-style-type: none"> Noise: Sound occasionally heard off-property Dust: Frequent and occasionally intense Odour: Frequent and occasionally intense Vibration: Possible ground-borne vibration, but cannot be perceived off-property 	<ul style="list-style-type: none"> Outside storage permitted Medium level of production allowed 	<ul style="list-style-type: none"> Open process Periodic outputs of minor annoyance Low probability of fugitive emissions 	<ul style="list-style-type: none"> Shift operations permitted Frequent movements of products and/ or heavy trucks with the majority of movements during daytime hours 	<ul style="list-style-type: none"> Magazine printing Paint spray booths Metal command Electrical production Manufacturing of dairy products Dry cleaning services Feed packing plants
Class 3	<ul style="list-style-type: none"> Noise: Sound frequently audible off property Dust: Persistent and/ or intense Odour: Persistent and/ or intense Vibration: Ground-borne vibration can frequently be perceived off-property 	<ul style="list-style-type: none"> Outside storage of raw and finished products Large production levels 	<ul style="list-style-type: none"> Open process Frequent outputs of major annoyances High probability of fugitive emissions 	<ul style="list-style-type: none"> Continuous movement of products and employees Daily shift operations permitted 	<ul style="list-style-type: none"> Paint and varnish manufacturing Organic chemical manufacturing Breweries Solvent recovery plants Soaps and detergent manufacturing Metal refining and manufacturing

3.3 Stationary Sources and Compliance with Guideline D-6 Criteria

Novus completed a site visit on September 28, 2016 to the development lands and surrounding area. The purpose of the site visit was to identify local commercial facilities and to understand the potential for noise impacts on the proposed development. The site was found to be primarily surrounded by commercial lands and residential properties. Novus personnel identified autobody paint booth exhaust stacks and periodic impact wrench use from an auto repair shop as the only notable noise sources. No impulsive noise sources were observed to be present during the site visit by Novus personnel.

The Guideline D-6 setback distances from the site are shown in **Figure 7**. Based on a review of the surrounding area:

- There are no Class 1 light industrial land uses within 70 m of the proposed development include the following.
- The Class 2 medium industrial land uses within 300 m of the proposed development include the following:
 - J. Salema & Sons Auto Service Limited (95 Joymar Drive)
 - Modelled stationary sources include one (1) paint booth exhaust stack (see **Figure 8**)
 - Turf Lawn Care & Maintenance Inc. (95 Joymar Drive)
 - Richard's Auto Repair Inc. (66 Thomas Street)
 - Meadowvale Collision Centre Atlantic (66 Thomas Street)
 - L.A. Auto Repairs (66 Thomas Street)
 - Modelled stationary sources include one (1) service bay with pneumatic impact wrenches and one (1) paint booth exhaust stack (see **Figure 8**)
 - Fix Auto Collision (66 Thomas Street)
 - Jorge's Auto Repair (66 Thomas Street)
 - Correct Automotive (64 Thomas Street)
- There are no Class 3 – Heavy Industrial land uses within 1000 m of the proposed development.

Under MOECC Guideline D-6, a detailed assessment of the potential noise impacts of the Class 2 industries listed above is warranted.

All, or sections of, the Class 2 industries listed above lie inside the Recommended Minimum Separation Distance of 70 m for Class 2 industries. For these industries we note the following:

- Under Section 4.10 of Guideline D-6, development is allowed within the Recommended Minimum Separation Distance, provided that the development is infilling, redevelopment or conversion to mixed use development, and that the applicable MOECC noise guidelines are met. The proposed development qualifies as infilling and redevelopment. A detailed assessment of potential noise impacts is provided below.

Based on the stationary noise impact assessment documented in the subsequent sections of this report, the applicable noise guidelines are met.

3.4 MOECC NPC-300 Guidelines for Stationary Noise Sources

The applicable noise guidelines for new industrial land uses and new residential development are provided in MOECC Publication NPC-300. NPC-300 sets out noise limits for two main types of noise sources:

- Non-impulsive, “continuous” noise sources such as ventilation fans, mechanical equipment, and vehicles while moving within the property boundary of an industry. Continuous noise is measured using 1-hour average sound exposures (L_{eq} (1-hr) values), in dBA; and
- Impulsive noise, which is a “banging” type noise characterized by rapid rise time and decay. Impulsive noise is measured using a logarithmic mean (average) level (L_{LM}) of the impulses in a one-hour period, in dBAI.

No impulsive noise sources were observed to be present during the site visit by Novus personnel, or would be anticipated based on the types of surrounding land uses. Impulsive noise impacts are not assessed further.

Furthermore, the guideline requires an assessment at, and provides separate guideline limits for both:

- Outdoor points of reception (e.g., back yards, communal outdoor amenity areas); and
- Plane of windows on the outdoor facade which connect onto noise sensitive spaces, such as living rooms, dens, eat-in kitchens, dining rooms and bedrooms.

The applicable noise limits at a point of reception are the higher of:

- The existing ambient sound level due to road traffic, or
- The exclusion limits set out in the guideline.

The following tables set out the exclusion limits from the guideline.

Table 12: Exclusion Limits for Non-Impulsive Sounds ^[1]

	Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
Plane of Windows	7am to 7 pm	50	50	45	55
	7 pm to 11 pm	50	45	40	55
	11 pm to 7 am	45	45	40	55
Outdoor Points of Reception	7am to 7 pm	50	50	45	60
	7 pm to 11 pm	50	50	40	60
	11 pm to 7 am	n/a	n/a	n/a	n/a

Notes: Outdoor points of reception are not considered to be noise sensitive during the overnight period (11 pm to 7 am) [1] or minimum hourly L_{eq} of background noise, whichever is higher.

3.5 Proposed Area Classification

Based on observations during the site visit, the acoustic environment surrounding the proposed development is dominated by the roadway noise and a general urban hum during all periods of the day. Therefore, the proposed development is considered to be located in an urban area. Thus, for the purposes of this assessment, the proposed development is considered to be located in a **Class 1** area.

3.6 Stationary Noise Modelling

A review has been conducted for the potential impacts on the development from “stationary” noise sources from surrounding commercial and industrial properties. Based on an aerial photography review and a site visit of the proposed development lands and surrounding area on September 28, 2016, noise sources from a number of commercial properties have the potential to cause adverse effects.

An environmental noise assessment was conducted to investigate the potential for impacts on the proposed development. Stationary noise impacts from the surrounding commercial businesses were assessed based on the observed noise during the site visit on September 28, 2016. Observations were made at various times during the mid-afternoon.

Stationary source impact modelling was performed using Cadna/A, a computerized implementation of the ISO 9613 noise propagation algorithms. The model takes into account:

- Source and receiver heights and locations
- Time adjustments for equipment operation
- Distance attenuation
- Screening effects of buildings and noise barriers
- Ground effects
- Worst-case atmospheric and meteorological effects

As described in ISO 9613-2, ground factor values that represent the effect of ground absorption on sound levels range between 0 (perfectly reflective) and 1 (perfectly absorptive). Based on the specific site conditions, the ground factor values used in the modelling ranged from $G = 0$ to $G = 1$, accounting for acoustically reflective (asphalt and concrete) and absorptive surfaces (grass areas) in the area.

Locations of the modelled stationary sources are shown in **Figure 6**. For the assessment of stationary noise impacts, the exclusionary limits were applied.

Sound emission data (sound power levels) for industrial equipment used in the assessment were based on generic data from Novus' in-house database. A summary of the sound power levels and modelling adjustments used in the analysis are included in **Appendix E**.

3.7 Stationary Source Façade Impacts

Modelled stationary noise levels and compliance with the Class 1 guideline limits are summarized in the following table. Predicted daytime façade sound levels are shown in **Figure 6**.

Based on a review of the operational hours of the surrounding commercial facilities, no stationary sources are expected to run in the evening (1900h to 2300h) and night-time (2300h to 0700h) time periods. Therefore, stationary noise impacts were not assessed during the evening and night-time periods.

Table 13: Summary of Stationary Noise Impacts - Façades

Townhouse Block ^[1]	Daytime (0700h to 1900h)	
	Predicted Sound Level ^[2] (dBA)	Meets Applicable Guideline? (Yes/No)
Block A	21	Yes
Block B	23	Yes
Block C	43	Yes
Block D	46	Yes
Block E	41	Yes
Block F	35	Yes
Block G	31	Yes
Block H	29	Yes
Block I	31	Yes
Block J	22	Yes
Block K	19	Yes
Block L	27	Yes
Block M	42	Yes
Block N	47	Yes
Block O	50	Yes
Block P	36	Yes
Block Q	41	Yes
Block R	36	Yes

Notes: [1] See **Figure 1** for corresponding Block locations.

[2] Worst-case façade level.

The applicable MOECC Publication NPC-300 Class 1 exclusionary guideline limits are predicted to be met at all Townhouse Blocks. No additional noise control measures are required.

3.8 Outdoor Points of Reception

The following table provides a summary of the maximum stationary noise impacts at the grade-level Outdoor Amenity Area on the east side of the development and the 1st floor terraces on the north side of the development. Outdoor points of reception were modelled at the worst-case locations of rooftop terraces. Predicted sound levels at each outdoor point of reception are shown in **Figure 9**.

Table 14: Summary of Stationary Noise Impacts – Outdoor Points of Reception

Location ^[1]	Daytime (0700h to 1900h)		Meets Applicable Guideline? (Yes/No)
	Predicted Sound Level ^[2] (dBA)	Applicable Guideline Limit ^[1] L _{eq} Day (dBA)	
Grade-level Outdoor Amenity Area (at grade)	46	50	Yes
North Side 1 st Floor Private Terraces	27	50	Yes
Block H Roof Top Deck – East	30	50	Yes
Block I Roof Top Deck – East	25	50	Yes
Block J Roof Top Deck – East	25	50	Yes
Block N Roof Top Deck – Northeast	35	50	Yes
Block N Roof Top Deck – Southeast	40	50	Yes
Block O Roof Top Deck – Northeast	39	50	Yes
Block O Roof Top Deck – Southeast	37	50	Yes
Block P Roof Top Deck – East	35	50	Yes
Block Q Roof Top Deck – East	41	50	Yes
Block R Roof Top Deck – East	36	50	Yes

Notes: [1] MOECC Exclusionary Limits for a Class I Area has been applied.

The projected sound levels at the OLAs listed in **Table 14** are predicted to meet the applicable guideline limits, thus noise control measures are not required.

3.9 Required Warning Clauses

Since the surrounding stationary noise sources are anticipated to be audible at times, a warning clause should be included in the Agreement of Purchase and Sale or Lease and in the relevant Development Agreements. An MOECC NPC-300 **Type E** warning clause is required for the residential portions of the re-development. See **Appendix D** for warning clause details.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The potential for noise impacts on and from the proposed development have been assessed. Based on the results of our studies, the following conclusions have been reached:

4.1 Transportation Noise

- An assessment of transportation noise impacts has been completed.
- Based on transportation façade sound levels, outlined in **Section 2.4**, glazing meeting the Ontario Building Code is expected to meet the MOECC Publication NPC-300 Building Component Requirements for all townhouse façades. Upgraded glazing is not required for any townhouse blocks. Façade STC requirements should be reviewed by an acoustical consultant once the development design has been finalized.
- Forced air heating with provisions for future installation of central air conditioning is required for Blocks A, B, C, D, M, N and O.
- Warning clauses are required to be included in all agreements of purchase and sale or lease and all rental agreements. A **Type C** Warning Clause is required Blocks A, B, C, D, M, N, and O. CP and Metrolinx / GO Transit Warning Clauses are required for all townhouse blocks (see **Appendix D** for required warning clauses).
- Noise impacts were predicted at the grade-level Outdoor Amenity Area on the east side of the development, the Private Terraces on the north side of the development and the Roof Top Decks. Based on the predicted noise levels at these OLAs, a **Type A** warning clause s is required.

4.2 Stationary Noise

- Significant noise sources identified during the Novus site visit were paint booth exhaust stacks at 95 Joymar Drive and 66 Thomas Street, and pneumatic impact wrenches at a service bay at 66 Thomas Street.
- Stationary noise impacts for the near-by facility sources identified above are predicted to meet the applicable MOECC Publication NPC-300 Class 1 Area criteria for the daytime period. Evening and night-time periods were not assessed since the near-by noise sources are expected to run during daytime periods only. No additional noise control measures are required.

- Noise impacts from the significant noise identified above were predicted at the grade-level Outdoor Amenity Area on the east side of the development, the Private Terraces on the north side of the development and the Roof Top Decks. Noise impacts are predicted to meet the applicable guideline limits, thus noise control measures are not required at these OLAs.
- As required by MOE Publication NPC-300, a Type E noise warning clause should be included in all agreements of purchase and sale or lease and all rental agreements for the residential units, as outlined in **Appendix D**.

5.0 REFERENCES

International Organization for Standardization, ISO 9613-2: Acoustics – Attenuation of Sound During Propagation Outdoors Part 2: General Method of Calculation, Geneva, Switzerland, 1996.

National Research Council, (NRC, 1985). Building Practice Note: Controlling Sound Transmission into Buildings, ISSN 0701-5216

Ontario Ministry of the Environment and Climate Change (MOECC, 1989). Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)

Ontario Ministry of the Environment and Climate Change (MOECC, 1996). STAMSON v5.03: Road, Rail and Rapid Transit Noise Prediction Model

Ontario Ministry of the Environment and Climate Change (MOECC, 2013). Publication NPC-300: Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning

Region of Peel (ROP, 2012): General Guidelines for the Preparation of Acoustical Reports in the Region of Peel

U.S. Department of Transportation - Federal Transit Administration (FTA, 2006). *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06
http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf

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Figures

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for 2-sided printing purposes



Aerial Photography from Google Earth

Figure No. **1**
Context Plan

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 3,000
Date: 16/10/12
File No.: 16-0219
Drawn By: SS

novus
ENVIRONMENTAL



Aerial Photography from Google Earth

Figure No. **2**

Modelled Transportation Noise Impacts (Roadway and Railway, including warning bells) – Daytime

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 1,500

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL

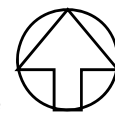


Aerial Photography from Google Earth

Figure No. **3**

Modelled Transportation Noise Impacts (Roadway and Railway, including warning bells) - Night-time

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 1,500

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL

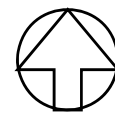


Aerial Photography from Google Earth

Figure No. 4

Modelled Transportation Noise Impacts (Roadway and Railway, excluding warning bells)- Daytime

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 1,500

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL



Aerial Photography from Google Earth

Figure No. 5

Modelled Transportation Noise Impacts (Roadway and Railway, excluding warning bells) - Night-time

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 1,500

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL

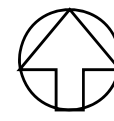


Aerial Photography from Google Earth

Figure No. **6**

Modelled Transportation Impacts (Roadway and Railway, excl. warning bells) at OLAs - Daytime

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 1,500

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL

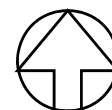


Aerial Photography from Google Earth

Figure No. **7**

Guideline D-6 Setbacks

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 10,000

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL

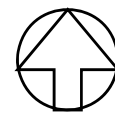


Aerial Photography from Google Earth

Figure No. **8**

Modelled Stationary Noise Source Impacts - Daytime

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 1,700

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL

All OLAs are Roof Top Level OLAs
unless noted otherwise



Aerial Photography from Google Earth

Figure No. 9

Outdoor Living Areas – Stationary Source Impacts

80 Thomas Street
Mississauga, Ontario



True
North

Scale: 1: 1,700

Date: 16/10/12

File No.: 16-0219

Drawn By: SS

novus
ENVIRONMENTAL

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Appendix A

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for 2-sided printing purposes

SCALE 1: 400

10 0 10 20 30 40 60 80metres

David B. Searles Surveying Ltd.

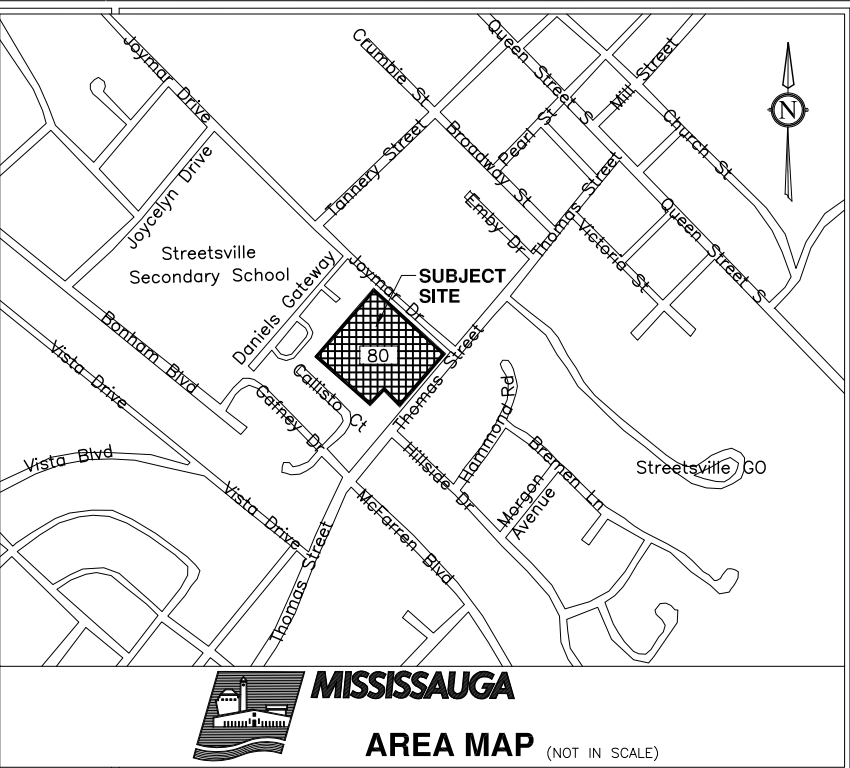
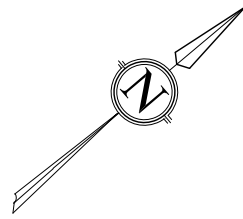
ONTARIO LAND SURVEYORS

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND
CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING NOTE

BEARINGS SHOWN HEREON ARE GRID AND ARE REFERRED TO THE
NORTHERLY LIMIT OF THOMAS STREET AS SHOWN ON PLAN 43R-28302,
HAVING A BEARING OF N39°41'00"E.



MISSISSAUGA
AREA MAP (NOT IN SCALE)

BUILDING DATA

LOT AREA	266,197 FT ²	24,730.56 M ²
2,4731 HA — 6.111 ACRES		
BUILDINGS' AREA	123,832 FT ²	11,504.42 M ²
LOT COVERAGE	= 123,832 / 266,197 = 46.51 %	
GFA OF BUILDINGS	365,353 FT ²	33,942.42 M ²
FLOOR SPACE INDEX (F.S.I.)	= 365,353 / 266,197 = 1.37	
DENSITY	219-UNIT/2,4731 HA	219-UNIT/6.111 ACRES
	86-UNIT/HA	36-UNIT/ACRE
PARKING—PROVIDED		
RESIDENTIAL TOWNHOMES		
BLOCK A-G, K-M:	83x2=166 SPOTS	
BLOCK H-J, N-R:	136x1=136 SPOTS	
	TOTAL =302 SPOTS	
VISITORS PARKING:		
REQUIRED: 219x0.25= 55 SPOTS		
PROVIDED : 57 SPOTS		57 SPOTS
PROPOSED RESIDENTIAL PARKING SPOT SIZE:		
BLOCK A-G, K-M	2.70x5.40 M	
BLOCK H-J, N-R	2.70x5.70 M	
PROPOSED VISITORS PARKING SPOT SIZE (TENDUM)	2.60x6.70 M	
PROPOSED BUILDING HEIGHT:		
(FROM ESTABLISHED GRADE OF BLDG TO THE MIDPOINT FROM EAVE TO TOP OF GABLE)—34.44 FT	10.50 M	
PROPOSED OVERALL HEIGHT:		
(FROM ESTABLISHED GRADE OF BLDG TO TOP OF FLAT ROOF)—40.03 FT	12.20 M	
PAVED AREA (ROADS, LANEWAYS, DRIVEWAYS)	(21.49%) 57,210 FT ²	5,315.00 M ²
BUILDINGS' AREA	(46.51%) 123,832 FT ²	11,504.42 M ²
LANDSCAPED AREA (ABOVE PAVED AREA)	(32.00%) 85,155 FT ²	7,911.14 M ²
LOT AREA	(100.00%) 266,197 FT ²	24,730.56 M ²
AMENITY AREA (FOR RECREABLE DEVELOPMENT)	4535 FT ²	421.34 M ²
NUMBER OF CONDOMINIUM UNITS	219	

BUILDINGS' AREA

BLOCK A	5,946 FT ²	552.42 M ²
BLOCK B	4,439 FT ²	412.36 M ²
BLOCK C	5,946 FT ²	552.42 M ²
BLOCK D	5,939 FT ²	551.71 M ²
BLOCK E	4,439 FT ²	412.36 M ²
BLOCK F	5,900 FT ²	548.11 M ²
BLOCK G	7,761 FT ²	721.05 M ²
BLOCK H	8,564 FT ²	795.65 M ²
BLOCK J	7,681 FT ²	713.59 M ²
BLOCK K	5,337 FT ²	495.80 M ²
BLOCK L	5,882 FT ²	546.48 M ²
BLOCK M	5,925 FT ²	550.48 M ²
BLOCK N	7,029 FT ²	656.66 M ²
BLOCK O	6,888 FT ²	639.97 M ²
BLOCK P	8,897 FT ²	826.57 M ²
BLOCK Q	8,897 FT ²	826.57 M ²
BLOCK R	8,897 FT ²	826.57 M ²
TOTAL	123,832 FT ²	11,504.42 M ²

GFA OF BUILDINGS

GROSS FLOOR AREA (GFA) OF BUILDINGS	
BLOCK A	15,744 FT ² — 1,462.67 M ²
BLOCK B	11,754 FT ² — 1,091.98 M ²
BLOCK C	15,744 FT ² — 1,462.67 M ²
BLOCK D	15,725 FT ² — 1,460.90 M ²
BLOCK E	11,754 FT ² — 1,091.98 M ²
BLOCK F	15,622 FT ² — 1,451.33 M ²
BLOCK G	20,556 FT ² — 1,909.72 M ²
BLOCK H	23,895 FT ² — 2,219.92 M ²
BLOCK I	23,895 FT ² — 2,219.92 M ²
BLOCK J	21,431 FT ² — 1,991.00 M ²
BLOCK K	16,884 FT ² — 1,568.58 M ²
BLOCK L	18,674 FT ² — 1,734.87 M ²
BLOCK M	18,775 FT ² — 1,744.26 M ²
BLOCK N	23,350 FT ² — 2,169.29 M ²
BLOCK O	222,882 FT ² — 2,125.81 M ²
BLOCK P	29,556 FT ² — 2,745.84 M ²
BLOCK Q	29,556 FT ² — 2,745.84 M ²
BLOCK R	29,556 FT ² — 2,745.84 M ²
TOTAL	365,353 FT ² — 33,942.42 M ²

VISITORS' PARKING REQUIRED:
219 x 0.25 = 55 SPOTS
PROVIDED: 57 SPOTS

TO	ISSUED FOR RE-ZONING	OCT. 14 / 2016	OP
BY	REVISION OF ROAD CURBS & SIDEWALKS ON BOTH ROADS	SEPT. 22 / 2016	OP
FOR	REVIEWS	REV. 3	2016
NO.	REVISIONS	DATE	BY

CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY
DISCREPANCIES TO OP DESIGN INC. BEFORE PROCEEDING WITH THE WORK
DO NOT SCALE THE DRAWINGS

PROJECT

80 THOMAS STREET
MISSISSAUGA • ONTARIO

PROPOSED
218-UNIT CONDOMINIUM TOWNHOMES

SCALE 1:400

DRAWING TITLE

SITE PLAN

OWNER/DEVELOPER

1672736
ONTARIO INC.

OP DESIGN INC.

105 SIX POINTS ROAD
TORONTO (ETOBICOKE), ONTARIO M8B 2K3

7825 BAYVIEW AVE., SUITE 505
THORNHILL, ONTARIO, L3T 7N9
TEL: (416) 404-1370
E-MAIL: info@opdesign.com

DESIGNED AND PREPARED BY OTTO PALFY INTERN ARCHITECT

CHECKED BY J. Z.

DATE APRIL 25/2016

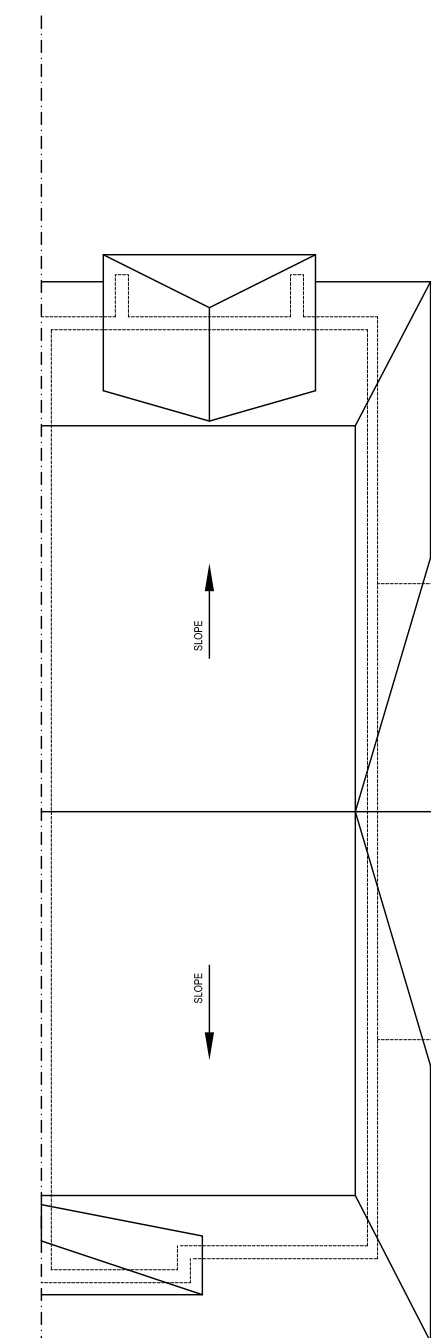
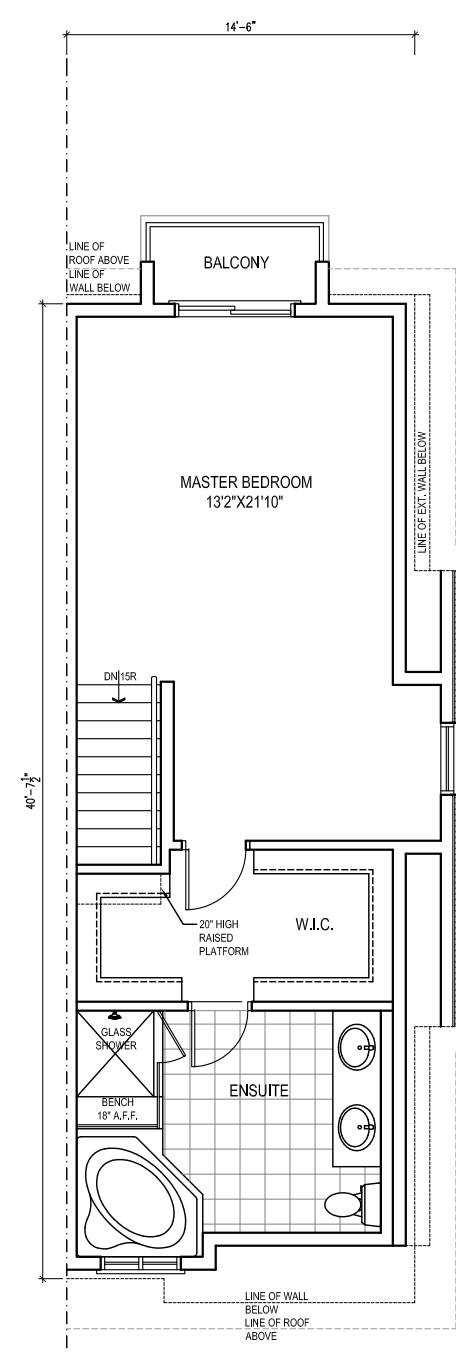
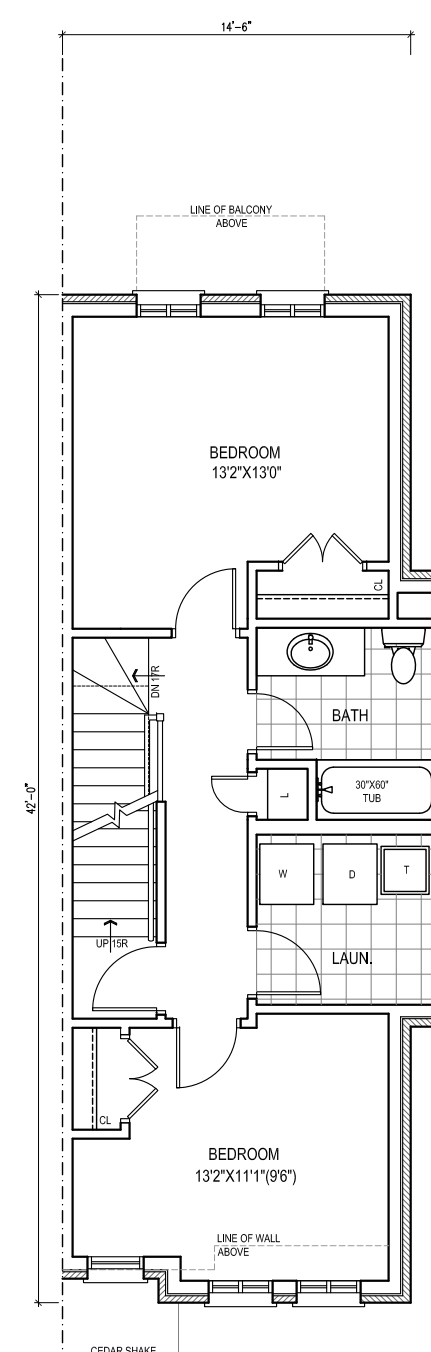
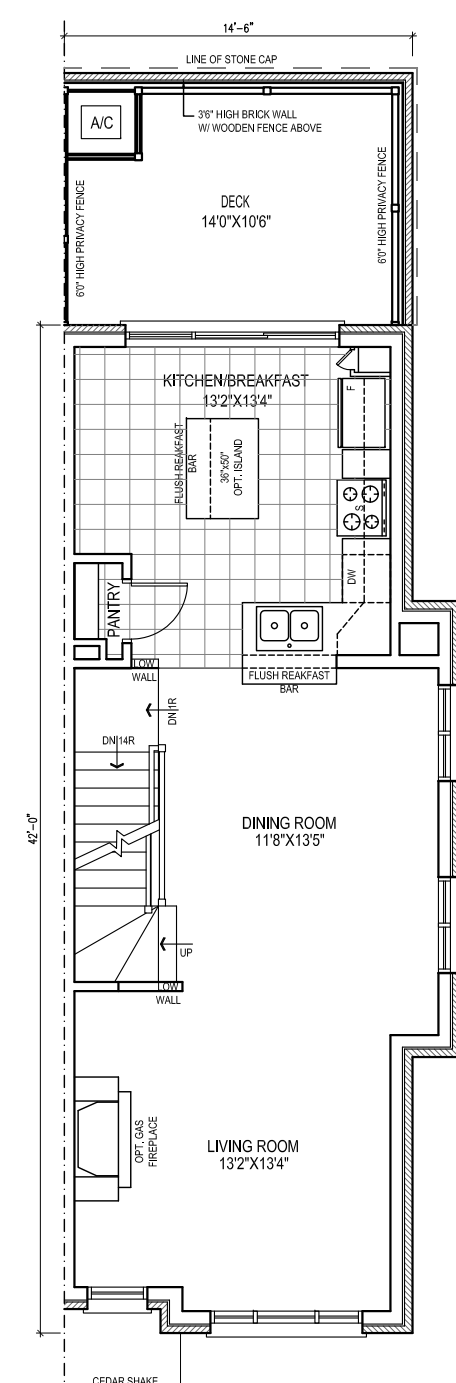
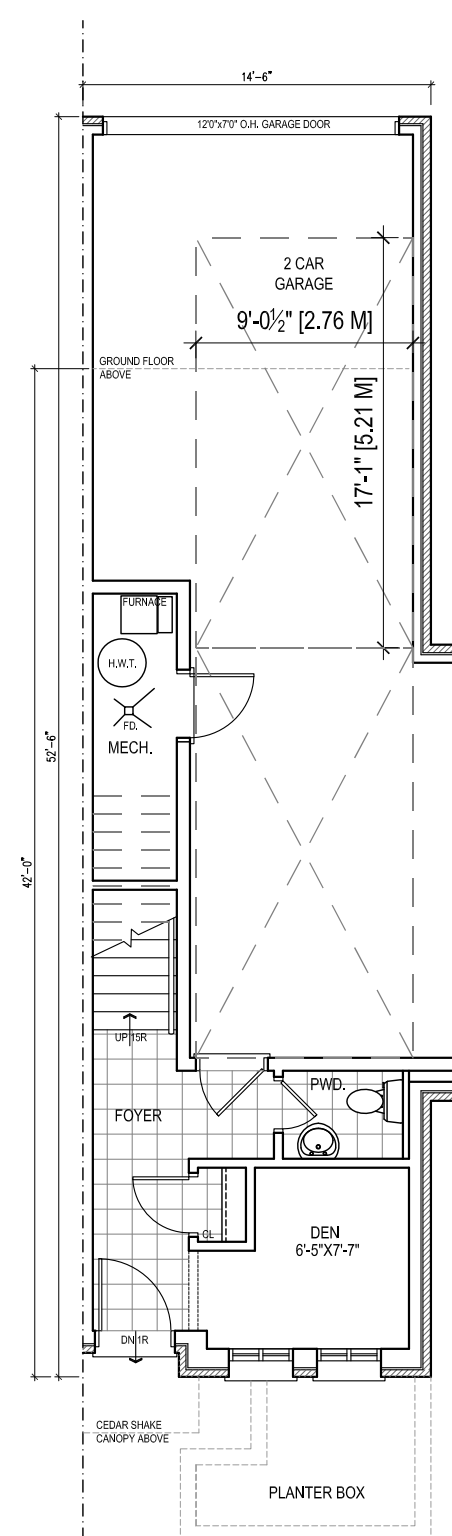
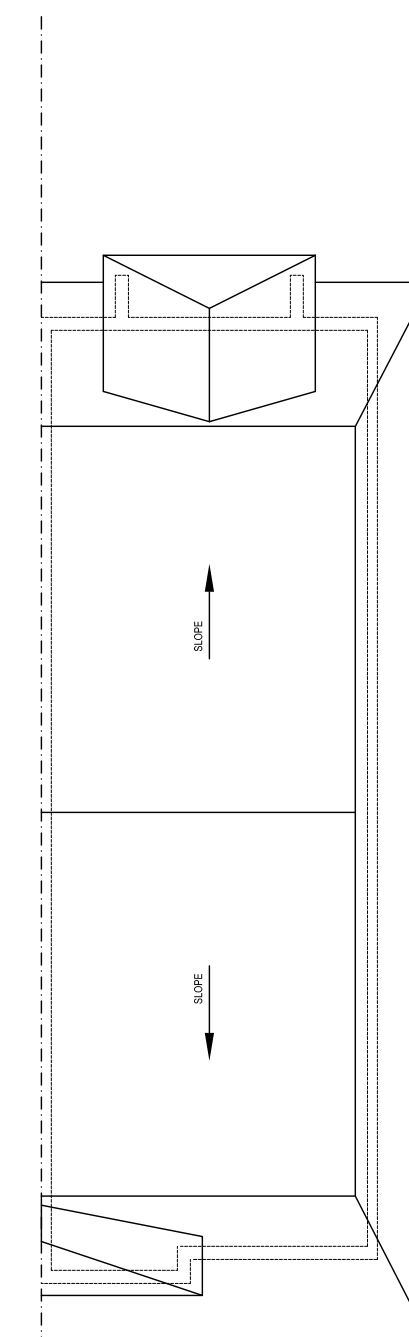
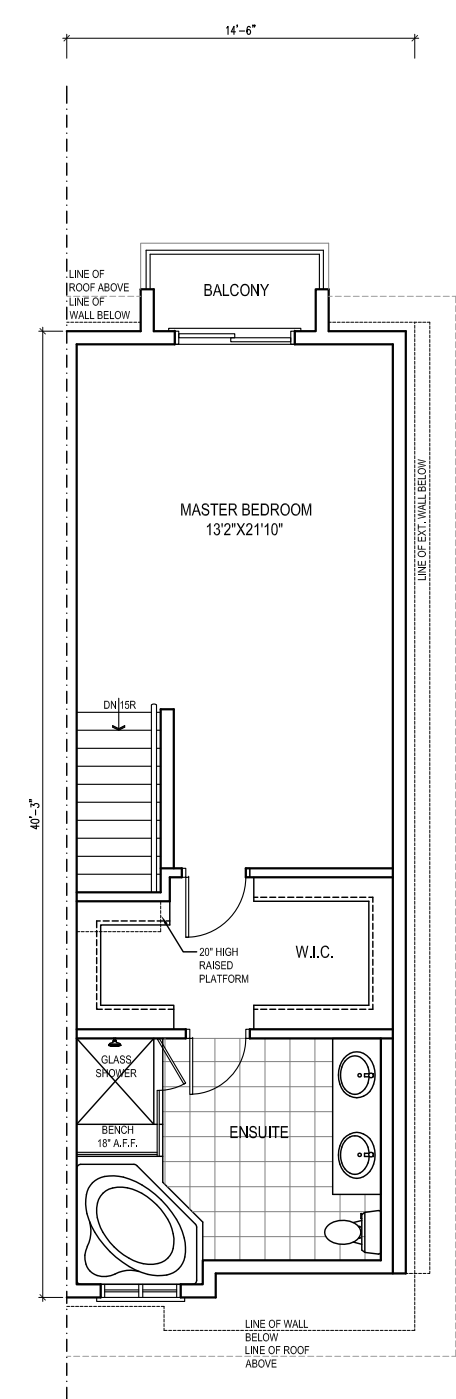
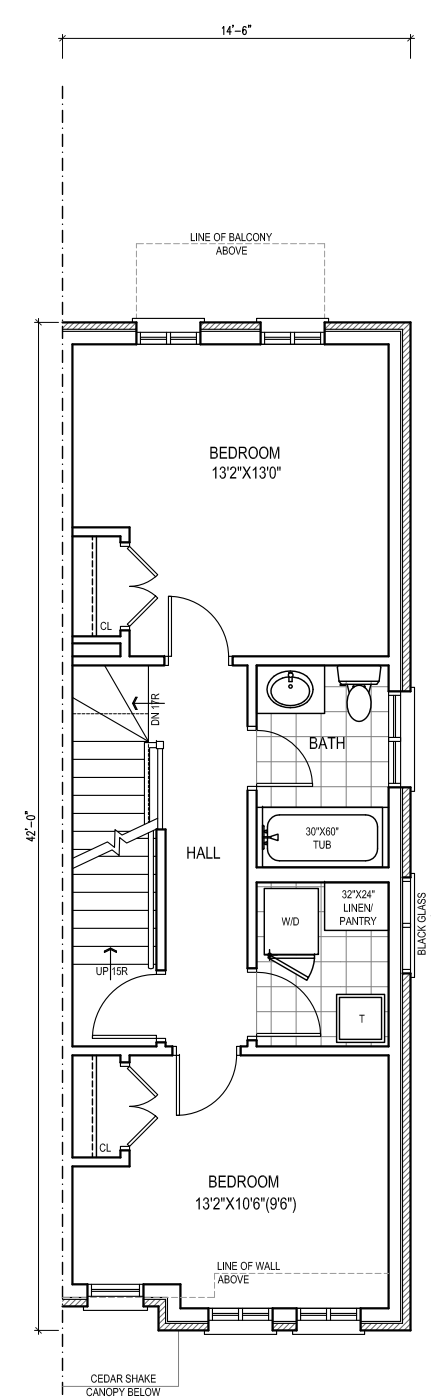
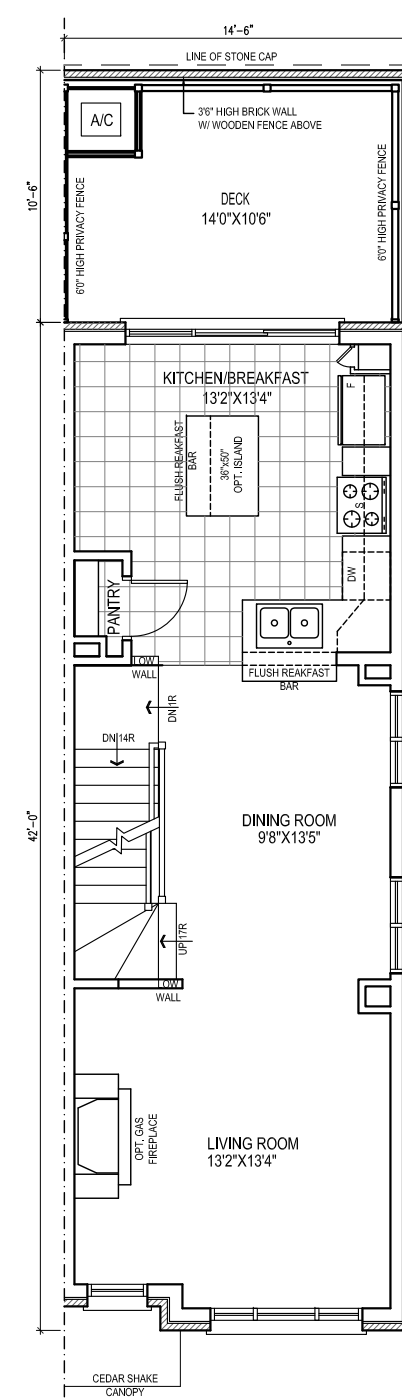
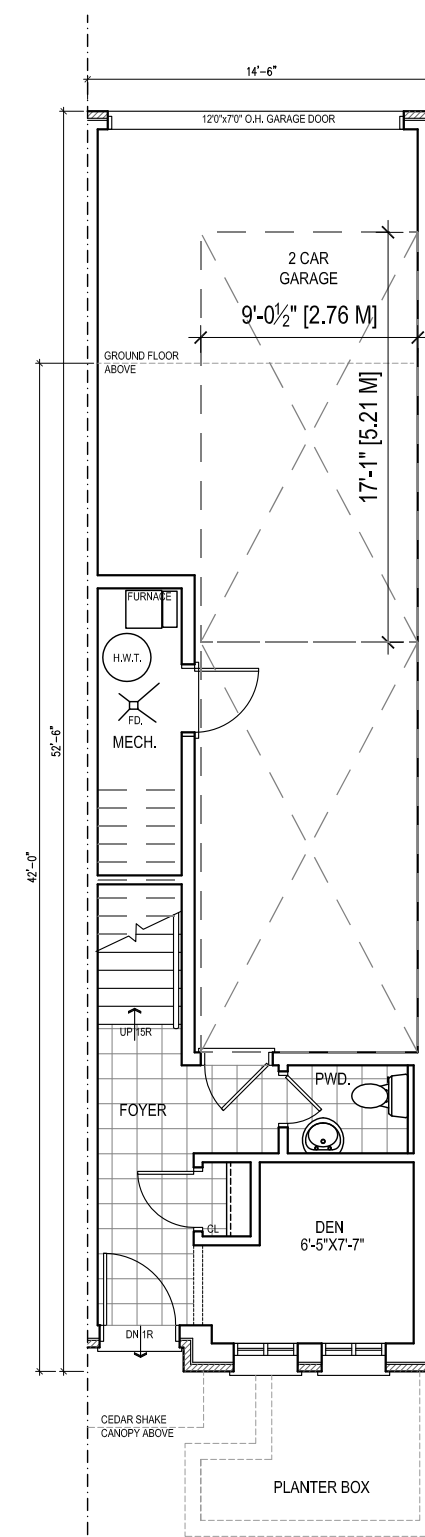
ISSUED

PROJECT NO 2016-022

DRAWING NO

PROJ 1-400
80 THOMAS ST-A-1-08

SP-1



CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO OP DESIGN INC. BEFORE PROCEEDING WITH THE WORK DO NOT SCALE THE DRAWINGS

[illegible]

AREA DATA	A-EHV, AB		AE		AE-2		AE-3		AE-4	
	SF	M2	SF	M2	SF	M2	SF	M2	SF	M2
FIRST FLOOR	586.00	54.25	605.00	56.20	643.00	59.73	648.00	60.02	814.00	81.19
SECOND FLOOR	586.00	54.25	605.00	56.20	643.00	59.73	648.00	60.02	814.00	81.19
THIRD FLOOR	552.75	51.62	560.00	52.08	598.00	55.35	575.00	53.87	615	61.87
SUBT. EXCL. F.N.	7,723.70	711.00	17,701.14	1,648.58	22,664.80	2,132.87	18,611	1,748.00	12,568	1,180.58
FINISHED BASEMENT	214.96	19.71	221.14	20.58	229.81	20.99	229.81	20.93	236.96	26.60
TOTAL INCL. FIN. FLOOR	1,038.66	100.11	1,092.22	103.07	1,279.51	1,204.63	1,092.37	1,234.00	214.96	214.96
BASEMENT										
WALL										

NOTE:
ALL FLOOR AREA INCLUDES STAIRS ARE TAKEN TO THE OUTSIDE FACE OF EXTERIOR WALL GRADE IS NOT INCLUDED IN GROUND FLOOR AREA.

NOTE:
ALL FLOOR AREAS INCLUDE STAIRS ARE TAKEN TO THE OUTSIDE FACE OF EXTERIOR WALL; GARAGE IS NOT INCLUDED IN GROUND FLOOR AREA.

PROJECT:

80 THOMAS STREET

80 THOMAS STREET
MISSISSAUGA, ONTARIO

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

DRAWING TITLE:


MODELS AE & AE-2
FLOOR PLANS

OWNER/DEVELOPER:

1672736

**ONTARIO
CORP.**

105 SIX POINT ROAD
TORONTO (ETOBICOKE), ONTARIO, M2X 2X3



OP DESIGN INC.

7825 BAYVIEW AVE., SUITE 405
THORNHILL, ONTARIO, L3T 7N2
TEL: (416) 474-1370
e-mail: ottop@opdesign.com

PREPARED BY		PROJECT NO.
CHECKED BY		
DATE		PAGE NO.
ISSUED		A-2



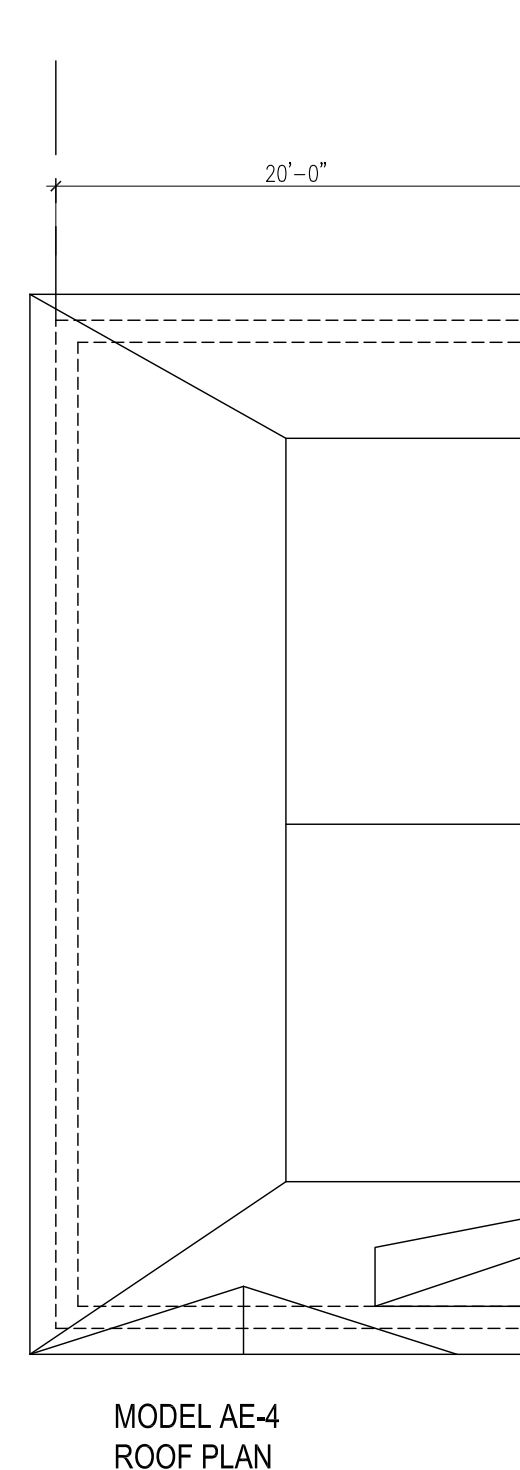
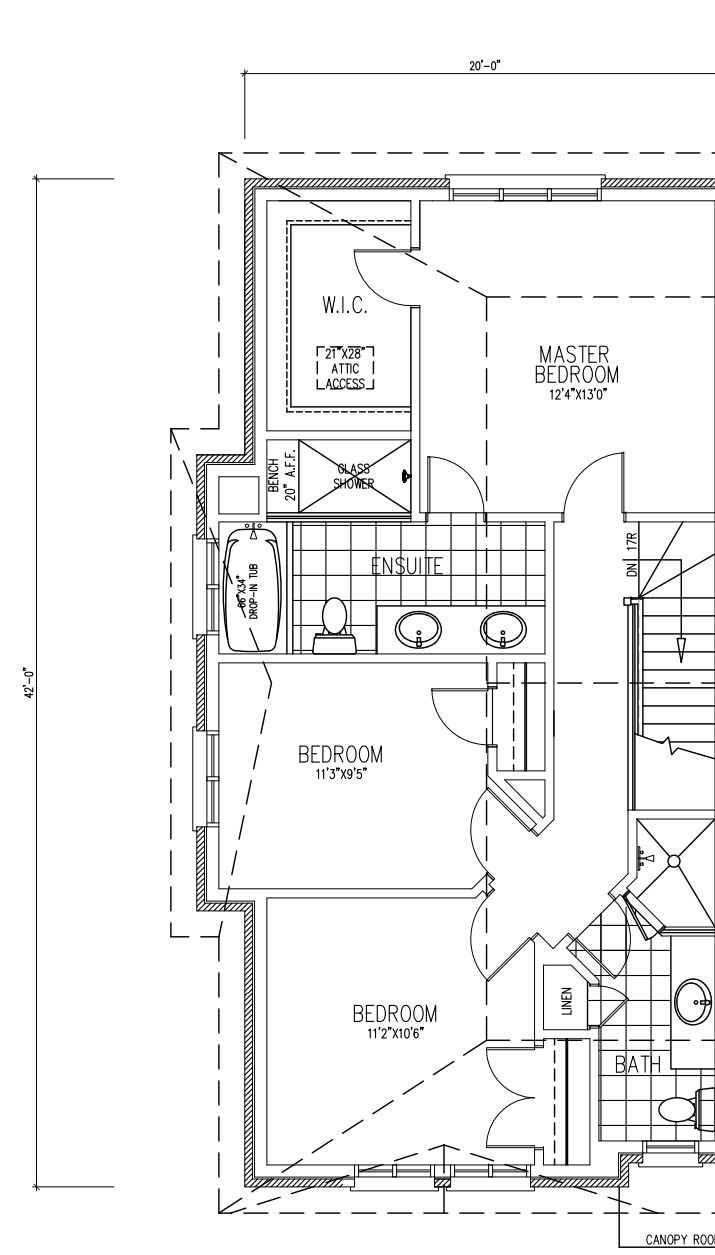
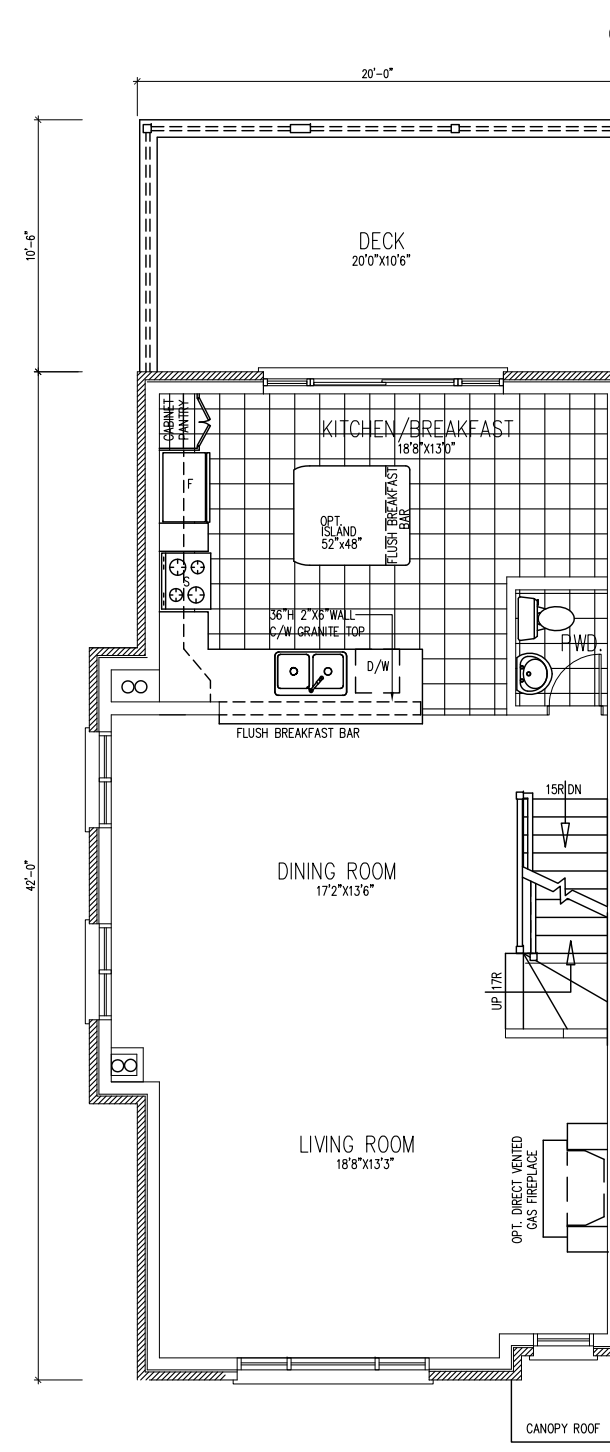
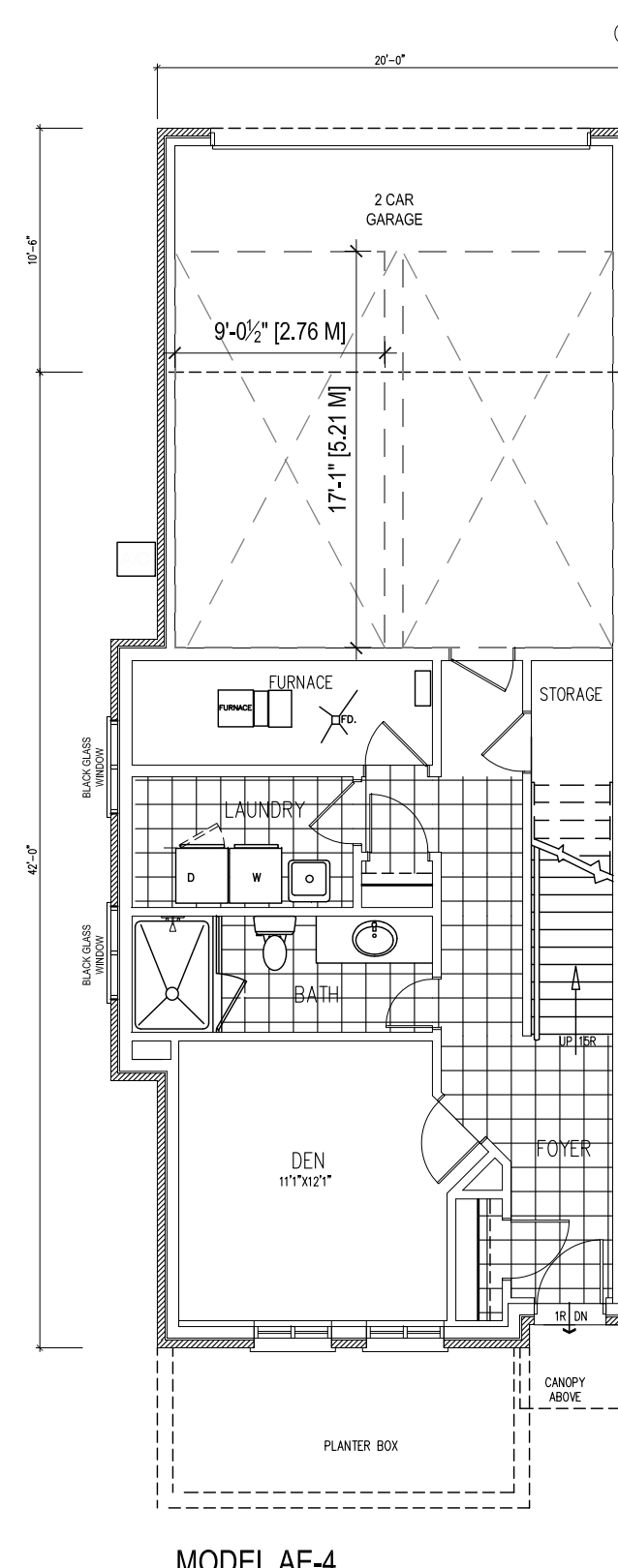
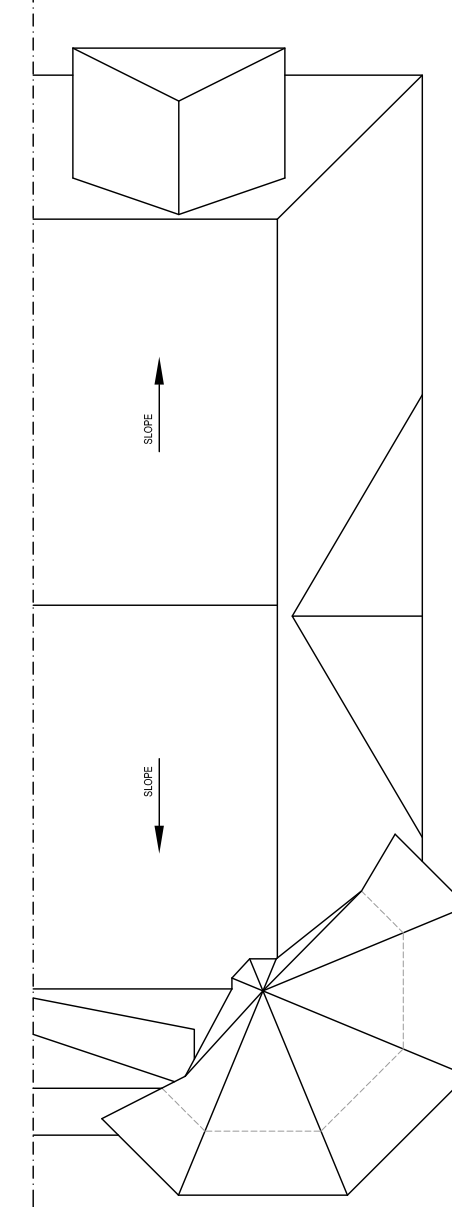
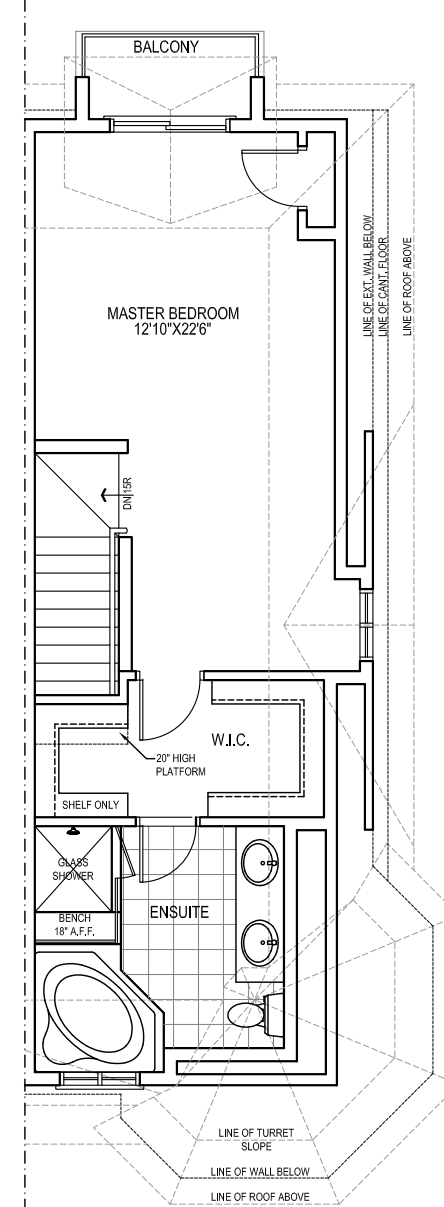
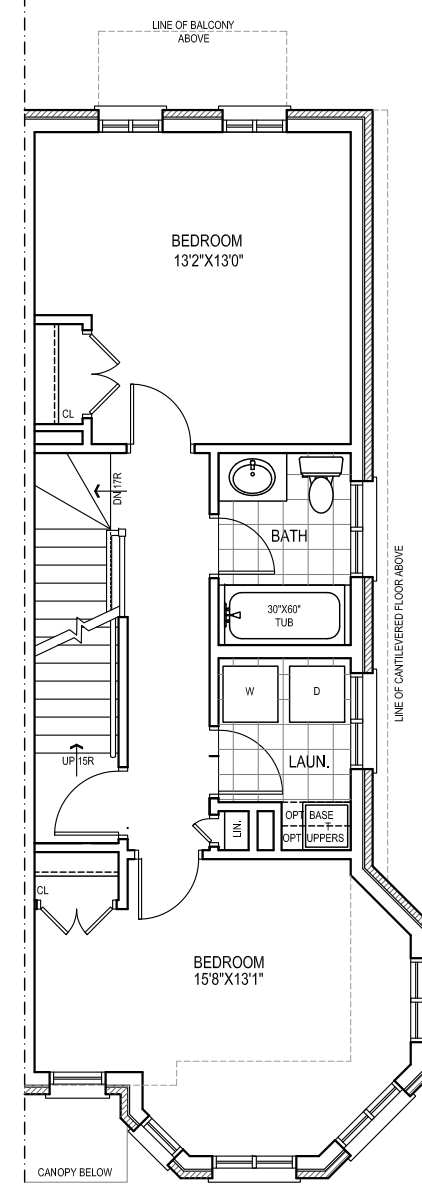
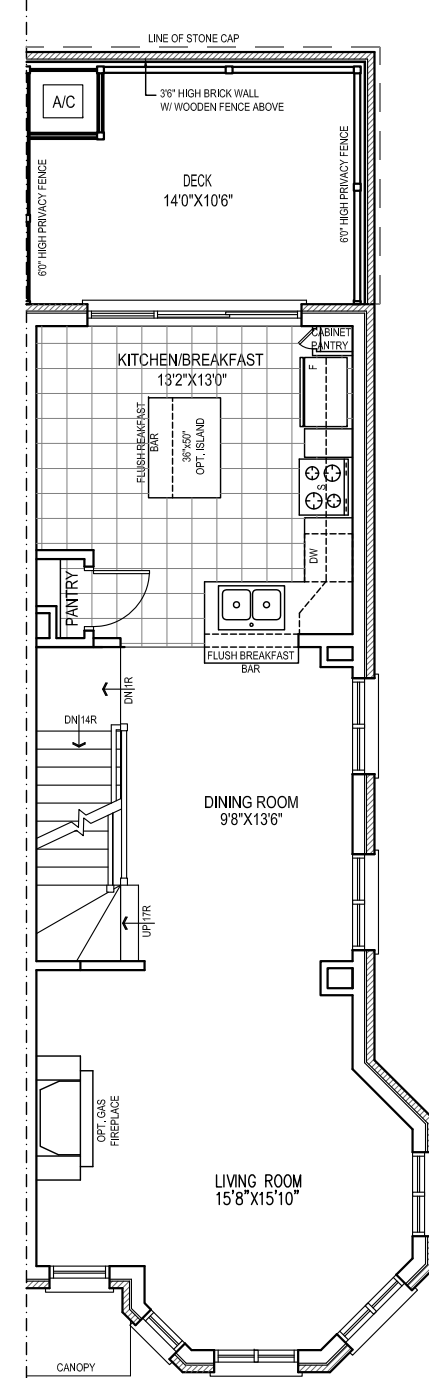
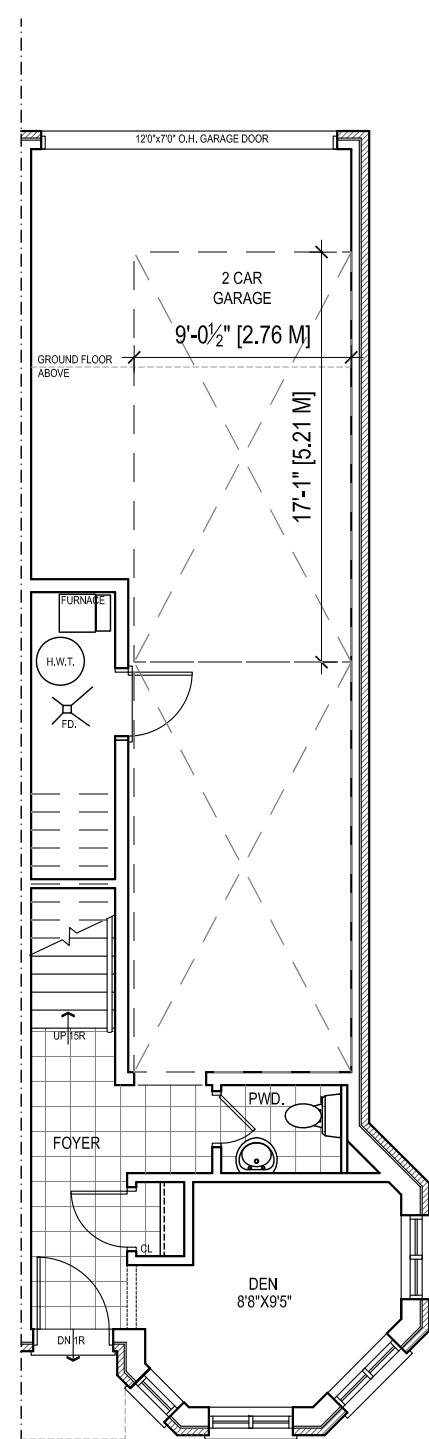
P DESIGN INC.
 5 BAYVIEW AVE., SUITE 505
 RICHMOND HILL, ONTARIO, L3T 7N2
 TEL: (416) 882-4040
 E-MAIL: ottopalfy@rogers.com

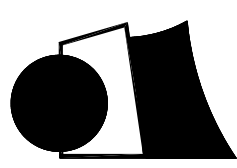
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RICHMOND HILL, ONTARIO, L3T 7N2
TEL.: (647) 404-1370
email: ottopalfy@rogers.com

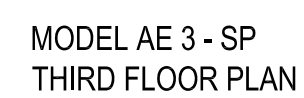
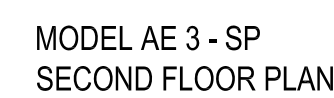
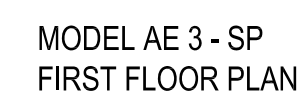
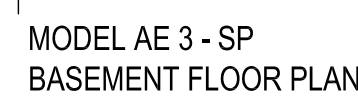
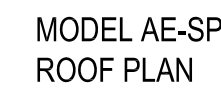
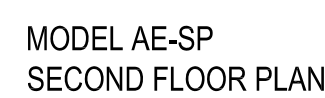
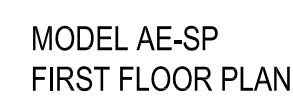
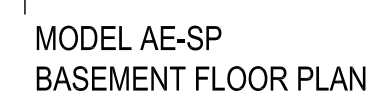
PROJECT NO.	
PAGE NO.	A-2

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PROJECT:		80 THOMAS STREET MISSISSAUGA, ONTARIO	
SCALE:		1/8" = 1'0"	
DRAWING TITLE:		MODELS AE-3&AE-4 FLOOR PLANS	
OWNER/DEVELOPER:			
1627236 ONTARIO CORP.		2820 BAYVIEW AVE., SUITE 507 THORNHILL, ONTARIO, L4T 7N2 TEL: (416) 404-1130 e-mail: atopinfo@opdesign.com	
1105 SIX POINT ROAD TORONTO (ETOBICOKE), ONTARIO, M9Z 2X3			
PREPARED BY	PROJECT NO.		
CHECKED BY			
DATE			
ISSUED			
	PAGE NO.		
	A-3		

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AREA DATA	A-SP	A&B	AE-SP	A&B	AE	3-SP
LOCATION	SF	M2	SF	M2	SF	M2
FIRST FLOOR	584.00	54.25	605.00	56.20	648.00	60.20
SECOND FLOOR	584.00	54.25	605.00	56.20	648.00	60.20
THIRD FLOOR	555.70	51.62	560.61	52.08	515.67	47.91
TOTAL EXCL. FIN. BSMT.	1,723.70	160.13	1,770.61	164.49	1,811.67	168.31
FINISHED BASEMENT	137.03	12.73	139.60	12.97	172.30	16.00
TOTAL INCL. FIN. BASEMENT	1,860.73	172.86	1,910.21	177.46	1,983.97	184.31
COVERAGE						
BUILDING AREA						

NOTE:
ALL FLOOR AREAS INCLUDE STAIRS ARE TAKEN TO THE OUTSIDE FACE OF EXTERIOR WALL; GARAGE IS NOT INCLUDED IN GROUND FLOOR AREA.

PROJECT:	
----------	--

80 THOMAS STREET
80 THOMAS STREET
MISSISSAUGA, ONTARIO

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

DRAWING TITLE:


MODELS AE-SP&AE-3 SP
FLOOR PLANS

OWNER/DEVELOPER:

1672736

**ONTARIO
CORP.**

105 SIX POINT ROAD
TORONTO (ETOBICOKE), ONTARIO, M9Z 2X3

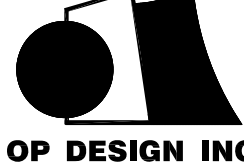


OP DESIGN INC.

7825 BAYVIEW AVE., SUITE 505
THORNHILL, ONTARIO, L3T 7N2
TEL: (416) 404-1370
e-mail: atopall@rogers.com

PREPARED BY		PROJECT NO.
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DATE		PAGE NO. A-5
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<div></div>		
PROJECT: <div>80 THOMAS STREET</div> <div>MISSISSAUGA, ONTARIO</div>		
SCALE: <div>1/8" = 1'0"</div>		
DRAWING TITLE: <div>BLOCK C</div> <div>BLOCK ELEVATIONS</div>		
OWNER/DEVELOPER: <div>1672736</div> <div>ONTARIO</div> <div>INC.</div> <div>1105 SIX POINT ROAD</div> <div>TORONTO (ETOBICOKE), ONTARIO, M8Z 2X3</div>		<div><div>OP DESIGN INC.</div><div>7825 BAYVIEW AVE., SUITE 505</div><div>THORNHILL, ONTARIO, L3T 7W2</div><div>TEL: (416) 494-1370</div><div>E-mail: ontario@opdesigninc.com</div></div>
PREPARED BY		PROJECT NO.
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DATE		PAGE NO.
ISSUED		<div>B-5</div>

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OWNER/DEVELOPER:

1609514

ONTARIO
INC.

105 SIX POINT ROAD
TORONTO (ETOBICOKE), ONTARIO, M2X 2X3



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BLOCK 0
MODEL BE-2
SIDE ELEVATION
UNITS 159&152

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Appendix B

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for 2-sided printing purposes



Peak Hour: 07:30 AM - 08:30 AM Weather:

Start Time	N Approach JOYMAR DR					E Approach TANNERY ST					S Approach JOYMAR DR					W Approach STREETSVILLE SCHOOL DRIVEWAY					Int. Total (15 min)
	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	
07:30:00	4	23	33	9	60	14	5	2	0	21	17	38	9	4	64	0	0	2	7	2	147
07:45:00	6	32	34	19	72	16	5	12	0	33	26	50	16	7	92	0	3	2	20	5	202
08:00:00	4	33	42	25	79	21	17	11	0	49	31	52	22	6	105	17	15	6	20	38	271
08:15:00	1	21	30	5	52	8	0	5	0	13	22	32	0	0	54	0	0	0	10	0	119
Grand Total	15	109	139	58	263	59	27	30	0	116	96	172	47	17	315	17	18	10	57	45	739
Approach%	5.7%	41.4%	52.9%	-	-	50.9%	23.3%	25.9%	-	-	30.5%	54.6%	14.9%	-	-	37.8%	40%	22.2%	-	-	-
Totals %	2%	14.7%	18.8%	-	35.6%	8%	3.7%	4.1%	-	15.7%	13%	23.3%	6.4%	-	42.6%	2.3%	2.4%	1.4%	-	6.1%	-
PHF	0.63	0.83	0.83	-	0.83	0.7	0.4	0.63	-	0.59	0.77	0.83	0.53	-	0.75	0.25	0.3	0.42	-	0.3	-
Heavy	0	4	3	-	7	3	0	3	-	6	4	2	0	-	6	1	0	0	-	1	-
Heavy %	0%	3.7%	2.2%	-	2.7%	5.1%	0%	10%	-	5.2%	4.2%	1.2%	0%	-	1.9%	5.9%	0%	0%	-	2.2%	-
Lights	15	105	136	-	256	56	27	27	-	110	92	170	47	-	309	16	18	10	-	44	-
Lights %	100%	96.3%	97.8%	-	97.3%	94.9%	100%	90%	-	94.8%	95.8%	98.8%	100%	-	98.1%	94.1%	100%	100%	-	97.8%	-
Single-Unit Trucks	0	1	0	-	1	1	0	0	-	1	3	0	0	-	3	0	0	0	-	0	-
Single-Unit Trucks %	0%	0.9%	0%	-	0.4%	1.7%	0%	0%	-	0.9%	3.1%	0%	0%	-	1%	0%	0%	0%	-	0%	-
Buses	0	3	3	-	6	2	0	3	-	5	1	2	0	-	3	1	0	0	-	1	-
Buses %	0%	2.8%	2.2%	-	2.3%	3.4%	0%	10%	-	4.3%	1%	1.2%	0%	-	1%	5.9%	0%	0%	-	2.2%	-
Pedestrians	-	-	-	55	-	-	-	-	0	-	-	-	-	17	-	-	-	-	55	-	-
Pedestrians%	-	-	-	41.7%	-	-	-	-	0%	-	-	-	-	12.9%	-	-	-	-	41.7%	-	-
Bicycles on Crosswalk	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
Bicycles on Crosswalk%	-	-	-	2.3%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	1.5%	-	-
Bicycles on Road	0	1	1	0	-	0	0	0	0	-	0	1	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-



Peak Hour: 05:15 PM - 06:15 PM Weather:

Start Time	N Approach JOYMAR DR					E Approach TANNERY ST					S Approach JOYMAR DR					W Approach STREETSVILLE SCHOOL DRIVEWAY					Int. Total (15 min)
	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	
17:15:00	1	27	14	1	42	25	0	31	2	56	16	20	0	2	36	0	0	1	0	1	135
17:30:00	0	17	11	0	28	22	2	23	0	47	15	17	0	6	32	3	1	0	5	4	111
17:45:00	0	26	11	1	37	28	0	20	0	48	6	18	2	1	26	2	1	0	2	3	114
18:00:00	0	23	15	4	38	18	1	27	0	46	14	23	1	1	38	0	0	0	6	0	122
Grand Total	1	93	51	6	145	93	3	101	2	197	51	78	3	10	132	5	2	1	13	8	482
Approach%	0.7%	64.1%	35.2%		-	47.2%	1.5%	51.3%		-	38.6%	59.1%	2.3%		-	62.5%	25%	12.5%		-	-
Totals %	0.2%	19.3%	10.6%		30.1%	19.3%	0.6%	21%		40.9%	10.6%	16.2%	0.6%		27.4%	1%	0.4%	0.2%		1.7%	-
PHF	0.25	0.86	0.85		0.86	0.83	0.38	0.81		0.88	0.8	0.85	0.38		0.87	0.42	0.5	0.25		0.5	-
Heavy	0	1	0		1	0	0	0		0	0	0	0		0	0	0	0		0	-
Heavy %	0%	1.1%	0%		0.7%	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Lights	1	92	51		144	93	3	101		197	51	78	3		132	5	2	1		8	-
Lights %	100%	98.9%	100%		99.3%	100%	100%	100%		100%	100%	100%	100%		100%	100%	100%	100%		100%	-
Single-Unit Trucks	0	1	0		1	0	0	0		0	0	0	0		0	0	0	0		0	-
Single-Unit Trucks %	0%	1.1%	0%		0.7%	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	6	-	-	-	-	2	-	-	-	-	10	-	-	-	-	13	-	-
Pedestrians%	-	-	-	19.4%	-	-	-	-	6.5%	-	-	-	-	32.3%	-	-	-	-	41.9%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-
Bicycles on Road	0	1	1	0	-	0	0	0	0	-	0	3	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

Extracted from *General Guidelines for the Preparation of Acoustical Reports in the Region of Peel* (November 2012):

Lanes	Future Traffic Volume	Medium Truck %	Heavy Truck %
2	16,200	Truck percentages are determined from actual counts, where available.	
4	32,400		
6	48,100		

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O R N A M E N T - Sound Power Emissions & Source Heights

Ontario Road Noise Analysis Method for Environment and Transportation

Road Segment ID	Roadway Name	Link Description	Speed (kph)	Period (h)	Total Traffic Volumes	Auto %	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorption G	PWL (dBA)	Source Height, s (m)
Joy_avg_D	Joymar Drive	Daytime Impacts	40	16	14855	98.2%	1.8%	0.0%	14588	267	0	0	0.00	75.2	0.5
Joy_avg_N	Joymar Drive	Nighttime Impacts	40	8	1345	98.2%	1.8%	0.0%	1320	24	0	0	0.00	67.7	0.5
Thom_avg_D	Thomas Street	Daytime Impacts	50	16	29711	97.7%	2.4%	0.0%	29013	698	0	0	0.00	81.1	0.5
Thom_avg_N	Thomas Street	Nighttime Impacts	50	8	2689	97.7%	2.4%	0.0%	2626	63	0	0	0.00	73.6	0.5

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September 14, 2016

Via e-mail: lucasa@novusenv.com

Luke Arnold, P.Eng.
Acoustics, Noise & Vibration Engineer
150 Research Lane
Suite 105
Guelph, ON N1G 4T2

Dear Luke:

**Re: Rail Traffic Volumes, CP Mileage 20.67 Galt Subdivision
80 Thomas Street, Mississauga, ON**

This is in reference to your request for rail traffic data for a noise study for the lands located at 80 Thomas Street in the vicinity of CP's Streetsville Station at mile 20.67 of our Galt Subdivision. This corridor is classified as a Principal Main Line.

The information requested is as follows:

1. Number of freight trains 0700 to 2300: 24
Number of freight trains 2300 to 0700: 9
Number of passenger trains (GO Transit*): 20
**GO Transit passenger service runs weekdays between 0620 & 0845 and then between 1630 & 1930.*
2. Average number of cars per train freight: 60
Maximum cars per train freight: 160
Number of cars per train passenger: 13
3. Number of Locomotives per train: 2 (4 max) freight, 1 passenger
4. Maximum permissible speed: 50 mph (freight), 55 mph (passenger)
5. Whistle signal is prohibited approaching public grade crossings through the study area. However, the whistle may be sounded if deemed necessary by the train crew for safety reasons.
6. The subject site is located in the vicinity of CP's Streetsville Station which is a passenger rail station. GO Trains ring their bells when they approach and leave the station.

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

Yours truly,

Josie Tomei
Specialist Real Estate Sales
& Acquisitions – Ontario
905-803-3429. josie_tomei@cpr.ca

Lucas Arnold

From: Brandon Gaffoor <Brandon.Gaffoor@gotransit.com>
Sent: Wednesday, June 15, 2016 12:12 PM
To: Lucas Arnold
Cc: Adam Snow
Subject: RE: Rail Traffic Data Request [REDACTED]

Hello Luke,

Further to your request of June 8, 2016, forecasts for future GO Transit service were revised in October 2015 to reflect the Regional Express Rail (RER) program. It's anticipated that GO Service on the adjacent Stouffville Line (Uxbridge Subdivision) will be comprised of electric trains (with power supplied by overhead catenaries) within (at least) a 10 year time horizon. The preliminary midterm (2025) weekday train volume forecast at this location, including both revenue and equipment trips, is in the order of 180 trains (148 Day, 32 Night). Trains will be comprised of a single locomotive and up to 12 passenger cars.

The maximum design speed on the Stouffville Line, adjacent to the subject site, is 80 kph (50 mph).

This information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

With respect to future electrified rail service, it should be noted that Metrolinx has not made a final decision regarding the electric train technology or technologies to be deployed. Similarly, we are only beginning to understand potential noise and vibration implications associated with electrification. We can, however, provide the following interim information which may be helpful:

1. At lower speeds, train noise is dominated by the powertrain. At higher speeds, train noise is dominated by the wheel- track interaction. Hence, at higher speeds, the noise level and spectrum of electric trains is expected to be very similar, if not identical, to those of equivalent diesel trains.
2. Along with electrification, Metrolinx will intensify service levels along all of its corridors to deliver the promised Regional Express Rail (RER) service. Everything else being equal, this will likely result in an overall increase in train noise emissions.

Given the above considerations, it would be prudent, at this time, to not expect any improvement in noise impacts due to electrification. Additional information regarding specific operational parameters will become available in the near future. General information about the program can be found here:

http://www.gotransit.com/electrification/en/info/fact_sheets.aspx.

~~In regards to double tracking, with the implementation of Regional Express Rail this section of track is anticipated to be double tracked within (at least) a 10 year time horizon. Moreover the intersection of Steeles Avenue East and the Stouffville line, the adjacent rail crossing, is expected to be grade separated within (at least) a 10 year time horizon.~~

I trust that this information is useful. Please feel free to contact me should you have any additional questions. Please keep us informed as this process moves forward.

Brandon Gaffoor

Co-op Student | Rail Corridor Management Office | Rail Corridors
Metrolinx | 335 Judson Street | Toronto | Ontario | M8Z 1B2
✉ | Brandon.Gaffoor@GoTransit.com
☎ | 416.354.7739

Appendix C

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Table C.1: Summary of Required Composite Window STCs

Building	Façade	Non-Glazing Veneer	Glazing											
			Daytime						Night-time					
			Road	Loco	Rail Wheel	Horn	Total STC	Resulting STC Req't	Road	Loco	Rail Wheel	Horn	Total STC	Resulting STC Req't
Block M	Block M Single Row Townhouse, East Façade, Dining Room	54	13	19	13	17			5	16	10	13		
	Block M Single Row Townhouse, North Façade, Kitchen	54	10	16	10	14	25	OBC (25)	2	13	7	10	22	OBC (22)
	Block M Single Row Townhouse, South Façade, Living Room	54	5	16	10	13			-2	13	7	9		
Block C	Block C, Single Row Townhouse, East Façade, Turret Bedroom	54	16	23	17	21			14	25	19	22		
	Block C, Single RowTownhouse, South Façade, Turret Bedroom	54	15	18	13	18	28	OBC (28)	12	20	15	18	29	OBC (29)
Block O	Block O Back to Back Townhouse, East Façade, Living Room	54	12	19	13	17	24	OBC (24)	4	16	10	12	21	OBC (21)
	Block O Back to Back Townhouse, South Façade, Kitchen	54	7	17	12	14			-1	14	8	11		
	Block O, Back to Back Townhouse, East Façade Turret Bedroom	54	14	22	16	20			12	24	18	20		
	Block O, Back to Back Townhouse, South Façade Turret Bedroom	54	10	20	15	17	27	OBC (27)	7	22	16	19	29	OBC (29)

Note: OBC is referred to as any configuration meeting the minimum structural and safety requirements of the Ontario Building Code, which generally produces a minimum STC for glazed elements of STC 29.

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

80 Thomas Project # 16-0219

ROADWAY

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs								Source Inputs			Veneer - Component 1					Glazing - Component 2								
		Façade Sound Level:	Free - field Correction:	Required Indoor Sound Level:	Required Noise Reduction:	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Total Floor Area (m ²)	Veneer Wall Area (m ²)	Glazing Wall Area (m ²)	Veneer as % of Floor Area: (%)	Glazing as % of Floor Area: (%)	Room Absorption:	Incident Sound Angle: (deg)	Angle Correction Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Room Correction	Frequency Correction	Sound Energy Correction	% Total Transmitted Energy (%)	Component Category:	Room Correction	Frequency Correction	% Total Transmitted Energy (%)	Sound Energy Correction	Require Glazing STC (STC)
		(dBA)	(dBA)	(dBA)	(dBA)																									
DAYTIME																														
Block M Single Row Townnhouse, East Façade, Dining Room		61	3	45	19	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	29	5	C. sealed thin window, or openable thick window	-10	4	95	0	13
Block M Single Row Townnhouse, North Façade, Kitchen		57	3	45	15	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	7	39	5	C. sealed thin window, or openable thick window	-9	4	95	0	10
Block M Single Row Townnhouse, South Façade, Living Room		54	3	45	12	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	7	41	5	C. sealed thin window, or openable thick window	-11	4	95	0	5
Block C, Single Row Townhouse, East Façade, Turret Bedroom		61	3	45	19	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	29	5	C. sealed thin window, or openable thick window	-7	4	95	0	16
Block C, Single RowTownhouse, South Façade, Turret Bedroom		62	3	45	20	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	7	29	5	C. sealed thin window, or openable thick window	-9	4	95	0	15
Block O Back to Back Townhouse, East Façade, Living Room		61	3	45	19	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	7	34	5	C. sealed thin window, or openable thick window	-11	4	95	0	12
Block O Back to Back Townhouse, South Façade, Kitchen		55	3	45	13	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	35	5	C. sealed thin window, or openable thick window	-10	4	95	0	7
Block O, Back to Back Townhouse, East Façade Turret Bedroom		60	3	45	18	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	7	31	5	C. sealed thin window, or openable thick window	-8	4	95	0	14
Block O, Back to Back Townhouse, South Façade Turret Bedroom		55	3	45	13	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	35	5	C. sealed thin window, or openable thick window	-7	4	95	0	10
NIGHT-TIME																														
Block M Single Row Townnhouse, East Façade, Dining Room		53	3	45	11	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	37	5	C. sealed thin window, or openable thick window	-10	4	95	0	5
Block M Single Row Townnhouse, North Façade, Kitchen		49	3	45	7	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	7	47	5	C. sealed thin window, or openable thick window	-9	4	95	0	2
Block M Single Row Townnhouse, South Façade, Living Room		47	3	45	5	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	7	48	5	C. sealed thin window, or openable thick window	-11	4	95	0	-2
Block C, Single Row Townhouse, East Façade, Turret Bedroom		54	3	40	17	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	31	5	C. sealed thin window, or openable thick window	-7	4	95	0	14
Block C, Single RowTownhouse, South Façade, Turret Bedroom		54	3	40	17	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	7	32	5	C. sealed thin window, or openable thick window	-9	4	95	0	12
Block O Back to Back Townhouse, East Façade, Living Room		53	3	45	11	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	7	42	5	C. sealed thin window, or openable thick window	-11	4	95	0	4
Block O Back to Back Townhouse, South Façade, Kitchen		47	3	45	5	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	43	5	C. sealed thin window, or openable thick window	-10	4	95	0	-1
Block O, Back to Back Townhouse, East Façade Turret Bedroom		53	3	40	16	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	7	33	5	C. sealed thin window, or openable thick window	-8	4	95	0	12
Block O, Back to Back Townhouse, South Façade Turret Bedroom		47	3	40	10	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	7	38	5	C. sealed thin window, or openable thick window	-7	4	95	0	7

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

80 Thomas Project # 16-0219

RAILWAY - LOCOMOTIVE

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs								Source Inputs			Veneer - Component 1						Glazing - Component 2							
		Façade Sound Level: (dBA)	Free - field Correction: (dBA)	Required Indoor Sound Level: (dBA)	Required Noise Reduction: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Total Floor Area (m ²)	Veneer Wall Area (m ²)	Glazing Wall Area (m ²)	Veneer as % of Floor Area: (%)	Glazing as % of Floor Area: (%)	Room Absorption:	Incident Sound Angle: (deg)	Angle Correction Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Room Correction	Frequency Correction	Sound Energy Correction	% Total Transmitted Energy (%)	Component Category:	Room Correction	Frequency Correction	% Total Transmitted Energy (%)	Sound Energy Correction	Require Glazing STC (STC)
DAYTIME																														
Block M Single Row Townhouse, East Façade, Dining Room		60	3	40	23	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	22	5	C. sealed thin window, or openable thick window	-10	6	95	0	19
Block M Single Row Townhouse, North Façade, Kitchen		56	3	40	19	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	10	32	5	C. sealed thin window, or openable thick window	-9	6	95	0	16
Block M Single Row Townhouse, South Façade, Living Room		58	3	40	21	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	10	29	5	C. sealed thin window, or openable thick window	-11	6	95	0	16
Block C, Single Row Townhouse, East Façade, Turret Bedroom		61	3	40	24	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	21	5	C. sealed thin window, or openable thick window	-7	6	95	0	23
Block C, Single RowTownhouse, South Façade, Turret Bedroom		58	3	40	21	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	10	25	5	C. sealed thin window, or openable thick window	-9	6	95	0	18
Block O Back to Back Townhouse, East Façade, Living Room		61	3	40	24	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	10	26	5	C. sealed thin window, or openable thick window	-11	6	95	0	19
Block O Back to Back Townhouse, South Façade, Kitchen		58	3	40	21	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	24	5	C. sealed thin window, or openable thick window	-10	6	95	0	17
Block O, Back to Back Townhouse, East Façade Turret Bedroom		61	3	40	24	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	10	22	5	C. sealed thin window, or openable thick window	-8	6	95	0	22
Block O, Back to Back Townhouse, South Façade Turret Bedroom		58	3	40	21	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	24	5	C. sealed thin window, or openable thick window	-7	6	95	0	20
NIGHT-TIME																														
Block M Single Row Townhouse, East Façade, Dining Room		57	3	40	20	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	25	5	C. sealed thin window, or openable thick window	-10	6	95	0	16
Block M Single Row Townhouse, North Façade, Kitchen		53	3	40	16	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	10	35	5	C. sealed thin window, or openable thick window	-9	6	95	0	13
Block M Single Row Townhouse, South Façade, Living Room		55	3	40	18	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	10	32	5	C. sealed thin window, or openable thick window	-11	6	95	0	13
Block C, Single Row Townhouse, East Façade, Turret Bedroom		58	3	35	26	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	19	5	C. sealed thin window, or openable thick window	-7	6	95	0	25
Block C, Single RowTownhouse, South Façade, Turret Bedroom		55	3	35	23	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	10	23	5	C. sealed thin window, or openable thick window	-9	6	95	0	20
Block O Back to Back Townhouse, East Façade, Living Room		58	3	40	21	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	10	29	5	C. sealed thin window, or openable thick window	-11	6	95	0	16
Block O Back to Back Townhouse, South Façade, Kitchen		55	3	40	18	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	27	5	C. sealed thin window, or openable thick window	-10	6	95	0	14
Block O, Back to Back Townhouse, East Façade Turret Bedroom		58	3	35	26	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	10	20	5	C. sealed thin window, or openable thick window	-8	6	95	0	24
Block O, Back to Back Townhouse, South Façade Turret Bedroom		55	3	35	23	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	F. diesel railway locomotive	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	10	22	5	C. sealed thin window, or openable thick window	-7	6	95	0	22

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

80 Thomas Project # 16-0219

RAILWAY - WHEEL

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs								Source Inputs			Veneer - Component 1						Glazing - Component 2							
		Façade Sound Level: (dBA)	Free - field Correction: (dBA)	Required Indoor Sound Level: (dBA)	Required Noise Reduction: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Total Floor Area (m ²)	Veneer Wall Area (m ²)	Glazing Wall Area (m ²)	Veneer as % of Floor Area: (%)	Glazing as % of Floor Area: (%)	Room Absorption:	Incident Sound Angle: (deg)	Angle Correction Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Room Correction	Frequency Correction	Sound Energy Correction	% Total Transmitted Energy (%)	Component Category:	Room Correction	Frequency Correction	% Total Transmitted Energy (%)	Sound Energy Correction	Require Glazing STC (STC)
DAYTIME																														
Block M Single Row Townhouse, East Façade, Dining Room		59	3	40	22	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	31	5	C. sealed thin window, or openable thick window	-10	1	95	0	13
Block M Single Row Townhouse, North Façade, Kitchen		55	3	40	18	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	2	41	5	C. sealed thin window, or openable thick window	-9	1	95	0	10
Block M Single Row Townhouse, South Façade, Living Room		57	3	40	20	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	38	5	C. sealed thin window, or openable thick window	-11	1	95	0	10
Block C, Single Row Townhouse, East Façade, Turret Bedroom		60	3	40	23	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	30	5	C. sealed thin window, or openable thick window	-7	1	95	0	17
Block C, Single RowTownhouse, South Façade, Turret Bedroom		58	3	40	21	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	33	5	C. sealed thin window, or openable thick window	-9	1	95	0	13
Block O Back to Back Townhouse, East Façade, Living Room		60	3	40	23	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	35	5	C. sealed thin window, or openable thick window	-11	1	95	0	13
Block O Back to Back Townhouse, South Façade, Kitchen		58	3	40	21	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	32	5	C. sealed thin window, or openable thick window	-10	1	95	0	12
Block O, Back to Back Townhouse, East Façade Turret Bedroom		60	3	40	23	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	31	5	C. sealed thin window, or openable thick window	-8	1	95	0	16
Block O, Back to Back Townhouse, South Façade Turret Bedroom		58	3	40	21	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	32	5	C. sealed thin window, or openable thick window	-7	1	95	0	15
NIGHT-TIME																														
Block M Single Row Townhouse, East Façade, Dining Room		56	3	40	19	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	34	5	C. sealed thin window, or openable thick window	-10	1	95	0	10
Block M Single Row Townhouse, North Façade, Kitchen		52	3	40	15	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	2	44	5	C. sealed thin window, or openable thick window	-9	1	95	0	7
Block M Single Row Townhouse, South Façade, Living Room		54	3	40	17	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	41	5	C. sealed thin window, or openable thick window	-11	1	95	0	7
Block C, Single Row Townhouse, East Façade, Turret Bedroom		57	3	35	25	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	28	5	C. sealed thin window, or openable thick window	-7	1	95	0	19
Block C, Single RowTownhouse, South Façade, Turret Bedroom		55	3	35	23	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	31	5	C. sealed thin window, or openable thick window	-9	1	95	0	15
Block O Back to Back Townhouse, East Façade, Living Room		57	3	40	20	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	38	5	C. sealed thin window, or openable thick window	-11	1	95	0	10
Block O Back to Back Townhouse, South Façade, Kitchen		54	3	40	17	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	36	5	C. sealed thin window, or openable thick window	-10	1	95	0	8
Block O, Back to Back Townhouse, East Façade Turret Bedroom		57	3	35	25	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	29	5	C. sealed thin window, or openable thick window	-8	1	95	0	18
Block O, Back to Back Townhouse, South Façade Turret Bedroom		54	3	35	22	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	31	5	C. sealed thin window, or openable thick window	-7	1	95	0	16

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

80 Thomas Project # 16-0219

RAILWAY - HORN

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs								Source Inputs			Veneer - Component 1						Glazing - Component 2							
		Façade Sound Level: (dBA)	Free - field Correction: (dBA)	Required Indoor Sound Level: (dBA)	Required Noise Reduction: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Total Floor Area (m ²)	Veneer Wall Area (m ²)	Glazing Wall Area (m ²)	Veneer as % of Floor Area: (%)	Glazing as % of Floor Area: (%)	Room Absorption:	Incident Sound Angle: (deg)	Angle Correction Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Room Correction	Frequency Correction	Sound Energy Correction	% Total Transmitted Energy (%)	Component Category:	Room Correction	Frequency Correction	% Total Transmitted Energy (%)	Sound Energy Correction	Require Glazing STC (STC)
DAYTIME																														
Block M Single Row Townhouse, East Façade, Dining Room		63	3	40	26	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	27	5	C. sealed thin window, or openable thick window	-10	1	95	0	17
Block M Single Row Townhouse, North Façade, Kitchen		59	3	40	22	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	2	37	5	C. sealed thin window, or openable thick window	-9	1	95	0	14
Block M Single Row Townhouse, South Façade, Living Room		60	3	40	23	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	35	5	C. sealed thin window, or openable thick window	-11	1	95	0	13
Block C, Single Row Townhouse, East Façade, Turret Bedroom		64	3	40	27	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	26	5	C. sealed thin window, or openable thick window	-7	1	95	0	21
Block C, Single RowTownhouse, South Façade, Turret Bedroom		63	3	40	26	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	28	5	C. sealed thin window, or openable thick window	-9	1	95	0	18
Block O Back to Back Townhouse, East Façade, Living Room		64	3	40	27	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	31	5	C. sealed thin window, or openable thick window	-11	1	95	0	17
Block O Back to Back Townhouse, South Façade, Kitchen		60	3	40	23	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	30	5	C. sealed thin window, or openable thick window	-10	1	95	0	14
Block O, Back to Back Townhouse, East Façade Turret Bedroom		64	3	40	27	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	27	5	C. sealed thin window, or openable thick window	-8	1	95	0	20
Block O, Back to Back Townhouse, South Façade Turret Bedroom		60	3	40	23	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	30	5	C. sealed thin window, or openable thick window	-7	1	95	0	17
NIGHT-TIME																														
Block M Single Row Townhouse, East Façade, Dining Room		59	3	40	22	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	31	5	C. sealed thin window, or openable thick window	-10	1	95	0	13
Block M Single Row Townhouse, North Façade, Kitchen		55	3	40	18	42%	3.2	4.0	12.0	48.0	7.4	5.4	15	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-7	2	41	5	C. sealed thin window, or openable thick window	-9	1	95	0	10
Block M Single Row Townhouse, South Façade, Living Room		56	3	40	19	23%	3.2	4.0	12.0	48.0	9.9	2.9	21	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	39	5	C. sealed thin window, or openable thick window	-11	1	95	0	9
Block C, Single Row Townhouse, East Façade, Turret Bedroom		60	3	35	28	21%	3.2	4.7	4.0	18.8	11.9	3.2	63	17	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	25	5	C. sealed thin window, or openable thick window	-7	1	95	0	22
Block C, Single RowTownhouse, South Façade, Turret Bedroom		58	3	35	26	19%	2.7	4.0	4.7	18.8	8.7	2.1	47	11	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	28	5	C. sealed thin window, or openable thick window	-9	1	95	0	18
Block O Back to Back Townhouse, East Façade, Living Room		59	3	40	22	23%	3.2	4.0	12.2	48.8	9.9	2.9	20	6	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-6	2	36	5	C. sealed thin window, or openable thick window	-11	1	95	0	12
Block O Back to Back Townhouse, South Façade, Kitchen		57	3	40	20	11%	3.2	12.2	4.0	48.8	34.7	4.3	71	9	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	33	5	C. sealed thin window, or openable thick window	-10	1	95	0	11
Block O, Back to Back Townhouse, East Façade Turret Bedroom		59	3	35	27	19%	2.9	4.0	4.7	18.8	9.4	2.2	50	12	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-2	2	27	5	C. sealed thin window, or openable thick window	-8	1	95	0	20
Block O, Back to Back Townhouse, South Façade Turret Bedroom		57	3	35	25	21%	2.9	4.7	4.0	18.8	10.8	2.9	57	15	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	54	D. sealed thick window, or exterior wall, or roof/ceiling	-1	2	28	5	C. sealed thin window, or openable thick window	-7	1	95	0	19

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Appendix D

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Warning Clauses

The following Warning Clauses should be registered on Title and/or included in in all agreements of purchase and sale and/or leases and/or disclosure statements and declarations for any proposed condominium in respect of such sale, lease or condominium:

Type A Purchasers/tenants are advised that sound levels due to increasing rail traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.

Type C Purchasers are advised that the dwelling unit has been or will be fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning by the occupant 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's noise criteria. (Note: The location and installation of an outdoor air conditioning device should be done so as to comply with the noise criteria of MOE Publication NPC-216, Residential Air Conditioning Devices and thus minimize the noise impacts both on and in the immediate vicinity of the subject property.).

Type E Purchasers/tenants are advised that due to the proximity of the adjacent commercial plaza, noise from the rooftop equipment on the commercial plaza may at times be audible.

Metrolinx Purchasers are advised that Metrolinx (Formerly GO Transit) or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject thereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future, including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way.

CP Purchasers or tenants are to be advised that Canadian Pacific Railway or its successors or assigns, have an operating right-of-way within 300 metres from the land subject hereof and there may be alterations to the right-of-way including the possibility that the Railway may expand its operations, which expansion may affect the living environment of the residents notwithstanding the inclusion of noise and vibration attenuating measures in the design of the subdivision and individual units, and that the Railway will not be responsible for complaints or claims arising from the use of its facilities and/or its operations.

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Appendix E

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Table E.1: Summary of Noise Source Sound Power Levels

Source Description	Calculated Sound Power Levels (1/1 Octave Band Levels)									Total PWL (dBA)	Notes
	32	63	125	250	500	1000	2000	4000	8000		
Impact Wrench	98	93	97	91	94	93	101	100	100	106	- Operated during daytime hours only (7 am to 7 pm) - 15 sec duration observed during the mid afternoon period. - Novus historical data - 10 dBA Quasi-Steady penalty included
Paint Booth Exhaust Stack		85	93	92	91	89	88	82	80	94	- Operated during daytime hours only (7 am to 7 pm) - no duty cycling applied - Based on Novus Historical Data

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