Environmental Noise Assessment
1085 Clearview Avenue Residential Development
Burlington, Ontario

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1.0 INTRODUCTION

Novus Environmental Inc. (Novus) was retained by L!V Communities to complete an Environmental Noise Assessment for the proposed 64-66 Masonry Court development located in Burlington, Ontario. This noise study is to be used to support a Zoning By-law Amendment (ZBA) application for the proposed development.

1.1 Focus of Report

In keeping with City of Burlington requirements, this report examines the potential for:

- Impacts of the environment on the proposed development;
- Impacts of the proposed development on the environment; and
- Impacts of the proposed development on itself.

Impacts of the environment on the development are due to transportation (roadway and railway) and stationary noise sources (industrial).

The rooftop mechanical systems associated with the development (e.g. cooling and ventilation equipment) have not been sufficiently designed at this stage and will be assessed at a future date. A general discussion has been included to meet this requirement.

1.2 Nature of the Subject Lands

The site is located 1085 Clearview Avenue & 1082, 1086 and 1090 St. Mathews Avenue, in Burlington, Ontario. The proposed development will include a 6-storey residential building, with one (1) level of underground parking. The east side of the building will be stepped, with private terraces located on the 3rd, 5th and 6th floors. An outdoor amenity space is located along the south side of the building.

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

1.3 Nature of the Surroundings

The lands surrounding the development include residential, commercial and industrial lands. . To the north is the 101 Masonry Court residential development, currently under construction, with the Aldershot GO Station and CN Aldershot Rail Yard located further to the north. To the west are single family homes and commercial lands adjacent to the development. Further to the west, on the opposite side of Waterdown Road are industrial lands (KPM Industries Asphalt Plant, and St. Mary's Cement / CBM Ready Mix Facility). To the south and east are single family home residential lands.

Surrounding transportation sources include the Highway 403 to the north and Waterdown Road to the west. The CN Oakville Subdivision railway is located to the north, which includes GO Train, Freight and VIA rail activity.

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) Roadway and Railway noise impacts on the development; and
2) Stationary noise impacts from the surrounding industries on the development.

2.0 Transportation Noise Impacts

2.1 Transportation Noise Sources

Transportation sources of interest with the potential to produce noise at the proposed development are roadway noise (Highway 403 and Waterdown Road) and railway noise from the CN Oakville Subdivision. The level of noise from these sources has 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 Ministry of the Environment Publication NPC-300

Noise Sensitive Developments

Ministry of the Environment, Conservation and Parks (MECP) 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 3** below summarize applicable surface transportation 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 amenity spaces. Indoor criteria vary with sensitivity of the space. As a result, sleep areas have more stringent criteria than Living / Dining room space.

Table 1: 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 Amenity Area	Daytime (0700-2300h)	55	55	Outdoors [2]
Living / Dining Room [3]	Daytime (0700-2300h)	45	40	Indoors [4]
	Nighttime (2300-0700h)	45	40	Indoors [4]
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors [4]
	Nighttime (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, where applicable.
[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 3** are exceeded.
[5] L_{eq} – the energy equivalent sound exposure level, integrated over the time period shown.

Ventilation and Warning Clauses

Table 2 summarizes requirements for ventilation where windows potentially would have to remain closed as a means of noise control. These requirements apply where the sound exposure levels found in **Table 2** exceed the guideline limits in **Table 1** for indoor spaces. Despite the implementation of ventilation measures where required, some occupants may choose not to use the ventilation means provided, and as such, warning clauses advising future occupants of the potential excess over the **Table 1** guideline limits 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.

Building Shell Requirements

Table 3 provides L_{eq} 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 location criteria are met.

Table 2: NPC-300 Ventilation and Warning Clause Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L_{eq} (dBA)		Ventilation and Warning Clause Requirements [2]
		Road	Rail [1]	
Outdoor Amenity Area	Daytime (0700-2300h)	56 to 60 incl.		Type A Warning Clause
Plane of Window	Daytime (0700-2300h)	≤ 55		None
		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
	Nighttime (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] Whistle noise is excluded.
[2] Road and Rail noise is combined for determining Ventilation and Warning Clause requirements.

Table 3: NPC-300 Building Component Requirements

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

Notes: [1] Including whistle noise.
[2] Building component requirements are assessed separately for Road and Railway, and combined for a resultant sound isolation parameter.

In summary, transportation 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 3**, 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 2**, based on the plane-of-window noise levels.

2.2.2 Halton Region

The Halton Region guidelines include the Noise Abatement Guidelines – Regional Official Plan Guidelines and the Land Use Compatibility Guidelines – Regional Official Plan Guidelines, both dated June 18, 2014. In general, the Halton Region guidelines are consistent with the MECP NPC-300 guidelines, with the exception of the barrier assessment requirements.

2.3 Traffic Data and Future Projections

2.3.1 Roadway Traffic Data

Traffic data was taken from historical projects completed within the area. Ultimate traffic volumes were applied for Highway 403. Traffic count data from the City of Burlington was applied for Waterdown Road and Masonry Court, including a 2% growth rate per year.

The following table summarizes the road traffic data used in the analysis.

Table 4: Summary of Road Traffic Data

Roadway Link	Future Volume (AADT)	Day / Night Volume Split [1]		Commercial Traffic Breakdown		Vehicle Speed (km/h)
		Daytime	Nighttime	Med	Heavy	
Highway 403	220,000	85	15	2.1 %	6.4 %	100
Waterdown Road	18,569	90	10	9.0 %	6.0 %	50
Masonry Court	2,518	90	10	7.5 %	5.0 %	50

Notes: [1] Highway 403 day/night split was applied based on Novus Historical traffic distributions for 400 series highways in urban areas.

2.3.1 Railway Traffic Data

Rail traffic data CN Oakville Subdivision were obtained directly from CN. An annual growth rate of 2.5% was applied to the rail data to reach a 2028 future year. Forecasted GO Train data was provided by Metrolinx. The rail traffic data used in the assessment is summarized in the **Table 5** and included in **Appendix B**.

Table 5: Summary of Rail Traffic Data

Rail	Train Type	2028 No of Trains [1]		Typical No. of Locomotives	Typical No. of Cars	Max Speed (km/h)
		Daytime (7am to 11pm)	Night-time (11pm to 7am)			
Freight[1]	Diesel Locomotive	13	8	4	140	97
Way Freight [1]	Diesel Locomotive	11	4	4	25	97
Passenger (VIA) [1]	Diesel Locomotive	16	0	2	10	153
GO Train [2]	Diesel Locomotive	45	9	1	12	153
GO Train [2]	Electric Locomotive	144	24	1	12	153

Notes: [1] Railway traffic data was grown using a default 2.5% annually to 2028.
[2[Provided as Future volumes

2.4 Projected Sound Levels

Future road traffic sound levels at the proposed development were predicted using Cadna/A, a commercially available noise propagation modelling software. Roadways were modelled as line sources of sound, with sound emission rates calculated using the ORNAMENT algorithms, the road traffic noise model of the MECP.

These predictions were validated and are equivalent to those made using the MECP's ORNAMENT or STAMSON v5.04 road traffic noise models. Copies of validation files are included in **Appendix C**. It should be noted the CadnaA validation modelling was completed for a simplified condition, as the varying ground contour obstructions and curvatures of the road could not be easily transferred to the STAMSON modelling software.

Railway sound levels at the proposed development were predicted using the FTA/FRA modelling algorithms included in the Cadna/A noise propagation modelling software. FTA reference sound levels were used for diesel-electric locomotives, electric locomotives and rail cars, as required.

Sound levels were predicted along the facades of the proposed development using the "building evaluation" feature of Cadna/A. This feature allows for noise levels to be predicted across the entire façade of a structure. Facades considered to be non-noise sensitive (e.g. blank walls, lobby space) were excluded from the analysis.

Ground absorption was assessed as a reflective surface, as the majority of the intervening ground is paved.

Changes in ground elevation contours for the surrounding area were included in the modelling using topography from the City of Burlington Open Data files.

2.4.1 Façade Sound Levels

The façade sound levels were predicted at all noise sensitive spaces within the proposed development. The worst-case façade sound levels for each façade are presented in **Table 6**. The transportation façade sound levels of the development, showing the ranges of predicted daytime and night-time sound levels are shown in **Figure 2a/b, Figure 3a/b**, and **Figure 4a/b** for roadway, railway and the combined road+rail impacts, respectively.

Table 6: Summary of Transportation Façade Sound Levels

Façade	Roadway Sound Levels		Railway Sound Levels [1]		Combined Road and Rail [1]	
	L_{eq} Day (dBA)	L_{eq} Night (dBA)	L_{eq} Day (dBA)	L_{eq} Night (dBA)	L_{eq} Day (dBA)	L_{eq} Night (dBA)
North	68	63	65	63	70	66
East	66	60	62	59	67	63
South	53	48	51	48	55	51
West	65	60	62	60	67	63

Notes: - Sound Levels shown are the maximums along the facade, and are not necessarily for the same location for the various source types.
[1] Including GO Train bells within station.

The façade roadway sound levels are predicted to exceed 65 dBA during the daytime periods, and 60 dBA during the night-time periods on the north east and south facades of the development. Railway noise levels are also predicted to exceed the 60 dBA daytime and 55 dBA night-time levels on the development's north, east and west facades. Therefore, an assessment of indoor sound levels is required.

2.4.2 Outdoor Amenity Areas

Outdoor living areas (OLA) of the proposed development include the at-grade outdoor amenity areas located on the south side of the development, as shown in **Figure 5**.

The predicted noise impacts from the adjacent roadway and rail lines on are summarized in the following table.

Table 7: Summary of Transportation OLA Sound Levels

Location	Road + Rail Impacts L_{eq} Day (dBA)	Applicable Guideline Limit L_{eq} Day (dBA) [1]	Meets Criteria? (Yes/No)
Outdoor Amenity, West	55	55	Yes

Notes: [1] Sound levels up to 60 dBA are allowed with the use of a Type A Warning Clause.

Based on the above, the 55 dBA sound level limit is met and no additional noise control measures are required.

As the development includes a common amenity space for all occupants, the private terraces are not considered to be the only outdoor amenity space available. Therefore, an assessment of private terraces was excluded based on the definitions outlined in NPC-300.

2.5 Façade Recommendations

2.5.1 Glazing Requirements

An assessment of indoor noise levels is required providing the façade sound levels due to road traffic exceed 65 dBA/60 dBA during the daytime/night-time periods. Similarly, an indoor noise level assessment is required providing façade sound levels due to rail traffic exceeding 60 dBA/55 dBA during the daytime/night-time period. Based on the above results, an in-room noise assessment is required for the north, east and south façades of the development for both roadway and railway noise.

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

Detailed floor plans were not available at the time of this assessment. For the analysis, generic bedrooms and living rooms have been considered. The following assumptions have been made regarding window glazing as a percentage of wall area for the development:

- 80% for living rooms and bedrooms
- Non-glazing portions of the wall have an STC rating of 43.

Preliminary acoustical requirements are provided below in **Table 8**. It should be noted that corner units are likely to require an increase of 3 STC points as the space has noise contributions from two (2) exposed sides. Detailed Façade Calculations are included in **Appendix D**.

Table 8: Maximum Façade Glazing Composite STC Requirements

Facade	Living Room (STC)	Bedroom (STC)
North	31	35
East	OBC (28)	33
South	OBC (16)	OBC (20)
West	OBC (28)	32

Notes: - Windows meeting OBC minimum structural and safety requirements will provide a minimum STC 29 rating.

The combined glazing and frame assembly must be designed to ensure the overall sound isolation performance for the entire window unit meets the sound isolation requirements. It is recommended window manufacturers test data be reviewed to confirm acoustical performance is met.

The glazing requirements above are approximated, based on the generic room, façade and glazing dimensions. Once detailed floor plans and façade plans become available, the glazing requirements should be re-assessed and reviewed by an Acoustical Consultant.

2.5.2 Ventilation and Warning Clause Requirements

The requirements regarding warning clauses are summarized in **Table 2**. Where required, the Warning Clauses should be included in agreements registered on Title, and included in all agreements of purchase and sale or lease, and all rental agreements.

Based on the predicted façade noise levels, mandatory air conditioning and a **Type D** Warning Clause will be required for units long the north, east and south façades of the development. The **Type D** warning clause is included in **Appendix E**.

Forced air heating with provisions for future installation of central air conditioning, and a **Type C** warning clause, is required for the south façade units of the development. The **Type C** warning clause is included in **Appendix E**.

In addition, CN and Metrolinx Warning Clauses are also required for all residential suites. The required warning clauses for this development are outlined in **Appendix E**.

2.6 Outdoor Amenity Area Requirements

Sound levels within the outdoor amenity areas are predicted to be at or below 55 dBA. Therefore, no mitigation measures are required, and no warning clauses are required.

3.0 Stationary Source Noise Impacts

3.1 Stationary Noise Sources

3.1.1 Review of the Surrounding Area

A review has been conducted for the potential impacts on the development from “stationary” noise sources in the surrounding area.

Novus completed a site visits in February 2016, and again in October, 2018 to the development lands and surrounding area. The surrounding area primarily includes residential and

commercial/retail lands, with industrial facilities located to the west (approx. 300 m from the development). A context plan is shown in **Figure 1**.

The general ambient environment surrounding the development lands are dominated by roadway noise from Highway 403 during all periods of the day. Railway noise along the CN Oakville subdivision is frequent throughout the day and audible within the area surrounding the development lands.

The industrial facilities located in a 1000 m radius, with a potential to impact the development, are summarized in the **Table 2**. Facilities currently operating under an approved MECP Certificate of Approval (CofA) or Environmental Compliance Approval (ECA) are identified in the following table.

Table 9: Summary of Surrounding Industries with Potential for Noise

Name	Description	Separation Distance	CofA/ECA No.
Aldershot GO Station	GO Train Station	265 m	-
Aldershot Rail Yard	Rail Yard	300 m	-
KPM Industries – Howard Road Plant	Asphalt Plant	360 m	Amended CofA Number 3669-5TPS2E
St. Mary's Cement / CBM Co. – 1093 Howard Road	Ready-Mix Plant	675 m	Amended ECA Number 5639-ABLLKT

3.1.2 Surrounding Industries

Aldershot GO Station

During the overnight period, GO Trains are not kept within the station. Therefore, the station is not considered to be a Layover Yard.

The 5:03 am GO Train was observed to arrive form the east, idle within the GO Station for a 10 minute period prior to departing east bound. In general, through trains were observed to stop for a period of 1 to 3 minutes, where end-of-line trains (arrive from east, then depart east-bound) were observed to stop and idle for a 10-minute period.

During the daytime period, fuel trucks were observed to park within the loading area and await the trains. The truck engines were shut down when fueling was not taking place.

Stationary noise sources modelled for the Aldershot GO Station include idling locomotives and idling fuel trucks. Based on current operations, three (3) GO Trains arrive (westbound), idle for 10 minutes during the stop and depart within a 1 hour period. During the night-time period,

two (2) GO Trains arrive/idle/depart during the worst-case hour. In addition, GO Train fueling was observed to occur during the daytime period.

Source locations are shown in **Figure 6**. Reference sound levels and additional details regarding noise modelling parameters are included in **Table F.1** of **Appendix F**.

Aldershot Rail Yard

Freight trains were observed to move within the Rail Yard during the October 2017 site visits.

Rail car movements were observed to occur periodically during the day. Impulsive noise from rail car movements were not consistently present, where trains of rail cars were observed to come to a complete stop without the associated knuckle-thump impulsive noise. On occasion, a single impulse was observed when the train came to a stop, as opposed to the successive impulses associated with a long train of railway cars.

Noise impacts from the Aldershot Rail Yard were modelled for both continuous and impulsive noise. Three (3) idling locomotives were modelled within the west end of the yard. Impulsive noise was modelled as a line, representing the single impulse within the west end of the yard.

The locations of the above sources are shown in **Figure 6**, with reference sound levels and modelling parameters summarized in **Table F.1** of **Appendix F**.

KPM Industries – Asphalt Plant

During the site visit, the only significant noise sources audible near the KPM Industries property line are an excavator, front end loader and crusher. The KPM Industries operations were observed to be inaudible during all periods of the day at the development lands, due to high ambient noise from highway 403.

Stationary noise sources modelled for the KPM Industries facility include the east end operations (excavator, front end loader and crusher), and the Asphalt Plant located in the west end of the facility.

Figure 6 shows the locations of the above sources. **Table F.1** of **Appendix F** summarizes the reference sound levels and parameters used in the noise modelling.

St. Mary's Cement / CBM Co. – Ready Mix Plant

Similarly to the KPM Industries operations, the ready-mix plant operations were observed to be inaudible at the development land due to the high ambient noise from Highway 403.

Typical noise sources for a ready mix plant include the delivery of cement powder, truck load-out and truck wash/mix. The locations of these sources are shown in **Figure 6**, with reference sound levels and modelling parameters summarized in **Table F.1** of **Appendix F**.

3.2 Stationary Noise Criteria

3.2.1 MECP NPC-300 Guidelines for Stationary Noise Sources

MECP noise guidelines for stationary source noise impacting residential developments are given in MECP publication NPC-300. The applicable portions of NPC-300 are Part C – Land Use Planning and the associated definitions outlined in Part A Background.

The acoustic environment surrounding the proposed development is dominated by the roadway noise from Highway 403 during all periods of the day. Therefore, the proposed development is considered to be located in a Class 1 area, and an assessment of impacts was completed for the daytime/evening (0700h to 2300h) and night-time (2300h to 0700h) periods.

The sound level limit for steady sound sources are expressed as a 1-hr equivalent sound level (1-hr L_{eq}), and is the higher of the NPC-300 exclusionary limits and the existing background sound level. The NPC-300 stationary source noise requirements in a Class 1 Area are summarized in **Table 10** and **Table 11** for steady sound sources and impulsive sources, respectively.

Table 10: NPC-300 Class 1 Continuous Sound Noise Requirements

Receiver Category	Time Period	Exclusionary Sound Level Limits, 1h-L_{eq} (dBA) [1]
Outdoor	0700-1900h	50
	1900-2300h	50
	2300-0700h	-
Plane of Window [2]	0700-1900h	50
	1900-2300h	50
	2300-0700h	45

Notes: [1] or minimum hourly L_{eq} of background noise, whichever is higher
[2] Applicable for "Noise Sensitive Spaces", as defined in NPC-300.

Table 11: NPC-300 Class 1 Impulsive Sound Noise Requirements

Number of Impulses In a 1-Hour Period (7 am to 11 pm) / (11 pm to 7 am)	Outdoor [1] (L_{LM}, dBAI)	Plane of Window (L_{LM}, dBAI)
9 or more	50	50 / 45
7 to 8	55	55 / 50
5 to 6	60	60 / 55
4	65	65 / 60
3	70	70 / 65
2	75	75 / 70
1	80	80 / 75

Notes: [1] Outdoor points of reception are not considered to be noise sensitive during the nigh-time period (11 pm to 7 am)

Since the ambient sound levels were anticipated to exceed the NPC-300 exclusionary limits, sound exposures from roadway noise were assessed and the corresponding applicable guideline limits were determined.

Table 12 summarizes the current road traffic volumes applied in the ambient noise modelling.

Table 12: Summary of Road Traffic Data – Ambient

Roadway Link	Existing Volume (AADT)	Worst-Case Hour for Day / Eve / Night [1]			Commercial Traffic Breakdown [2]		Vehicle Speed (km/h)
		Day	Eve	Night	Med	Heavy	
Highway 403	141,300 [3]	4.7 %	2.8 %	0.7 %	2.1 %	6.4 %	100
Waterdown Road	14,073 [2]	4.3 %	3.1 %	0.4 %	9.0 %	6.0 %	50
Masonry Court	1,908 [2]	4.3 %	3.1 %	0.4 %	7.5 %	5.0 %	50

Notes: [1] Based on Novus Historical data for 400 series highways and arterial roadways within an urban area.
[2] Taken from historical reports within the development area.
[3] Taken from 2016 MTO traffic data.

As with the Transportation assessment, ambient roadway noise was modelled as line sources of sound using the Cadna/A computer model. The minimum hourly L_{eq} for the ambient sound levels were found to exceed the NPC-300 default guideline limits during all periods of the day.

As a conservative assessment of stationary impacts, the daytime/evening operations were considered to be the same, and were assessed against the stricter evening criteria.

For continuous noise, impacts were assessed against the higher of the modelled ambient noise levels and the exclusionary limits in **Table 10**.

As a conservative assessment of impulsive noise, the exclusionary limits have been applied. Railway impulsive noise was not observed to occur more than once per hour, and as indicated above was observed to be a single impulse. Therefore, the exclusionary limits of 80 dBAI and 75 dBAI were applied for the daytime/evening and night-time periods, respectively.

3.2.1 Halton Region

The Halton Region guidelines include the Noise Abatement Guidelines – Regional Official Plan Guidelines and the Land Use Compatibility Guidelines – Regional Official Plan Guidelines, both dated June 18, 2014. The MECP NPC-300 guidelines are referenced in the above documents and have been applied in this assessment of stationary impacts.

3.3 Stationary Noise Modelling

3.3.1 Noise Impact Prediction

Modelling was performed using Cadna/A, a software implementation of the ISO 9613 noise propagation algorithms. The model took into consideration the current full build-out of the development, and the adjacent surrounding buildings.

As described in ISO 9613-2, ground factor values that represent the effect of ground absorption on sound levels range between 0 and 1. Based on the specific site conditions, the ground factor values used in the modelling were a ground factor value of 0 for acoustically reflective surfaces, such as asphalt. Large grassy areas are considered to have a ground factor of 1, and included as localized ground absorption in the modelling. Dirt areas considered to be intermediate ground type with an absorption factor of 0.5.

3.3.2 Façade Levels

The “building evaluation” feature of the Cadna/A was used to assess noise impacts on the residential portions of the towers, podium and townhouse blocks. This feature allows for noise levels to be predicted across the entire façade of a structure.

A sample modelling output file is included in Appendix G. The modelled location is a mid-span receptor on the 6th floor of the development’s north façade. All sources (continuous and impulsive) are included in the file.

Continuous Noise

A summary of the predicted noise impacts on each façade are shown in the following table.

Table 13: Summary of Stationary Façade Sound Levels (Continuous)

Façade	Daytime / Evening (dBA)	Night-time (dBA)
North	56	54
East	54	48
South	45	44
West	50	49

Notes: - Sound Levels shown are the maximums impacts along each facade.

The difference between the existing ambient sound levels and the surrounding stationary noise impacts are shown in **Figure 7a**, and **7b** for daytime/evening and night-time periods, respectively.

The stationary noise impacts were found to be at or below the ambient sound levels for all facades, during all periods of the day. Therefore, the applicable guideline limits are met on all facades of the proposed development and additional noise mitigation measures are not required.

Impulsive Noise

As Aldershot Rail Yard impacts are not expected to change over the periods of the day, impulsive noise is shown against the strictest night-time sound level limits.

A summary of the predicted noise impacts on each façade are shown in the following table.

Table 14: Summary of Stationary Façade Sound Levels (Impulsive)

Façade	Daytime / Evening (dBAI)	Night-time (dBAI)
North	52	52
East	51	51
South	37	37
West	36	36

Notes: - Sound Levels shown are the maximums impacts along each facade.

Noise impacts form a single impulse are shown against the exclusionary NPC-300 sound level limits in **Figure 8a** and **8b** for the daytime/evening and night-time periods respectively.

The impulsive noise from rail car knuckle thumps were found to be below the exclusionary sound levels for all facades, during all periods of the day. Therefore, the applicable guideline limits are met on all facades of the proposed development and additional noise mitigation measures are not required.

3.3.3 Outdoor Amenity Areas

The Outdoor Amenity Areas considered in this assessment include the at-grade outdoor amenity areas on the south side of the development.

Continuous Noise

Sound levels within the outdoor amenity areas are predicted to be 42 dBA and 41 dBA within the west and east outdoor amenity areas, respectively. As the predicted impacts are below daytime/evening limit of 50 dBA, noise mitigation measures and warning clauses are not required.

Impulsive Noise

Impulsive noise levels are predicted to be 28 dBAI and 30 dBAI within the west and east outdoor amenity areas, respectively. Mitigation and warning clauses are not required, as the predicted impacts are below the single impulse criteria of 80 dBAI and the night-time limit of 75 dBAI.

3.4 Required Warning Clauses

Since the surrounding stationary noise sources are anticipated to be audible at times a warning clause should be included in agreements registered on Title, and included in all agreements of purchase and sale or lease, and all rental agreements. An MECP NPC-300 **Type E** warning clause is required, and included in **Appendix E**.

PART 2: IMPACTS OF THE DEVELOPMENT ON THE SURROUNDING AREA

4.0 Impacts of the Development Mechanical Systems on Surrounding Properties

In terms of the noise environment of the area, it is expected that the project will have a negligible effect on the neighbouring properties. The traffic related to the proposed development will be small in relation to the traffic volumes within the area, and is not of concern with respect to noise impact.

Other possible development noise sources with potentially adverse impacts on the surrounding neighbourhood are the mechanical roof-top equipment (cooing tower, make up air units and generator). This equipment is required to meet MECP Publication NPC-300 requirements at the worst-case off-site noise sensitive receptors. Given the high ambient sound levels in the area and the requirement for the systems to meet the applicable noise guideline at closer on-site receptors, off-site impacts are not anticipated.

Regardless, potential impacts should be assessed as part of the final building design. The criteria can be met at all surrounding and on-site receptors by the appropriate selection of mechanical equipment, by locating equipment with sufficient setback from noise sensitive locations, and by incorporating control measures (e.g., silencers, barriers) into the design.

It is recommended the mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment.

PART 3: IMPACTS OF THE DEVELOPMENT ON ITSELF

5.0 Outdoor Noise Impacts from Development Mechanical Systems on Itself

The building mechanical systems (eg. cooling tower, emergency generator, parking garage vents) have not been sufficiently designed at this time for a detailed assessment. Although no adverse impacts are expected, such equipment has the potential to result in noise impacts on the noise sensitive spaces within the development.

Therefore, the potential impacts should be assessed as part of the final building design. The criteria is expected to be met at all on-site receptors with the appropriate selection of mechanical equipment, by locating equipment to minimize noise impacts within the development, and by incorporating control measures (e.g., silencers, barriers) into the design.

It is recommended the mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The potential for noise impacts on and from the proposed development have been assessed. Impacts of the environment on the development, the development on itself, and the development on the surrounding area have been considered. Based on the results of the study, the following conclusions have been reached:

6.1 Transportation Noise

- An assessment of transportation noise impacts from roadways and railway has been completed.
- Based on transportation façade sound levels outlined in **Section 2.5**, upgraded glazing is required on the north, east and south façades of the development.
- Mandatory air conditioning will be required for the north, east, and south façade units of the development, as outlined in **Section 2.5**. All other units will require forced air heating and the provision for air conditioning.
- Noise impacts in the outdoor amenity spaces of the development meet the applicable guideline limits. No additional noise control measures are required, as outlined in **Section 2.6**.
- Warning Clauses (MECP, CN and GO) should be included in agreements registered on Title for the residential units, and included in agreements of purchase and sale, as outlined in **Sections 2.5** and **2.6**. Warning clauses are included in **Appendix E**.
- Glazing requirements above are approximated, based on the generic room, façade and glazing dimensions. Once detailed floor plans and façade plans become available, the glazing requirements should be re-assessed and reviewed by an Acoustical Consultant.

6.2 Stationary Noise

- Stationary noise impacts were assessed against the MECP NPC-300 Class 1 Area criteria, based on increased ambient noise from roadway traffic.
- Stationary noise impacts from the surrounding industrial and commercial/retail noise are predicted to meet NPC-300 Class 1 guideline limits on all facades, and outdoor amenity spaces. No additional noise mitigation measures are required.
- An MECP Warning Clause for stationary noise should be included in agreements registered on Title for the residential units, and included in agreements of purchase and sale, as outlined in **Section 3.4**. Warning clauses are included in **Appendix E**.

6.3 Overall Assessment

- Impacts of the environment on the proposed development can be adequately controlled through upgrades to the building construction, without the inclusion of mitigation measures for surrounding stationary sources, and the inclusion of ventilation and warning clause requirements, detailed in **Part 1** of this report.

- Impacts of the proposed development on the surroundings are expected to meet the applicable guideline limits, and can be adequately controlled by following the design guidance outlined **Part 2** of this report.

- Impacts of the proposed development on itself are not anticipated and can be adequately controlled by following the design guidance outlined in **Part 3** of this report.

- As the mechanical systems for the proposed development have not been designed at the time of this assessment, the acoustical requirements above should be confirmed by an Acoustical Consultant as part of the final building design.

7.0 REFERENCES

Halton Region (Halton 2014), *Regional Official Plan Guidelines – Land Use Compatibility Guidelines*

Halton Region (Halton 2014), *Regional Official Plan Guidelines – Noise Abatement Guidelines*

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, Building Practice Note 56: *Controlling Sound Transmission into Buildings*, Canada 1985.

Ontario Ministry of the Environment, Conservation and Parks, 1989, Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT).

Ontario Ministry of the Environment, Conservation and Parks, Publication NPC-300: *Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning*, 2013.

Ontario Ministry of the Environment, Conservation and Parks, 1996, STAMSON v5.03: Road, Rail and Rapid Transit Noise Prediction Model.

Figures

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Figure No. **1**

Context Plan

1085 Clearview
Burlington, Ontario

True North

Scale: 1: 10,000
Date: 18/12/06
File No.: 18-0260
Drawn By: MTL

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Aerial Photography from Google Earth

Figure No. **2a**

Modelled Roadway Noise Impacts – Daytime

1085 Clearview
Burlington, Ontario

True North

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Date: 18/12/06
File No.: 18-0260
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Figure No. **2b**

Modelled Roadway Noise Impacts – Night-time

1085 Clearview
Burlington, Ontario

True North

Scale: 1: 1,000
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Figure No. **3a**

Modelled Railway Noise Impacts – Daytime

1085 Clearview
Burlington, Ontario

True North

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Figure No. **3b**

Modelled Railway Noise Impacts – Night-time

1085 Clearview
Burlington, Ontario

True North

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Figure No. **4a**

Modelled Road+Rail Noise Impacts – Daytime

1085 Clearview
Burlington, Ontario

True North

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Figure No. **4b**

Modelled Road+Rail Noise Impacts – Night-time

1085 Clearview
Burlington, Ontario

True North

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Aerial Photography from Google Earth

Legend

Modelled OLA

Figure No. **5**

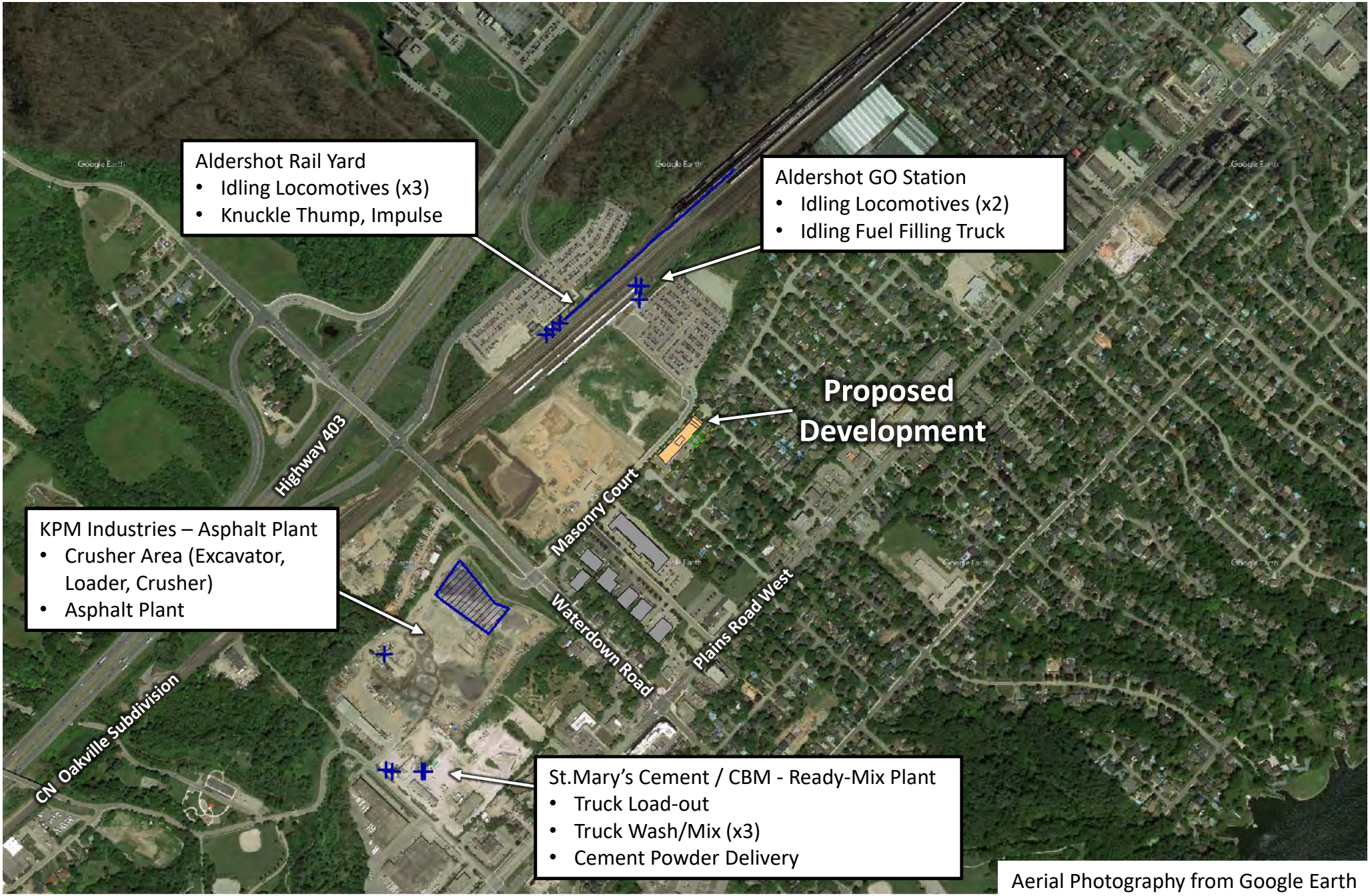
Modelled Road+Rail Noise Impacts – OLA

1085 Clearview
Burlington, Ontario

True North

Scale: 1: 1,000
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Legend

- Noise Source (point)
- Noise Source (line)
- Noise Source (area)

Figure No. **6**

Stationary Noise Source Locations

1086 Clearview
Burlington, Ontario

True North

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Aerial Photography from Google Earth

Figure No. **7a**

Modelled Excess of the Guideline Limits
Stationary Noise – Daytime/Evening (Continuous)

1085 Clearview
Burlington, Ontario

True North

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Figure No. **7b**

Modelled Excess of the Guideline Limits
Stationary Noise – Night-time (Continuous)

1085 Clearview
Burlington, Ontario

True North

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Figure No. **8a**

Modelled Excess of the Guideline Limits
Stationary Noise – Daytime/Evening (Impulsive)

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Burlington, Ontario

True North

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Figure No. **8b**

Modelled Excess of the Guideline Limits
Stationary Noise – Night-time (Impulsive)

1085 Clearview
Burlington, Ontario

True North

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Modelled OLA

Figure No. **9**

Modelled Stationary Noise Impacts – OLA (Continuous)

1085 Clearview
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True North

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Modelled OLA

Figure No. **10**

Modelled Stationary Noise Impacts – OLA (Impulsive)

1085 Clearview
Burlington, Ontario

True North

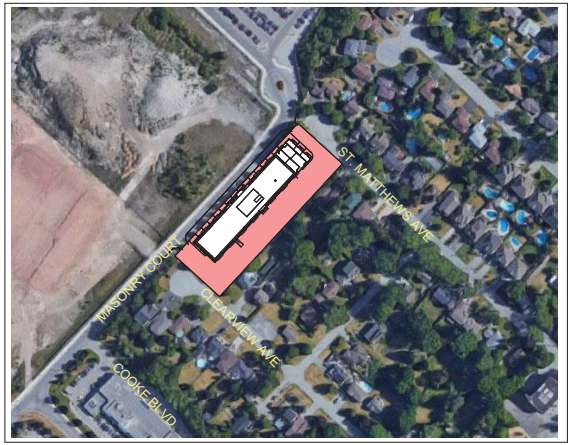
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Appendix A

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Context Plan 3 A1.1
NTS

PROJECT STATISTICS
Masonry Court, Burlington
Residential Development - 6 Storey Scheme
Burlington,ON
November 23, 2018 Project No. 18-035

1.0 SITE AREA

Site	hectare	acre	sq.m.	sq.ft.
Site Area (to be verified)	0.627	1.54	6,284.03	67,669

2.0 Proposed GFA

2.1 Apartments - GFA	floors	sq.m	sq.m.	sq.ft.
Level 1	1 x	2,00	2,05	21,577
Level 2	1 x	2,30	2,06	24,817
Level 3	1 x	2,21	2,18	23,871
Level 4	1 x	2,04	2,146	22,025
Level 5	1 x	1,91	1,119	20,653
Level 6	1 x	1,69	1,62	18,215
Total Proposed GFA *			12,85	131,158

Note: * including all residential areas above grade including amenity and garbage room. Excludes mechanical areas, solrage areas and all underground areas

3.0 Proposed Density - FSI

Total Proposed GFA (Gross Site Area (Item 2 / Item 1)	1.54

4.0 Unit Count

4.1

Apartment	floors	uni	1B	1B+D	2B	2B+D	Total
Level 1	1 x	1	2	12	2	1	17
Level 2	1 x	3	6	20	2	4	32
Level 3	1 x	3	5	20	2	4	31
Level 4	1 x	3	2	21	4	3	30
Level 5	1 x	2	5	12	2	7	28
Level 6	1 x	2	9	8	3	4	24
Total Apartment Units		16	29	93	15	23	160
			18%	58%	9%	14%	
			76%			24%	
TOTAL UNITS							160

5.0 Amenity

Note: may include gas spaces, patios, balconies, communal play areas, lounges, sundeks and rooftdecks.

5.1 Amenity Area Required (Under Zoning-by-law - RH5)

Unit type	Requirement	No. of units		No. of BR	sq. m.	sq. ft.
1-Bed (< 60 sq.m.)	15 sq.m. per unit	29x	15		435	4,682
1-Bed (> 60 sq.m.)	25 sq.m. per bedroom	93x	25 x	1	2,325	25,026
2-Bed	25 sq.m. per bedroom	38x	25 x	2	1,900	20,451
Total Amenity Area Required					4,660	50,159

5.2 Amenity Area Provided

	floors	Area - sq.m.	sq.m.	sq.ft.
Level 1 (Indoor amenity)	1x	313	313	3,368
Level 1 (Outdoor amenity)	1x	467	467	5,021
Level 1 (Patio)	1x	414	414	4,458
Level 2 (Balconies)	1x	160	160	1,718
Level 3 (Balconies)	1x	239	239	2,575
Level 4 (Balconies)	1x	184	184	1,983
Level 5 (Balconies)	1x	304	304	3,276
Level 6 (Balconies)	1x	377	377	4,055
Total Amenity Area Provided			2,458	26,455

6.0 Parking

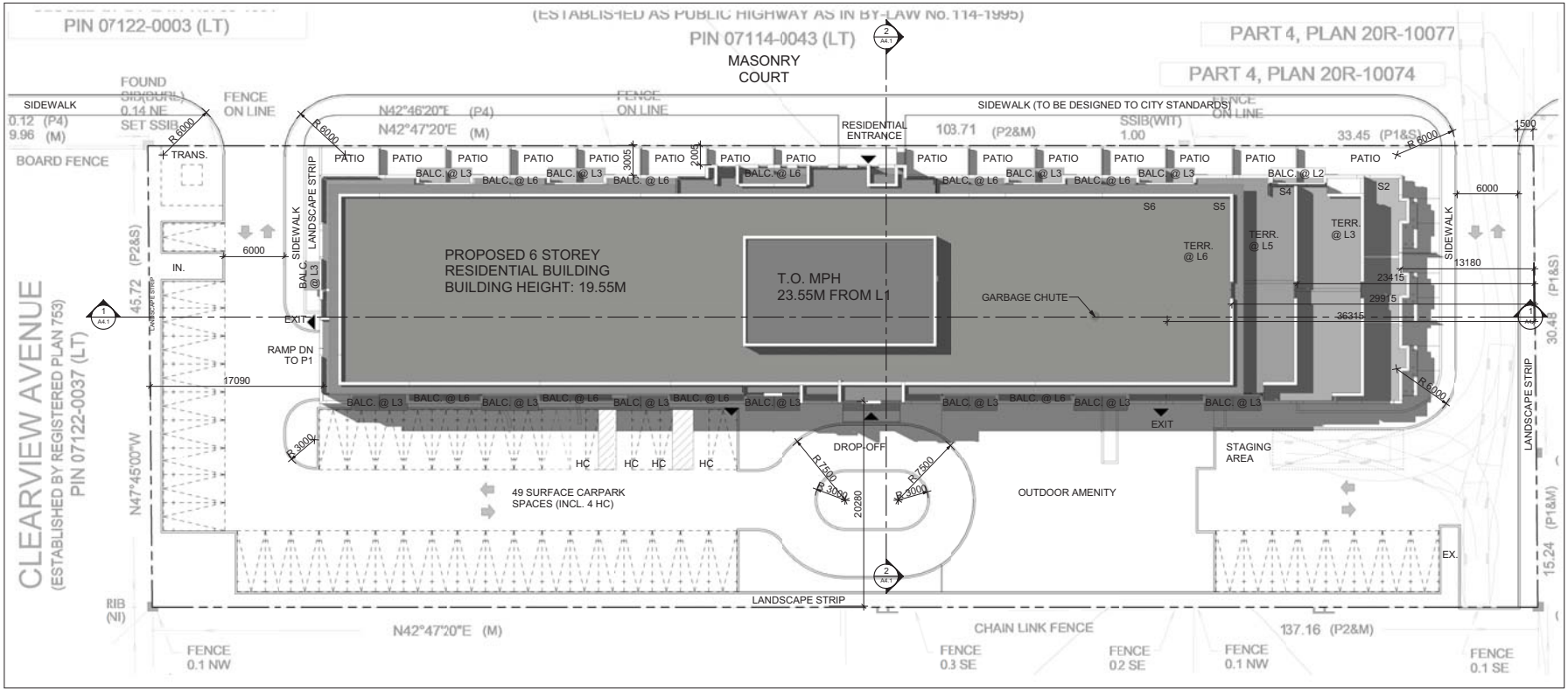
6.1 Parking Required (Under Zoning-by-law - Apartment)

Unit type	Requirement	No. of units		Parking Spaces
Residential and Visitor	1.25 car per unit (1-Bed)	160x	1.25	200
Total Parking Required				200

6.2 Parking Provded

Surface Parking Provided	49
Underground Parking Provided	153
Total Parking Provided	202

Site Statistics 2 A1.1
NTS



Site Plan 1 A1.1
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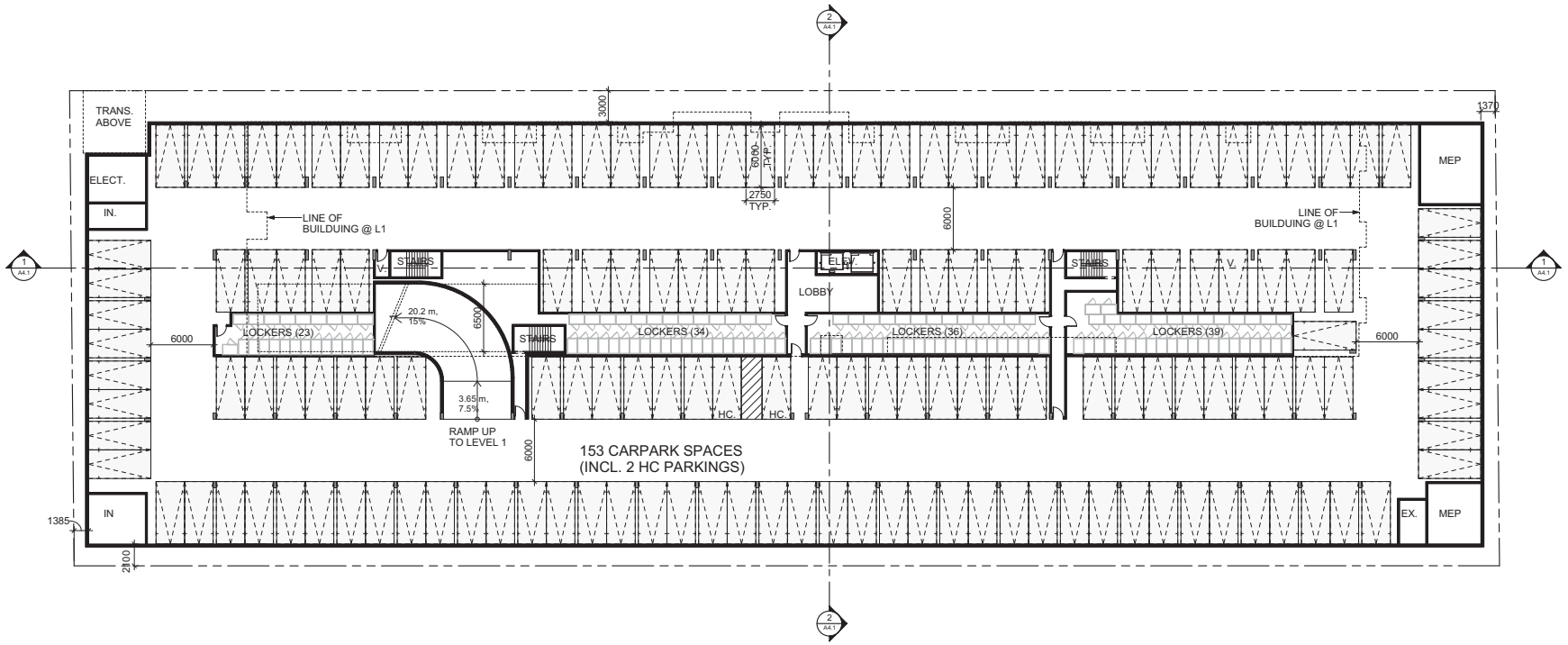
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Site Plan, Context Plan & Project Statistics

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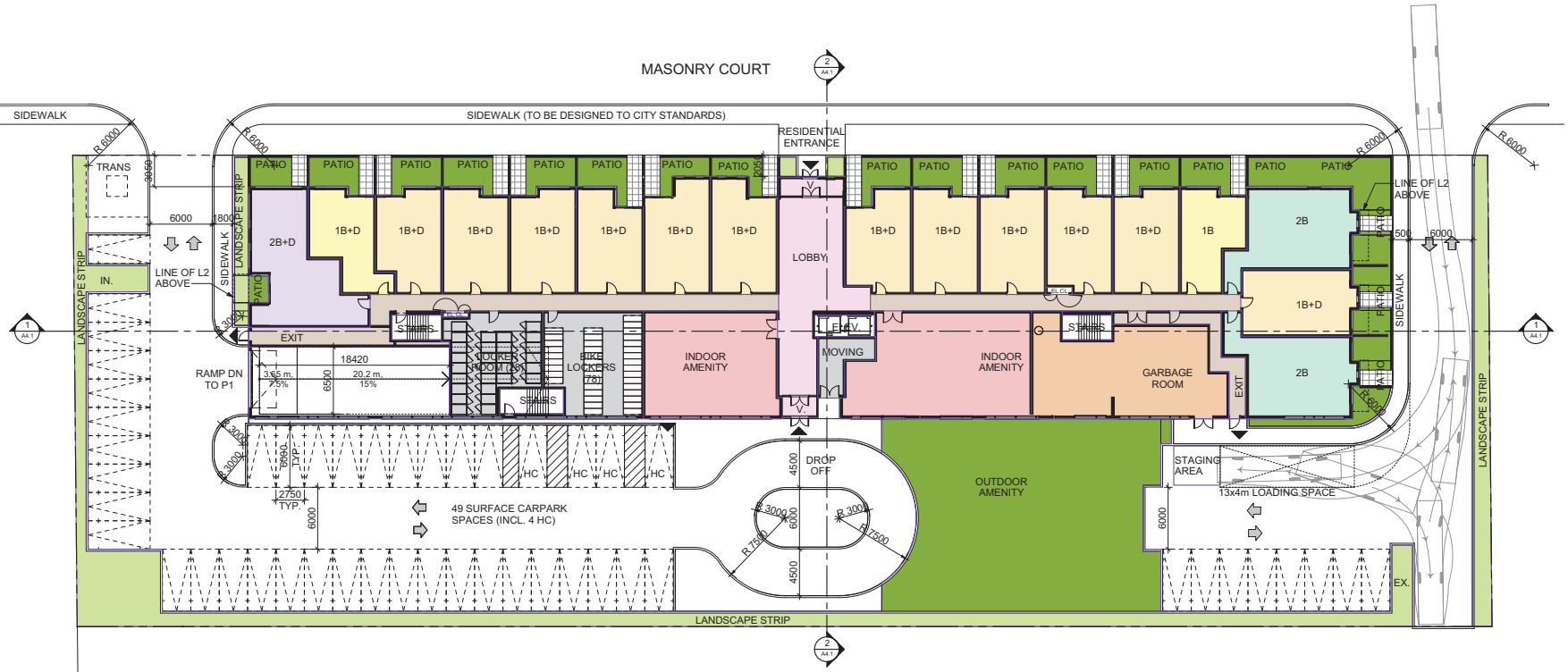
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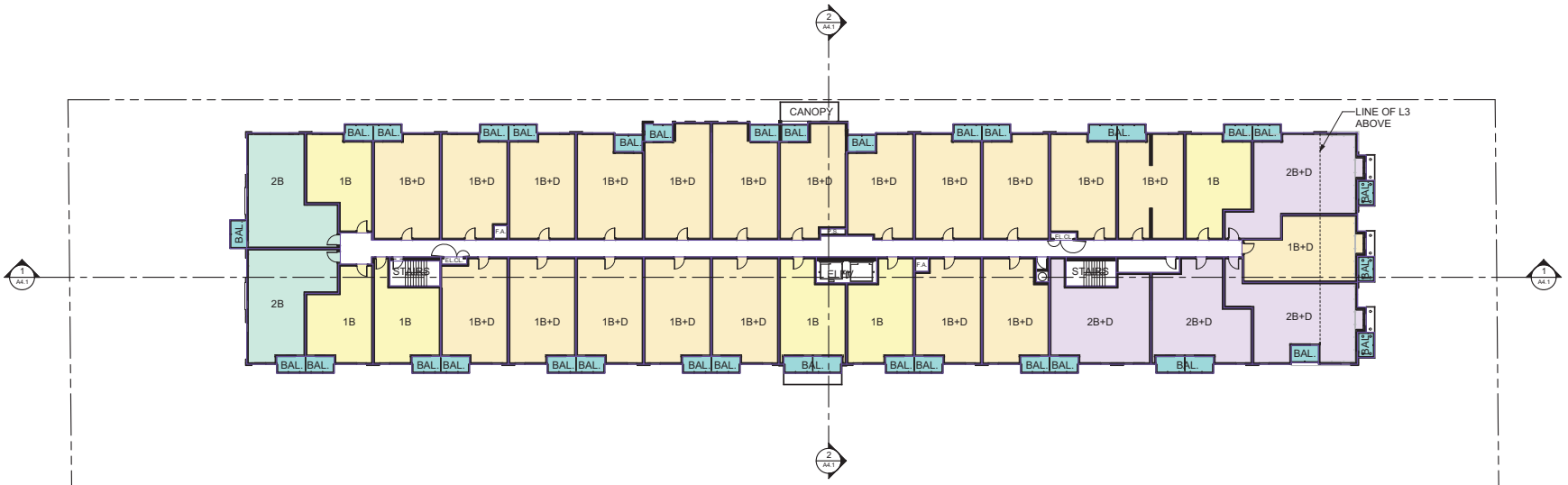
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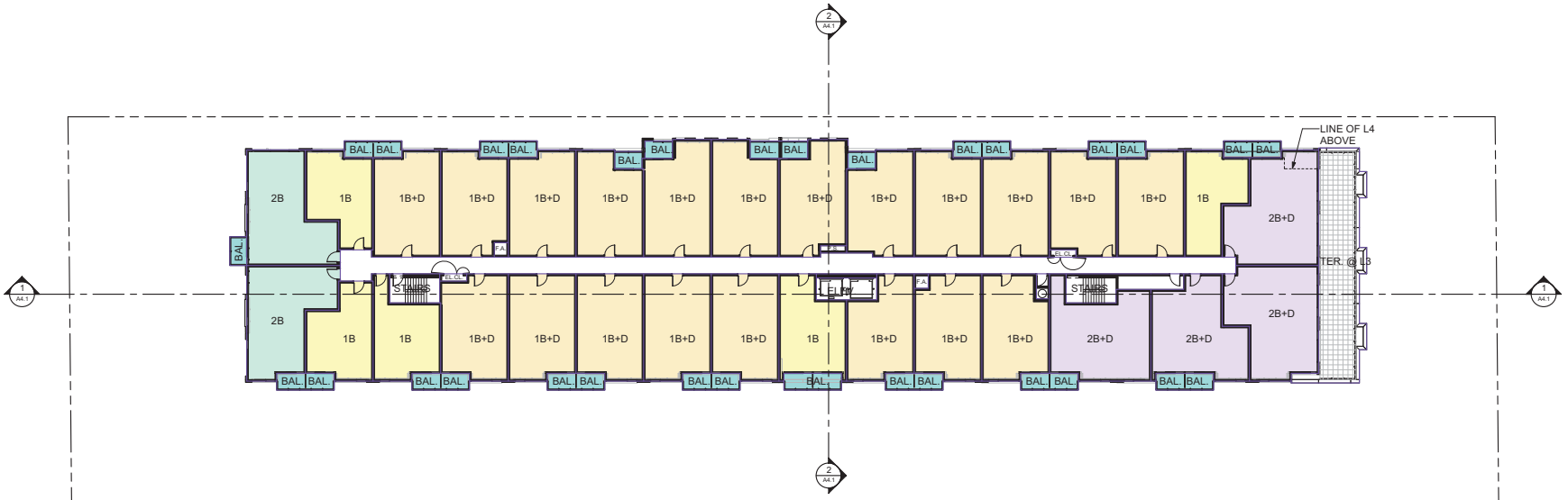
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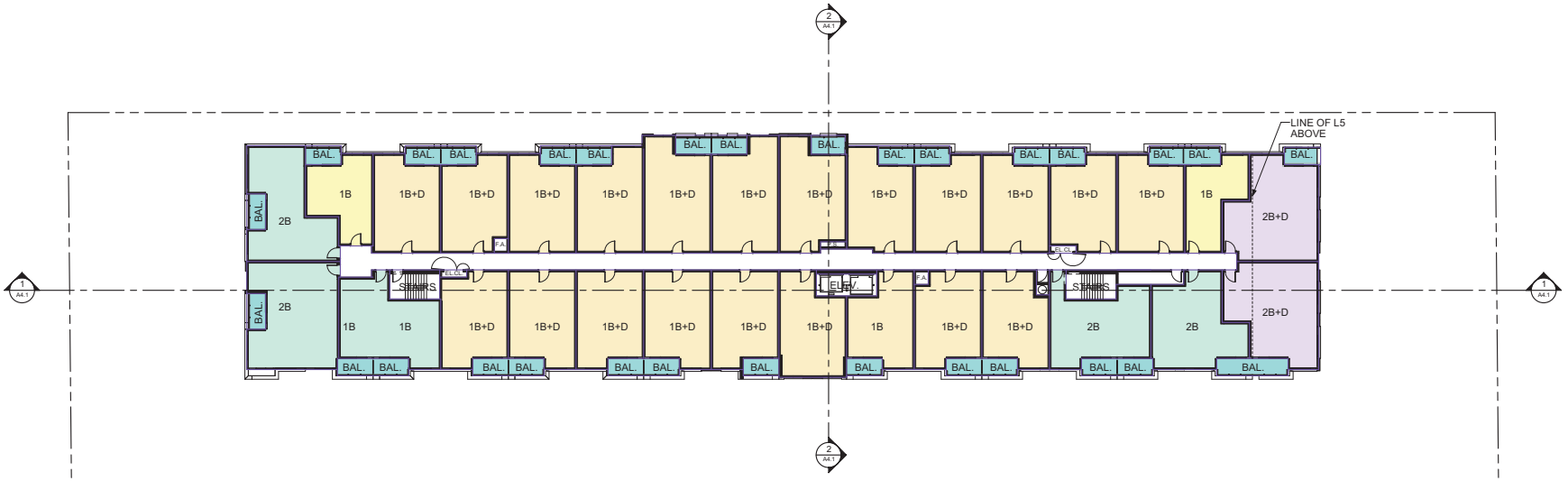
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Floor Plan Level 4

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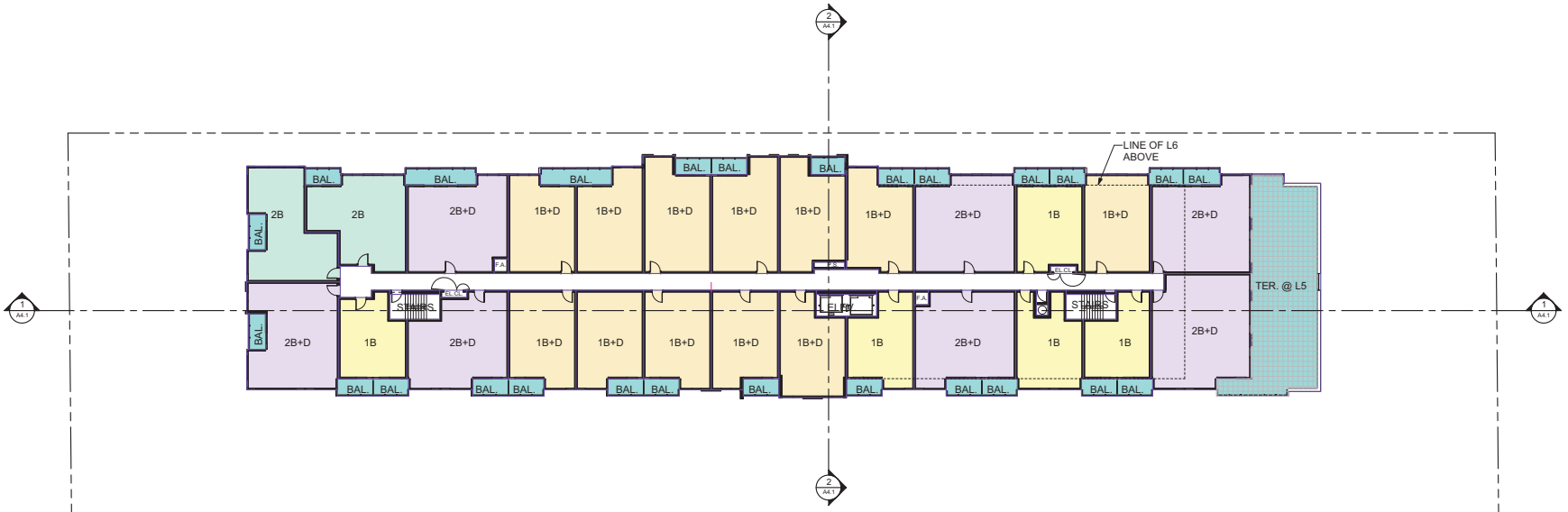
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No.:	Revision:	Date:
1	Issued For: Re-Zoning	Nov 23, 2018

No:	Issued For:	Date:

Drawing Title:

Level 5 Floor Plan

Project:

LIV COMMUNITIES

1085 Clearview Avenue & 1082, 1086 and 1090 St. Matthews Avenue, Burlington, ON

Scale: 1 : 200

Drawn by: TL

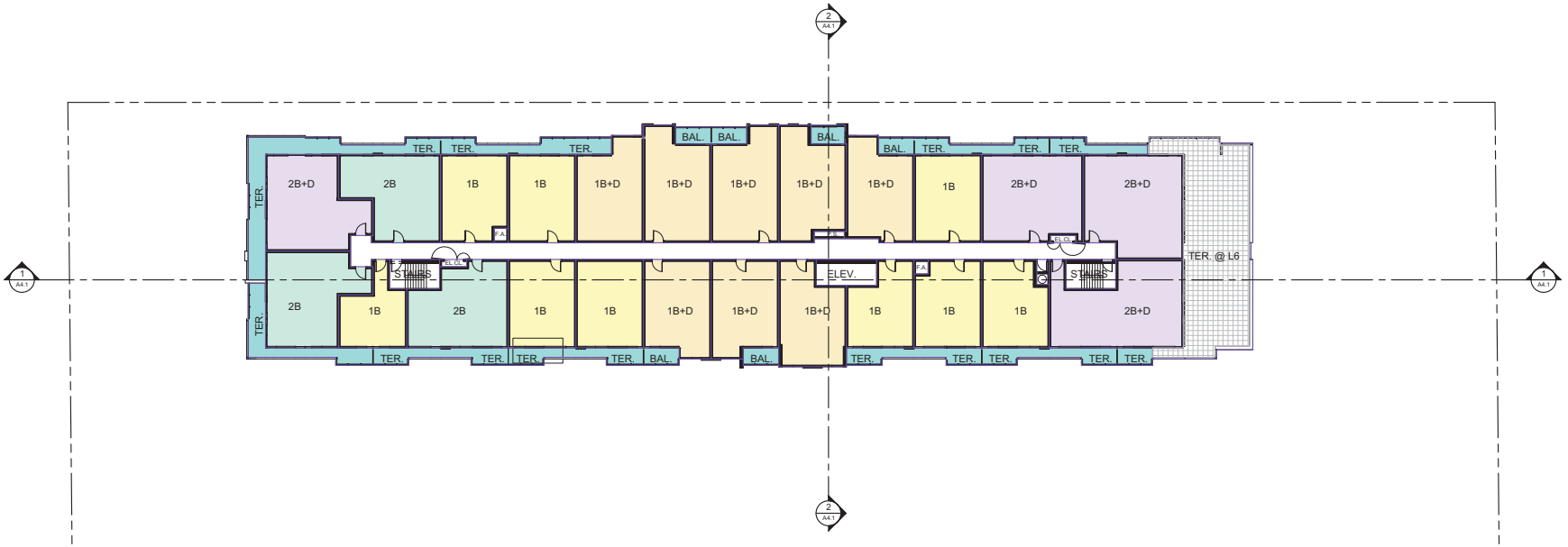
Checked by: BC, DL

Project No.: 18-035

Date: Nov 12, 2018

Drawing No.: A2.6

Plot Date: 11/23/2018 1:49:04 PM File Path: C:\Users\bsong\Documents\18-035P10 - Model - Masonry Court_bsong@kirkorarchitects.net.rvt



Floor Plan - Level 6 (1 / A2.7)

Scale: 1 : 200

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Level 6 Floor Plan

Project:

LIV COMMUNITIES

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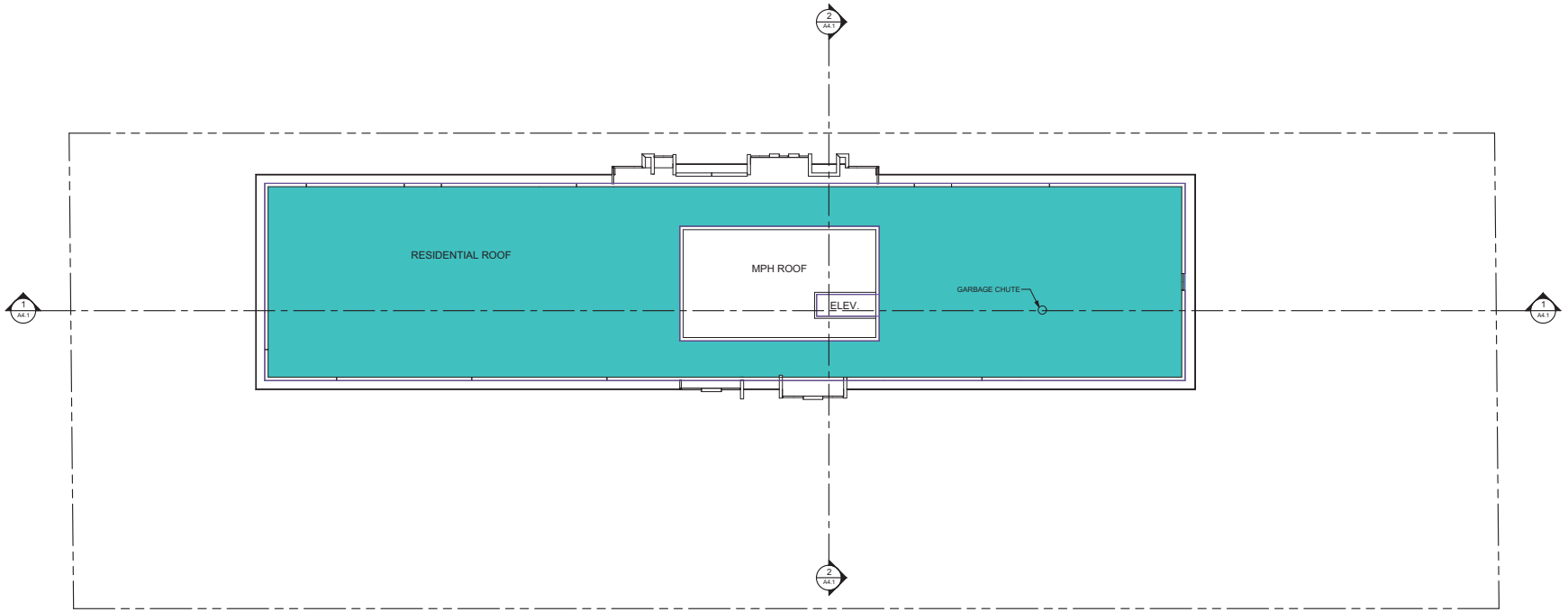
Drawn by: TL

Checked by: BC, DL

Project No.: 18-035

Date: Nov 12, 2018

Drawing No.: A2.7



Roof Plan 1
Scale: 1 : 200 A2.8

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Drawing Title:

Roof Plan

Project:

LIV COMMUNITIES

1085 Clearview Avenue & 1082, 1086 and 1090 St. Matthews Avenue, Burlington, ON

Scale: 1 : 200

Drawn by: TL

Checked by: BC, DL

Project No.: 18-035

Date: Nov 12, 2018

Drawing No.: A2.8

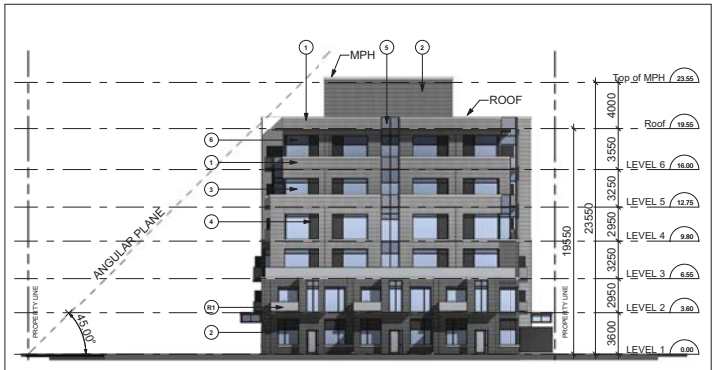
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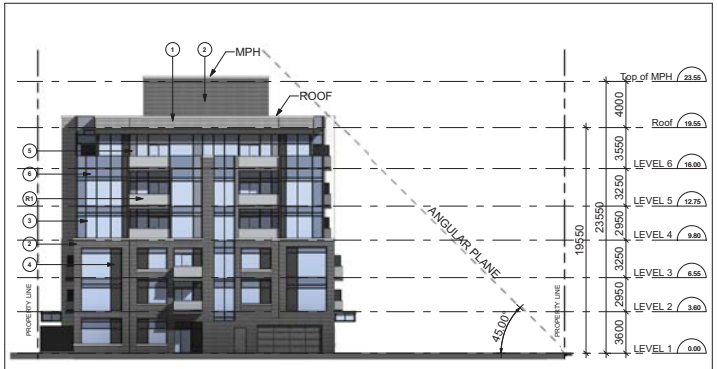
North Elevation 5 A3.1
Scale: 1 : 200



South Elevation 4 A3.1
Scale: 1 : 200



East Elevation 3 A3.1
Scale: 1 : 200



West Elevation 2 A3.1
Scale: 1 : 200

EXTERIOR FINISH LEGEND

18-035 - 1085 CLEARVIEW AVENUE & 1082, 1086 AND 1090 ST. MATTHEWS AVENUE

1. LIGHT GREY BRICK
2. DARK GREY BRICK
3. VISION GLASS
4. DARK GREY SPANDREL
5. LIGHT GREY SPANDREL
6. BLUE SPANDREL
R1. CLEAR GLASS RAILING

EXTERIOR FINISH LEGEND 1 A3.1
NTS

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No.:	Revision:	Date:
1	Issued For: Re-Zoning	Nov 23, 2018
No:	Issued For:	Date:

Drawing Title:
Building Elevations

Project:
LIV COMMUNITIES

1085 Clearview Avenue & 1082, 1086 and 1090 St. Matthews Avenue, Burlington, ON

Scale: 1 : 200
Drawn by: TL
Checked by: BC, DL
Project No.: 18-035
Date: Nov 12, 2018
Drawing No.: A3.1

Plot Date: 11/23/2018 1:50:20 PM File Path: C:\Users\lsong\Documents\18-035P10 - Model - Masonry Court_lsong@kirkorarchitects.net.rvt

Appendix B

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TABLE 1A

ROAD TRAFFIC DATA

Roadway	Year	AADT(1)	% Trucks		Speed Limit (kph)	Day/Night Split (%)
			Medium	Heavy		
Masonry Court(2)	2014	1 908	7.5	5.0	50	90/10
Waterdown Road(2)	2014	14 073	9.0	6.0	50	90/10
Highway 403(3)	Ultimate	220 000	2.1	6.4	100	67/33

Notes:

(1) AADT - Annual Average Daily Traffic.
(2) Obtained from the City of Burlington.
(3) Obtained from the MTO. Truck percentage split used was 75%/25% heavy/medium as recommended by MTO for freeways.

TABLE 1B

RAIL TRAFFIC DATA – CN OAKVILLE SUBDIVISION

Period	Train Type	Maximum # of Trains	Maximum # of Cars/Train	Max # of Locos/Train	Maximum Speed (kph)
Daytime (0700 to 2300)	Freight(1)	12 (15.7)	142	4	97
	Way Freight(1)	3 (3.9)	25	2	97
	[illegible](1)	[illegible]	[illegible]	[illegible]	[illegible]
Nighttime (2300 to 0700)	Freight(1)	7 (9.2)	142	4	97
	Way Freight(1)	3 (3.9)	25	2	97
	Passenger(1)	0 (0)	10	2	150
	GO Commuter(2)	73 (74.8)	12	1	150

REVISED

Notes:

(1) Obtained from CN for the year 2015. The data shown in brackets is projected to the year 2026 with a 2.5% growth rate, compounded annually.
(2) Obtained from GO Transit/Metrolinx for the year 2025. The data shown in brackets is projected to the year 2026 with a 2.5% growth rate, compounded annually.

Marcus Li

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: Tuesday, October 2, 2018 4:32 PM
To: Marcus Li
Cc: Brandon Gaffoor
Subject: RE: Lakeshore West/Aldershot GO STation - Rail Data

Hello Marcus,

Further to your request dated September 27, 2018 (attached below), the subject site (1085 Clearview Avenue, Burlington) is located within 300 metres of CNR's Oakville Subdivision (which carries Lakeshore West GO Train service) and Aldershot GO Station. I note that we do not maintain information pertaining to the idling activities at stations and/or layovers – that would be up to the consultant to collect that information for a typical weekday period.

It's anticipated that GO service will be comprised of a mix of both diesel and electric trains within (at least) a 10-year time horizon. The combined preliminary midterm weekday train volume forecast at this location, including both revenue and equipment trips is in the order of 222 trains (54 diesel: 45 day, 9 night; 168 electric: 144 day, 24 night). Trains will be comprised of a single locomotive and up to 12 passenger cars.

The track design speed on this corridor is 95 mph (153 km/h).

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 GO Expansion rail 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, for the purposes of acoustical analyses, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the near future.

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

It should be noted that CNR and VIA operate trains in this area and it would be prudent to contact them directly for rail traffic information.

I trust this information is useful. Should you have any questions, please feel free to contact me.

IVAN CHEUNG, M.Sc, B.URPl
Intern
Metrolinx
Pre-Construction Services | Capital Projects Group
20 Bay Street, Suite 600 | Toronto | Ontario | M5J 2E3
T: 416-202-5920

METROLINX

Dear Jafar Al-Khalaf:

Re: Train Traffic Data – CN Oakville Subdivision near Masonry Court in Burlington, ON

The following is provided in response to Lucas Arnolds 2018/01/29 request for information regarding rail traffic in the vicinity of Masonry Court, Burlington, ON at approximately Mile 34.61 on CN's Oakville Subdivision.

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

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

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

	0700-2300			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	10	140	60	4
Way Freight	8	25	60	4
Passenger	12	10	95	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	6	140	60	4
Way Freight	3	25	60	4
Passenger	0	10	95	2

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

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are no at-grade crossing in the immediate vicinity of the study area at Mile 34.61. Anti-whistling bylaws are not in effect at this crossing. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

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

The double mainline track is considered to be continuously welded rail throughout the study area. The presence of eight (8) switches located at Mile 32.48-32.08 may exacerbate the noise and vibration caused by train movements.

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

I trust the above information will satisfy your current request.

Sincerely,

Michael Vallins P.Eng
Manager of Public Works
public_works_gld@cn.ca

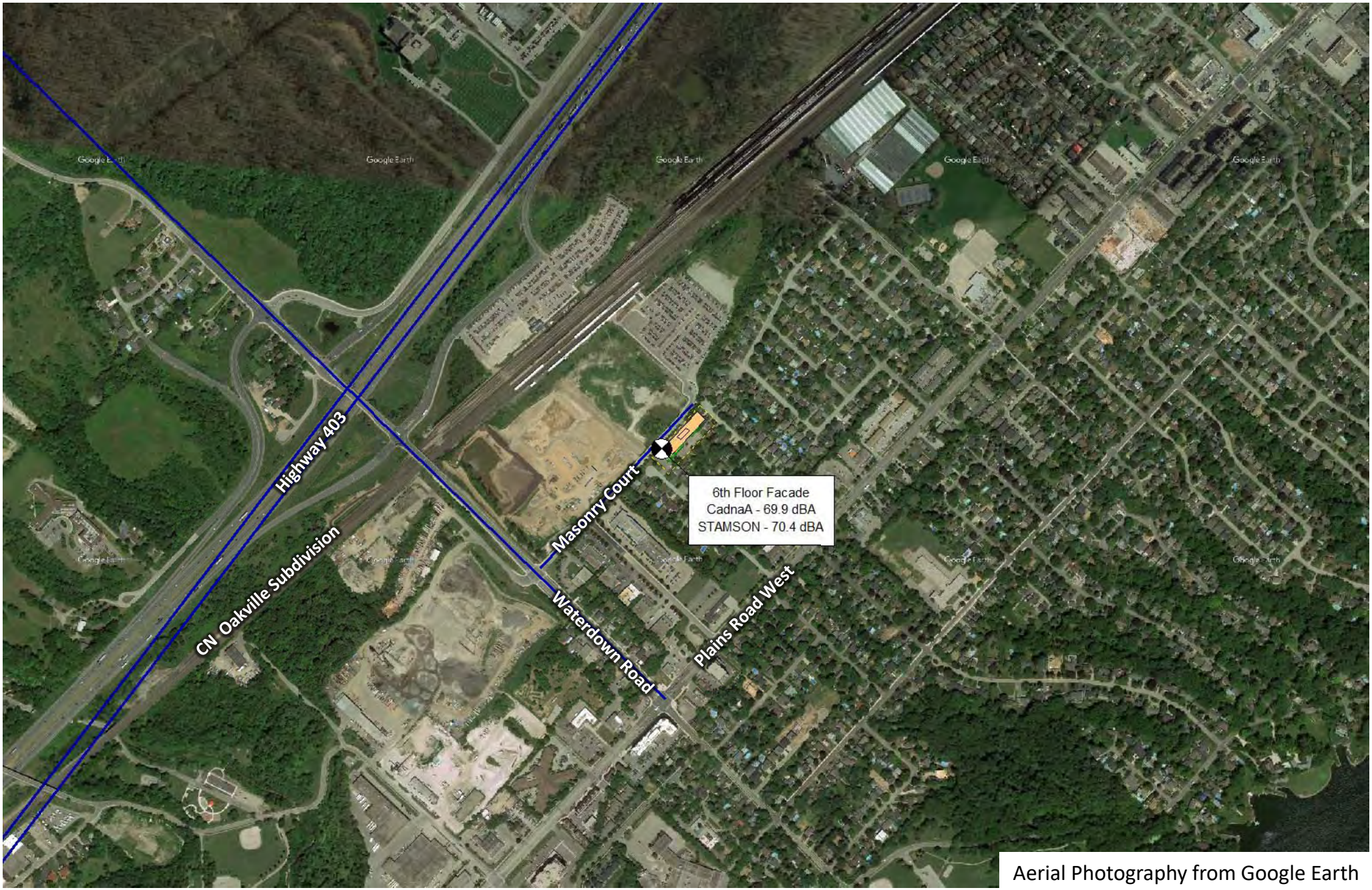
Appendix C

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Table C.1: Comparison of STAMSON to CadnaA Implementation of ORNAMENT

Location	STAMSON									CadnaA	Diff (dBA)
	Hwy403 EB (dBA at 500m)	dist corr (m)	Hwy 407 at Recptor [1] (dBA, dist corr)	Hwy403 WB (dBA at 500m)	dist corr (m)	Hwy 407 at Recptor [1] (dBA, dist corr)	Waterdown (dBA)	Masonry (dBA)	Overall (dBA)	Overall (dBA)	
1st floor, N Façade	67.5	525	67.3	67.5	565	66.9	43.1	58.7	70.4	69.9	-0.5

Notes: [1] Hwy 403 impacts at 500 m corrected for receptor location, based on a 3 dBA per doubling of distance



Aerial Photography from Google Earth

Figure No. **C.1**

Comparison of STAMSON to CadnaA ORNAMENT Implementation

64-66 Masonry Court
Burlington, Ontario

True North

Scale: 1: 10,000
Date: 18/10/29
File No.: 18-0260
Drawn By: MTL

novus ENVIRONMENTAL

STAMSON 5.0 COMPREHENSIVE REPORT Date: 29-10-2018 08:25:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 1stFlr.te Time Period: 16 hours
Description: 1st Floor, N Facade, daytime

Road data, segment # 1: 403EB

Car traffic volume : 87793 veh/TimePeriod
Medium truck volume : 2015 veh/TimePeriod
Heavy truck volume : 6141 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 403EB

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 500.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 403WB

Car traffic volume : 87793 veh/TimePeriod
Medium truck volume : 2015 veh/TimePeriod
Heavy truck volume : 6141 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: 403WB

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 500.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Waterdown

Car traffic volume : 14205 veh/TimePeriod
Medium truck volume : 1504 veh/TimePeriod
Heavy truck volume : 1003 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Waterdown

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 340.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: Masonry

Car traffic volume : 1983 veh/TimePeriod
Medium truck volume : 170 veh/TimePeriod
Heavy truck volume : 113 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: Masonry

Angle1 Angle2 : -90.00 deg 80.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Segment # 1: 403EB

Source height = 1.59 m

ROAD (0.00 + 67.45 + 0.00) = 67.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	82.68	0.00	-15.23	0.00	0.00	0.00	0.00	67.45

Segment Leq : 67.45 dBA

Segment # 2: 403WB

Source height = 1.59 m

ROAD (0.00 + 67.45 + 0.00) = 67.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	82.68	0.00	-15.23	0.00	0.00	0.00	0.00	67.45

Segment Leq : 67.45 dBA

Segment # 3: Waterdown

Source height = 1.57 m

ROAD (0.00 + 43.08 + 0.00) = 43.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.66	70.02	0.00	-22.47	-4.46	0.00	0.00	0.00	43.08

Segment Leq : 43.08 dBA

Segment # 4: Masonry

Source height = 1.49 m

ROAD (0.00 + 59.16 + 0.00) = 59.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	80	0.66	60.69	0.00	0.00	-1.52	0.00	0.00	0.00	59.16

Segment Leq : 59.16 dBA

Total Leq All Segments: 70.78 dBA

TOTAL Leq FROM ALL SOURCES: 70.78

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Appendix D

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

Receptor ID	Receptor Description	Sound Levels			Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exp Wall Ht (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)
DAYTIME															
N_LvgRm	North Facade - Living Room/Kitchen	68	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**27**
N_Bedrm	North Facade - Bedroom	68	3	45	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**30**
E_LvgRm	East Facade - Living Room/Kitchen	66	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**25**
E_Bedrm	East Facade - Bedroom	66	3	45	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**28**
S_LvgRm	South Facade - Living Room/Kitchen	53	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**12**
S_Bedrm	South Facade - Bedroom	53	3	45	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**15**
W_LvgRm	West Facade - Living Room/Kitchen	65	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**24**
W_Bedrm	West Facade - Bedroom	65	3	45	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**27**
NIGHT-TIME															
N_LvgRm	North Facade - Living Room/Kitchen	63	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**22**
N_Bedrm	North Facade - Bedroom	63	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**30**
E_LvgRm	East Facade - Living Room/Kitchen	60	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**19**
E_Bedrm	East Facade - Bedroom	60	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**27**
S_LvgRm	South Facade - Living Room/Kitchen	47	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**6**
S_Bedrm	South Facade - Bedroom	47	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**14**
W_LvgRm	West Facade - Living Room/Kitchen	60	3	45	80%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**19**
W_Bedrm	West Facade - Bedroom	60	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**27**

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

Receptor ID	Receptor Description	Sound Levels			Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exp Wall Ht (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)
DAYTIME															
N_LvgRm	North Facade - Living Room/Kitchen	60	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
N_Bedrm	North Facade - Bedroom	60	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**29**
E_LvgRm	East Facade - Living Room/Kitchen	57	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**23**
E_Bedrm	East Facade - Bedroom	57	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
S_LvgRm	South Facade - Living Room/Kitchen	45	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**11**
S_Bedrm	South Facade - Bedroom	45	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**14**
W_LvgRm	West Facade - Living Room/Kitchen	57	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**23**
W_Bedrm	West Facade - Bedroom	57	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
NIGHT-TIME															
N_LvgRm	North Facade - Living Room/Kitchen	58	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**24**
N_Bedrm	North Facade - Bedroom	58	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**32**
E_LvgRm	East Facade - Living Room/Kitchen	55	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**21**
E_Bedrm	East Facade - Bedroom	55	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**29**
S_LvgRm	South Facade - Living Room/Kitchen	43	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**9**
S_Bedrm	South Facade - Bedroom	43	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**17**
W_LvgRm	West Facade - Living Room/Kitchen	55	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**21**
W_Bedrm	West Facade - Bedroom	55	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	F. diesel railway locomotive	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**29**

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

Receptor ID	Receptor Description	Sound Levels			Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exp Wall Ht (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)
DAYTIME															
N_LvgRm	North Facade - Living Room/Kitchen	62	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**23**
N_Bedrm	North Facade - Bedroom	62	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
E_LvgRm	East Facade - Living Room/Kitchen	60	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**21**
E_Bedrm	East Facade - Bedroom	60	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**24**
S_LvgRm	South Facade - Living Room/Kitchen	48	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**9**
S_Bedrm	South Facade - Bedroom	48	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**12**
W_LvgRm	West Facade - Living Room/Kitchen	60	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**21**
W_Bedrm	West Facade - Bedroom	60	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**24**
NIGHT-TIME															
N_LvgRm	North Facade - Living Room/Kitchen	60	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**21**
N_Bedrm	North Facade - Bedroom	60	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**29**
E_LvgRm	East Facade - Living Room/Kitchen	57	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**18**
E_Bedrm	East Facade - Bedroom	57	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
S_LvgRm	South Facade - Living Room/Kitchen	45	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**6**
S_Bedrm	South Facade - Bedroom	45	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**14**
W_LvgRm	West Facade - Living Room/Kitchen	57	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**18**
W_Bedrm	West Facade - Bedroom	57	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**

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

Receptor ID	Receptor Description	Sound Levels			Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exp Wall Ht (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)
DAYTIME															
N_LvgRm	North Facade - Living Room/Kitchen	58	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**19**
N_Bedrm	North Facade - Bedroom	58	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**22**
E_LvgRm	East Facade - Living Room/Kitchen	54	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**15**
E_Bedrm	East Facade - Bedroom	54	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**18**
S_LvgRm	South Facade - Living Room/Kitchen	42	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**3**
S_Bedrm	South Facade - Bedroom	42	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**6**
W_LvgRm	West Facade - Living Room/Kitchen	53	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**14**
W_Bedrm	West Facade - Bedroom	53	3	40	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**17**
NIGHT-TIME															
N_LvgRm	North Facade - Living Room/Kitchen	53	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**14**
N_Bedrm	North Facade - Bedroom	53	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**22**
E_LvgRm	East Facade - Living Room/Kitchen	50	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**11**
E_Bedrm	East Facade - Bedroom	50	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**19**
S_LvgRm	South Facade - Living Room/Kitchen	38	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**-1**
S_Bedrm	South Facade - Bedroom	38	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**7**
W_LvgRm	West Facade - Living Room/Kitchen	49	3	40	80%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**10**
W_Bedrm	West Facade - Bedroom	49	3	35	80%	2.8	3.0	3.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**18**

Appendix E

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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 the development:

MECP Type C – South façade units

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

MECP Type D – North, East and West façade units

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

MECP Type E – All units

> “Purchasers are advised that due to the proximity of the adjacent industrial and commercial facilities, sound levels from these facilities may at times be audible.”

Metrolinx – All units

> “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.”

CN – All units

Purchasers are advised that Canadian National Railway Company 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). CNR 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.

Appendix F

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

Source Description	Maximum Sound Power Levels (1/1 Octave Band Levels)									Total PWL	Notes
	32 (dBA/ dBAI)	63 (dBA/ dBAI)	125 (dBA/ dBAI)	250 (dBA/ dBAI)	500 (dBA/ dBAI)	1000 (dBA/ dBAI)	2000 (dBA/ dBAI)	4000 (dBA/ dBAI)	8000 (dBA/ dBAI)	(dBA/ dBAI)	
Aberdeen GO Station											
Idling Locomotive - GO Train	117	127	114	110	103	98	97	95	90	108	- based on Novus historical data for MP40 locomotives. - two (2) locomitives included in noise model: - idling during stop (10 min dur., 3 trains/hr during daytime; 10 min dur, 2 trains/hr during night) - idling during refueling (1 hr dur assumed, 1 train/hr, daytime/evening hours only).
Idling Fuel Truck	98	101	101	97	96	96	92	84	78	100	- based on Novus historical data - 1 hr duration assumed - operation during daytime / evening hours only.
Aberdeen Rail Yard											
Idling Locomotive - Freight Train	117	113	109	97	103	102	99	92	89	106	- based on historical data for studies completed in the area. - three (3) locomotives assumed to be idling on west side of Rail Yard. - 24/7 operation assumed.
Knuckle Thump (impulse)	-	117	111	109	108	107	104	100	93	111	- based on Novus historical data - 24/7 operation assumed.
KPM Industries											
Crushing Area - Excavator, Front end loader, Grinder	117	122	118	116	111	111	106	100	88	115	- based on historical data for studies completed in the area. - 24/7 operation assumed.
Asphalt Plant	123	125	125	124	111	107	103	101	96	118	- based on Novus historical data - 24/7 operation assumed.
St. Mary's Cement / CBM											
Ready-Mix Plant - Truck Loadout	105	109	108	109	104	101	100	95	87	107	- based on Novus historical data - continuous flow of 7.5 trucks per hour (approx based on historical data) - duration at high idle assessed based on a historical 5 min/truck. - operations assumed during all periods of the day.
Ready-Mix Plant - Truck Wash and Mix	105	109	108	109	104	101	100	95	87	107	- based on Novus historical data - continuous flow of 7.5 trucks per hour (approx based on historical data) - duration at high idle assessed based on a historical 8 min/truck. - operations assumed during all periods of the day
Ready-Mix Plant - Pneumatic Unlaoding of Cement Powder	116	118	111	110	108	107	102	95	86	111	- based on historical Novus data - non-tonal at receptor (approx.750 m) - duration anticipated to be 1 hr or longer - daytime filling only

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Appendix G

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Receiver
Name: facade - 6th floor, north, mid-span
ID: facade
X: 593083.21 m
Y: 4796040.30 m
Z: 122.30 m

Line Source, ISO 9613, Name: "Freight Train - Knuckle Thump", ID: "CN_Knuckle_imp"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
1	592904.76	4796298.16	106.47	0	DEN	32	-65.8	20.4	0.0	0.0	0.0	60.9	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-103.4
1	592904.76	4796298.16	106.47	0	DEN	63	63.9	20.4	0.0	0.0	0.0	60.9	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	26.3
1	592904.76	4796298.16	106.47	0	DEN	125	68.0	20.4	0.0	0.0	0.0	60.9	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	30.3
1	592904.76	4796298.16	106.47	0	DEN	250	73.5	20.4	0.0	0.0	0.0	60.9	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	35.6
1	592904.76	4796298.16	106.47	0	DEN	500	77.9	20.4	0.0	0.0	0.0	60.9	0.6	-2.9	0.0	0.0	0.0	0.0	0.0	39.7
1	592904.76	4796298.16	106.47	0	DEN	1000	80.1	20.4	0.0	0.0	0.0	60.9	1.1	-2.9	0.0	0.0	0.0	0.0	0.0	41.3
1	592904.76	4796298.16	106.47	0	DEN	2000	78.3	20.4	0.0	0.0	0.0	60.9	3.0	-2.9	0.0	0.0	0.0	0.0	0.0	37.6
1	592904.76	4796298.16	106.47	0	DEN	4000	74.1	20.4	0.0	0.0	0.0	60.9	10.3	-2.9	0.0	0.0	0.0	0.0	0.0	26.2
1	592904.76	4796298.16	106.47	0	DEN	8000	65.0	20.4	0.0	0.0	0.0	60.9	36.7	-2.9	0.0	0.0	0.0	0.0	0.0	-9.3
2	592986.57	4796370.01	106.57	0	DEN	32	-65.8	20.4	0.0	0.0	0.0	61.7	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-104.2
2	592986.57	4796370.01	106.57	0	DEN	63	63.9	20.4	0.0	0.0	0.0	61.7	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	25.5
2	592986.57	4796370.01	106.57	0	DEN	125	68.0	20.4	0.0	0.0	0.0	61.7	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	29.5
2	592986.57	4796370.01	106.57	0	DEN	250	73.5	20.4	0.0	0.0	0.0	61.7	0.4	-2.9	0.0	0.0	0.0	0.0	0.0	34.7
2	592986.57	4796370.01	106.57	0	DEN	500	77.9	20.4	0.0	0.0	0.0	61.7	0.7	-2.9	0.0	0.0	0.0	0.0	0.0	38.8
2	592986.57	4796370.01	106.57	0	DEN	1000	80.1	20.4	0.0	0.0	0.0	61.7	1.3	-2.9	0.0	0.0	0.0	0.0	0.0	40.4
2	592986.57	4796370.01	106.57	0	DEN	2000	78.3	20.4	0.0	0.0	0.0	61.7	3.3	-2.9	0.0	0.0	0.0	0.0	0.0	36.6
2	592986.57	4796370.01	106.57	0	DEN	4000	74.1	20.4	0.0	0.0	0.0	61.7	11.3	-2.9	0.0	0.0	0.0	0.0	0.0	24.4
2	592986.57	4796370.01	106.57	0	DEN	8000	65.0	20.4	0.0	0.0	0.0	61.7	40.2	-2.9	0.0	0.0	0.0	0.0	0.0	-13.6
3	593109.30	4796477.80	106.72	0	DEN	32	-65.8	23.4	0.0	0.0	0.0	63.8	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-103.3
3	593109.30	4796477.80	106.72	0	DEN	63	63.9	23.4	0.0	0.0	0.0	63.8	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	26.4
3	593109.30	4796477.80	106.72	0	DEN	125	68.0	23.4	0.0	0.0	0.0	63.8	0.2	-2.9	0.0	0.0	0.0	0.0	0.0	30.2
3	593109.30	4796477.80	106.72	0	DEN	250	73.5	23.4	0.0	0.0	0.0	63.8	0.5	-2.9	0.0	0.0	0.0	0.0	0.0	35.5
3	593109.30	4796477.80	106.72	0	DEN	500	77.9	23.4	0.0	0.0	0.0	63.8	0.8	-2.9	0.0	0.0	0.0	0.0	0.0	39.5
3	593109.30	4796477.80	106.72	0	DEN	1000	80.1	23.4	0.0	0.0	0.0	63.8	1.6	-2.9	0.0	0.0	0.0	0.0	0.0	40.9
3	593109.30	4796477.80	106.72	0	DEN	2000	78.3	23.4	0.0	0.0	0.0	63.8	4.2	-2.9	0.0	0.0	0.0	0.0	0.0	36.5
3	593109.30	4796477.80	106.72	0	DEN	4000	74.1	23.4	0.0	0.0	0.0	63.8	14.4	-2.9	0.0	0.0	0.0	0.0	0.0	22.2
3	593109.30	4796477.80	106.72	0	DEN	8000	65.0	23.4	0.0	0.0	0.0	63.8	51.3	-2.9	0.0	0.0	0.0	0.0	0.0	-23.8

Point Source, ISO 9613, Name: "Asphalt Plant", ID: "KPM_Asphalt_cont"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
4	592515.48	4795614.01	107.50	0	DEN	32	83.9	0.0	0.0	0.0	0.0	68.0	0.0	-3.3	0.0	0.0	4.8	0.0	0.0	14.4
4	592515.48	4795614.01	107.50	0	DEN	63	98.7	0.0	0.0	0.0	0.0	68.0	0.1	-3.3	0.0	0.0	4.8	0.0	0.0	29.1
4	592515.48	4795614.01	107.50	0	DEN	125	108.7	0.0	0.0	0.0	0.0	68.0	0.3	-0.2	0.0	0.0	4.8	0.0	0.0	35.9
4	592515.48	4795614.01	107.50	0	DEN	250	115.4	0.0	0.0	0.0	0.0	68.0	0.7	-1.1	0.0	0.0	4.8	0.0	0.0	42.9
4	592515.48	4795614.01	107.50	0	DEN	500	107.7	0.0	0.0	0.0	0.0	68.0	1.4	-2.1	0.0	0.0	4.9	0.0	0.0	35.5
4	592515.48	4795614.01	107.50	0	DEN	1000	106.7	0.0	0.0	0.0	0.0	68.0	2.6	-2.1	0.0	0.0	5.2	0.0	0.0	33.0
4	592515.48	4795614.01	107.50	0	DEN	2000	103.8	0.0	0.0	0.0	0.0	68.0	6.9	-2.1	0.0	0.0	5.7	0.0	0.0	25.3
4	592515.48	4795614.01	107.50	0	DEN	4000	102.4	0.0	0.0	0.0	0.0	68.0	23.3	-2.1	0.0	0.0	6.6	0.0	0.0	6.6
4	592515.48	4795614.01	107.50	0	DEN	8000	94.7	0.0	0.0	0.0	0.0	68.0	83.0	-2.1	0.0	0.0	7.9	0.0	0.0	-62.1

Point Source, ISO 9613, Name: "Idling GO Train (fueling)", ID: "GO_LocoIdle_cont"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
6	593010.85	4796324.69	110.50	0	D	32	77.3	0.0	0.0	0.0	0.0	60.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	19.9
6	593010.85	4796324.69	110.50	0	D	63	100.5	0.0	0.0	0.0	0.0	60.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	43.1
6	593010.85	4796324.69	110.50	0	D	125	98.1	0.0	0.0	0.0	0.0	60.4	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	40.6
6	593010.85	4796324.69	110.50	0	D	250	101.3	0.0	0.0	0.0	0.0	60.4	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	43.6
6	593010.85	4796324.69	110.50	0	D	500	100.0	0.0	0.0	0.0	0.0	60.4	0.6	-2.9	0.0	0.0	0.0	0.0	0.0	42.0
6	593010.85	4796324.69	110.50	0	D	1000	98.0	0.0	0.0	0.0	0.0	60.4	1.1	-2.9	0.0	0.0	0.0	0.0	0.0	39.5
6	593010.85	4796324.69	110.50	0	D	2000	98.1	0.0	0.0	0.0	0.0	60.4	2.8	-2.9	0.0	0.0	0.0	0.0	0.0	37.8
6	593010.85	4796324.69	110.50	0	D	4000	96.2	0.0	0.0	0.0	0.0	60.4	9.6	-2.9	0.0	0.0	0.0	0.0	0.0	29.2
6	593010.85	4796324.69	110.50	0	D	8000	89.2	0.0	0.0	0.0	0.0	60.4	34.3	-2.9	0.0	0.0	0.0	0.0	0.0	-2.5

Point Source, ISO 9613, Name: "Idling GO Train (fueling)", ID: "GO_LocoIdle_cont"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
6	593010.85	4796324.69	110.50	0	N	32	77.3	0.0	-188.0	0.0	0.0	60.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-168.1
6	593010.85	4796324.69	110.50	0	N	63	100.5	0.0	-188.0	0.0	0.0	60.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-144.9
6	593010.85	4796324.69	110.50	0	N	125	98.1	0.0	-188.0	0.0	0.0	60.4	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	-147.4
6	593010.85	4796324.69	110.50	0	N	250	101.3	0.0	-188.0	0.0	0.0	60.4	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	-144.4
6	593010.85	4796324.69	110.50	0	N	500	100.0	0.0	-188.0	0.0	0.0	60.4	0.6	-2.9	0.0	0.0	0.0	0.0	0.0	-146.0
6	593010.85	4796324.69	110.50	0	N	1000	98.0	0.0	-188.0	0.0	0.0	60.4	1.1	-2.9	0.0	0.0	0.0	0.0	0.0	-148.5
6	593010.85	4796324.69	110.50	0	N	2000	98.1	0.0	-188.0	0.0	0.0	60.4	2.8	-2.9	0.0	0.0	0.0	0.0	0.0	-150.2
6	593010.85	4796324.69	110.50	0	N	4000	96.2	0.0	-188.0	0.0	0.0	60.4	9.6	-2.9	0.0	0.0	0.0	0.0	0.0	-158.8
6	593010.85	4796324.69	110.50	0	N	8000	89.2	0.0	-188.0	0.0	0.0	60.4	34.3	-2.9	0.0	0.0	0.0	0.0	0.0	-190.5
6	593010.85	4796324.69	110.50	0	E	32	77.3	0.0	0.0	0.0	0.0	60.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	19.9
6	593010.85	4796324.69	110.50	0	E	63	100.5	0.0	0.0	0.0	0.0	60.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	43.1
6	593010.85	4796324.69	110.50	0	E	125	98.1	0.0	0.0	0.0	0.0	60.4	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	40.6
6	593010.85	4796324.69	110.50	0	E	250	101.3	0.0	0.0	0.0	0.0	60.4	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	43.6
6	593010.85	4796324.69	110.50	0	E	500	100.0	0.0	0.0	0.0	0.0	60.4	0.6	-2.9	0.0	0.0	0.0	0.0	0.0	42.0
6	593010.85	4796324.69	110.50	0	E	1000	98.0	0.0	0.0	0.0	0.0	60.4	1.1	-2.9	0.0	0.0	0.0	0.0	0.0	39.5
6	593010.85	4796324.69	110.50	0	E	2000	98.1	0.0	0.0	0.0	0.0	60.4	2.8	-2.9	0.0	0.0	0.0	0.0	0.0	37.8
6	593010.85	4796324.69	110.50	0	E	4000	96.2	0.0	0.0	0.0	0.0	60.4	9.6	-2.9	0.0	0.0	0.0	0.0	0.0	29.2
6	593010.85	4796324.69	110.50	0	E	8000	89.2	0.0	0.0	0.0	0.0	60.4	34.3	-2.9	0.0	0.0	0.0	0.0	0.0	-2.5

Point Source, ISO 9613, Name: "Idling Freight Train", ID: "CN_LocoIdle_cont"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
7	592853.59	4796254.46	109.39	0	DEN	32	77.7	0.0	0.0	0.0	0.0	60.9	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	19.7
7	592853.59	4796254.46	109.39	0	DEN	63	86.6	0.0	0.0	0.0	0.0	60.9	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	28.6
7	592853.59	4796254.46	109.39	0	DEN	125	92.6	0.0	0.0	0.0	0.0	60.9	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	34.5
7	592853.59	4796254.46	109.39	0	DEN	250	88.2	0.0	0.0	0.0	0.0	60.9	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	29.9
7	592853.59	4796254.46	109.39	0	DEN	500	100.1	0.0	0.0	0.0	0.0	60.9	0.6	-3.0	0.0	0.0	0.0	0.0	0.0	41.5
7	592853.59	4796254.46	109.39	0	DEN	1000	101.7	0.0	0.0	0.0	0.0	60.9	1.1	-3.0	0.0	0.0	0.0	0.0	0.0	42.6
7	592853.59	4796254.46	109.39	0	DEN	2000	99.7	0.0	0.0	0.0	0.0	60.9	3.0	-3.0	0.0	0.0	0.0	0.0	0.0	38.7
7	592853.59	4796254.46	109.39	0	DEN	4000	92.9	0.0	0.0	0.0	0.0	60.9	10.3	-3.0	0.0	0.0	0.0	0.0	0.0	24.6
7	592853.59	4796254.46	109.39	0	DEN	8000	87.9	0.0	0.0	0.0	0.0	60.9	36.7	-3.0	0.0	0.0	0.0	0.0	0.0	-6.8

Point Source, ISO 9613, Name: "Idling Freight Train", ID: "CN_LocoIdle_cont"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
8	592840.29	4796242.43	109.16	0	DEN	32	77.7	0.0	0.0	0.0	0.0	61.0	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	19.7
8	592840.29	4796242.43	109.16	0	DEN	63	86.6	0.0	0.0	0.0	0.0	61.0	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	28.6
8	592840.29	4796242.43	109.16	0	DEN	125	92.6	0.0	0.0	0.0	0.0	61.0	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	34.4
8	592840.29	4796242.43	109.16	0	DEN	250	88.2	0.0	0.0	0.0	0.0	61.0	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	29.8
8	592840.29	4796242.43	109.16	0	DEN	500	100.1	0.0	0.0	0.0	0.0	61.0	0.6	-3.0	0.0	0.0	0.0	0.0	0.0	41.4
8	592840.29	4796242.43	109.16	0	DEN	1000	101.7	0.0	0.0	0.0	0.0	61.0	1.2	-3.0	0.0	0.0	0.0	0.0	0.0	42.5
8	592840.29	4796242.43	109.16	0	DEN	2000	99.7	0.0	0.0	0.0	0.0	61.0	3.1	-3.0	0.0	0.0	0.0	0.0	0.0	38.6
8	592840.29	4796242.43	109.16	0	DEN	4000	92.9	0.0	0.0	0.0	0.0	61.0	10.4	-3.0	0.0	0.0	0.0	0.0	0.0	24.5
8	592840.29	4796242.43	109.16	0	DEN	8000	87.9	0.0	0.0	0.0	0.0	61.0	37.0	-3.0	0.0	0.0	0.0	0.0	0.0	-7.1

Point Source, ISO 9613, Name: "Idling Freight Train", ID: "CN_LocoIdle_cont"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
9	592828.76	4796231.58	109.15	0	DEN	32	77.7	0.0	0.0	0.0	0.0	61.1	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	19.6
9	592828.76	4796231.58	109.15	0	DEN	63	86.6	0.0	0.0	0.0	0.0	61.1	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	28.5
9	592828.76	4796231.58	109.15	0	DEN	125	92.6	0.0	0.0	0.0	0.0	61.1	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	34.4
9	592828.76	4796231.58	109.15	0	DEN	250	88.2	0.0	0.0	0.0	0.0	61.1	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	29.8
9	592828.76	4796231.58	109.15	0	DEN	500	100.1	0.0	0.0	0.0	0.0	61.1	0.6	-3.0	0.0	0.0	0.0	0.0	0.0	41.4
9	592828.76	4796231.58	109.15	0	DEN	1000	101.7	0.0	0.0	0.0	0.0	61.1	1.2	-3.0	0.0	0.0	0.0	0.0	0.0	42.4
9	592828.76	4796231.58	109.15	0	DEN	2000	99.7	0.0	0.0	0.0	0.0	61.1	3.1	-3.0	0.0	0.0	0.0	0.0	0.0	38.5
9	592828.76	4796231.58	109.15	0	DEN	4000	92.9	0.0	0.0	0.0	0.0	61.1	10.4	-3.0	0.0	0.0	0.0	0.0	0.0	24.3
9	592828.76	4796231.58	109.15	0	DEN	8000	87.9	0.0	0.0	0.0	0.0	61.1	37.2	-3.0	0.0	0.0	0.0	0.0	0.0	-7.5

Point Source, ISO 9613, Name: "Idling GO Train", ID: "GO_LocoIdle_cont"

Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
11	593001.30	4796326.70	110.50	0	D	32	77.3	0.0	-3.0	0.0	0.0	60.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	16.8
11	593001.30	4796326.70	110.50	0	D	63	100.5	0.0	-3.0	0.0	0.0	60.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	40.0
11	593001.30	4796326.70	110.50	0	D	125	98.1	0.0	-3.0	0.0	0.0	60.5	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	37.4

Point Source, ISO 9613, Name: "Idling GO Train", ID: "GO_LocoIdle_cont"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
11	593001.30	4796326.70	110.50	0	D	250	101.3	0.0	-3.0	0.0	0.0	60.5	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	40.4
11	593001.30	4796326.70	110.50	0	D	500	100.0	0.0	-3.0	0.0	0.0	60.5	0.6	-2.9	0.0	0.0	0.0	0.0	0.0	38.9
11	593001.30	4796326.70	110.50	0	D	1000	98.0	0.0	-3.0	0.0	0.0	60.5	1.1	-2.9	0.0	0.0	0.0	0.0	0.0	36.3
11	593001.30	4796326.70	110.50	0	D	2000	98.1	0.0	-3.0	0.0	0.0	60.5	2.9	-2.9	0.0	0.0	0.0	0.0	0.0	34.7
11	593001.30	4796326.70	110.50	0	D	4000	96.2	0.0	-3.0	0.0	0.0	60.5	9.8	-2.9	0.0	0.0	0.0	0.0	0.0	25.9
11	593001.30	4796326.70	110.50	0	D	8000	89.2	0.0	-3.0	0.0	0.0	60.5	34.8	-2.9	0.0	0.0	0.0	0.0	0.0	-6.2
11	593001.30	4796326.70	110.50	0	N	32	77.3	0.0	-4.8	0.0	0.0	60.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	15.0
11	593001.30	4796326.70	110.50	0	N	63	100.5	0.0	-4.8	0.0	0.0	60.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	38.2
11	593001.30	4796326.70	110.50	0	N	125	98.1	0.0	-4.8	0.0	0.0	60.5	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	35.7
11	593001.30	4796326.70	110.50	0	N	250	101.3	0.0	-4.8	0.0	0.0	60.5	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	38.7
11	593001.30	4796326.70	110.50	0	N	500	100.0	0.0	-4.8	0.0	0.0	60.5	0.6	-2.9	0.0	0.0	0.0	0.0	0.0	37.1
11	593001.30	4796326.70	110.50	0	N	1000	98.0	0.0	-4.8	0.0	0.0	60.5	1.1	-2.9	0.0	0.0	0.0	0.0	0.0	34.6
11	593001.30	4796326.70	110.50	0	N	2000	98.1	0.0	-4.8	0.0	0.0	60.5	2.9	-2.9	0.0	0.0	0.0	0.0	0.0	32.9
11	593001.30	4796326.70	110.50	0	N	4000	96.2	0.0	-4.8	0.0	0.0	60.5	9.8	-2.9	0.0	0.0	0.0	0.0	0.0	24.1
11	593001.30	4796326.70	110.50	0	N	8000	89.2	0.0	-4.8	0.0	0.0	60.5	34.8	-2.9	0.0	0.0	0.0	0.0	0.0	-8.0
11	593001.30	4796326.70	110.50	0	E	32	77.3	0.0	-3.0	0.0	0.0	60.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	16.8
11	593001.30	4796326.70	110.50	0	E	63	100.5	0.0	-3.0	0.0	0.0	60.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	40.0
11	593001.30	4796326.70	110.50	0	E	125	98.1	0.0	-3.0	0.0	0.0	60.5	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	37.4
11	593001.30	4796326.70	110.50	0	E	250	101.3	0.0	-3.0	0.0	0.0	60.5	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	40.4
11	593001.30	4796326.70	110.50	0	E	500	100.0	0.0	-3.0	0.0	0.0	60.5	0.6	-2.9	0.0	0.0	0.0	0.0	0.0	38.9
11	593001.30	4796326.70	110.50	0	E	1000	98.0	0.0	-3.0	0.0	0.0	60.5	1.1	-2.9	0.0	0.0	0.0	0.0	0.0	36.3
11	593001.30	4796326.70	110.50	0	E	2000	98.1	0.0	-3.0	0.0	0.0	60.5	2.9	-2.9	0.0	0.0	0.0	0.0	0.0	34.7
11	593001.30	4796326.70	110.50	0	E	4000	96.2	0.0	-3.0	0.0	0.0	60.5	9.8	-2.9	0.0	0.0	0.0	0.0	0.0	25.9
11	593001.30	4796326.70	110.50	0	E	8000	89.2	0.0	-3.0	0.0	0.0	60.5	34.8	-2.9	0.0	0.0	0.0	0.0	0.0	-6.2

Point Source, ISO 9613, Name: "Refueling Truck", ID: "GO_FuelTrk_cont"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
12	593008.10	4796299.37	108.50	0	D	32	62.3	0.0	0.0	0.0	0.0	59.6	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	5.7
12	593008.10	4796299.37	108.50	0	D	63	78.7	0.0	0.0	0.0	0.0	59.6	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	22.0
12	593008.10	4796299.37	108.50	0	D	125	88.5	0.0	0.0	0.0	0.0	59.6	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	31.7
12	593008.10	4796299.37	108.50	0	D	250	91.4	0.0	0.0	0.0	0.0	59.6	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	34.4
12	593008.10	4796299.37	108.50	0	D	500	96.6	0.0	0.0	0.0	0.0	59.6	0.5	-2.9	0.0	0.0	0.0	0.0	0.0	39.4
12	593008.10	4796299.37	108.50	0	D	1000	99.1	0.0	0.0	0.0	0.0	59.6	1.0	-2.9	0.0	0.0	0.0	0.0	0.0	41.4
12	593008.10	4796299.37	108.50	0	D	2000	96.2	0.0	0.0	0.0	0.0	59.6	2.6	-2.9	0.0	0.0	0.0	0.0	0.0	36.9
12	593008.10	4796299.37	108.50	0	D	4000	88.6	0.0	0.0	0.0	0.0	59.6	8.9	-2.9	0.0	0.0	0.0	0.0	0.0	23.0
12	593008.10	4796299.37	108.50	0	D	8000	80.4	0.0	0.0	0.0	0.0	59.6	31.6	-2.9	0.0	0.0	0.0	0.0	0.0	-7.9
12	593008.10	4796299.37	108.50	0	N	32	62.3	0.0	-188.0	0.0	0.0	59.6	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-182.3
12	593008.10	4796299.37	108.50	0	N	63	78.7	0.0	-188.0	0.0	0.0	59.6	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-166.0
12	593008.10	4796299.37	108.50	0	N	125	88.5	0.0	-188.0	0.0	0.0	59.6	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	-156.3
12	593008.10	4796299.37	108.50	0	N	250	91.4	0.0	-188.0	0.0	0.0	59.6	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	-153.6
12	593008.10	4796299.37	108.50	0	N	500	96.6	0.0	-188.0	0.0	0.0	59.6	0.5	-2.9	0.0	0.0	0.0	0.0	0.0	-148.6
12	593008.10	4796299.37	108.50	0	N	1000	99.1	0.0	-188.0	0.0	0.0	59.6	1.0	-2.9	0.0	0.0	0.0	0.0	0.0	-146.6
12	593008.10	4796299.37	108.50	0	N	2000	96.2	0.0	-188.0	0.0	0.0	59.6	2.6	-2.9	0.0	0.0	0.0	0.0	0.0	-151.1
12	593008.10	4796299.37	108.50	0	N	4000	88.6	0.0	-188.0	0.0	0.0	59.6	8.9	-2.9	0.0	0.0	0.0	0.0	0.0	-165.0
12	593008.10	4796299.37	108.50	0	N	8000	80.4	0.0	-188.0	0.0	0.0	59.6	31.6	-2.9	0.0	0.0	0.0	0.0	0.0	-195.9
12	593008.10	4796299.37	108.50	0	E	32	62.3	0.0	0.0	0.0	0.0	59.6	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	5.7
12	593008.10	4796299.37	108.50	0	E	63	78.7	0.0	0.0	0.0	0.0	59.6	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	22.0
12	593008.10	4796299.37	108.50	0	E	125	88.5	0.0	0.0	0.0	0.0	59.6	0.1	-2.9	0.0	0.0	0.0	0.0	0.0	31.7
12	593008.10	4796299.37	108.50	0	E	250	91.4	0.0	0.0	0.0	0.0	59.6	0.3	-2.9	0.0	0.0	0.0	0.0	0.0	34.4
12	593008.10	4796299.37	108.50	0	E	500	96.6	0.0	0.0	0.0	0.0	59.6	0.5	-2.9	0.0	0.0	0.0	0.0	0.0	39.4
12	593008.10	4796299.37	108.50	0	E	1000	99.1	0.0	0.0	0.0	0.0	59.6	1.0	-2.9	0.0	0.0	0.0	0.0	0.0	41.4
12	593008.10	4796299.37	108.50	0	E	2000	96.2	0.0	0.0	0.0	0.0	59.6	2.6	-2.9	0.0	0.0	0.0	0.0	0.0	36.9
12	593008.10	4796299.37	108.50	0	E	4000	88.6	0.0	0.0	0.0	0.0	59.6	8.9	-2.9	0.0	0.0	0.0	0.0	0.0	23.0
12	593008.10	4796299.37	108.50	0	E	8000	80.4	0.0	0.0	0.0	0.0	59.6	31.6	-2.9	0.0	0.0	0.0	0.0	0.0	-7.9

Area Source, ISO 9613, Name: "grinding activity (excavator, loader, grinder)", ID: "KPM_Crush_cont"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
5	592663.57	4795725.09	105.82	0	DEN	32	38.5	37.2	0.0	0.0	0.0	65.4	0.0	-3.0	0.0	0.0	8.9	0.0	0.0	4.4
5	592663.57	4795725.09	105.82	0	DEN	63	55.9	37.2	0.0	0.0	0.0	65.4	0.1	-3.0	0.0	0.0	11.3	0.0	0.0	19.4
5	592663.57	4795725.09	105.82	0	DEN	125	62.3	37.2	0.0	0.0	0.0	65.4	0.2	0.0	0.0	0.0	14.7	0.0	0.0	19.1
5	592663.57	4795725.09	105.82	0	DEN	250	67.5	37.2	0.0	0.0	0.0	65.4	0.5	1.7	0.0	0.0	17.4	0.0	0.0	19.7

Area Source, ISO 9613, Name: "grinding activity (excavator, loader, grinder)", ID: "KPM_Crush_cont"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
5	592663.57	4795725.09	105.82	0	DEN	500	68.0	37.2	0.0	0.0	0.0	65.4	1.0	-0.5	0.0	0.0	23.0	0.0	0.0	16.4
5	592663.57	4795725.09	105.82	0	DEN	1000	71.4	37.2	0.0	0.0	0.0	65.4	1.9	-1.7	0.0	0.0	25.0	0.0	0.0	18.1
5	592663.57	4795725.09	105.82	0	DEN	2000	68.1	37.2	0.0	0.0	0.0	65.4	5.1	-1.8	0.0	0.0	25.0	0.0	0.0	11.7
5	592663.57	4795725.09	105.82	0	DEN	4000	62.0	37.2	0.0	0.0	0.0	65.4	17.2	-1.8	0.0	0.0	25.0	0.0	0.0	-6.6
5	592663.57	4795725.09	105.82	0	DEN	8000	47.9	37.2	0.0	0.0	0.0	65.4	61.4	-1.8	0.0	0.0	25.0	0.0	0.0	-64.8
10	592701.65	4795720.40	106.09	0	DEN	32	38.5	33.9	0.0	0.0	0.0	64.9	0.0	-3.0	0.0	0.0	4.8	0.0	0.0	5.7
10	592701.65	4795720.40	106.09	0	DEN	63	55.9	33.9	0.0	0.0	0.0	64.9	0.1	-3.0	0.0	0.0	4.8	0.0	0.0	23.1
10	592701.65	4795720.40	106.09	0	DEN	125	62.3	33.9	0.0	0.0	0.0	64.9	0.2	1.0	0.0	0.0	3.7	0.0	0.0	26.3
10	592701.65	4795720.40	106.09	0	DEN	250	67.5	33.9	0.0	0.0	0.0	64.9	0.5	3.4	0.0	0.0	1.3	0.0	0.0	31.2
10	592701.65	4795720.40	106.09	0	DEN	500	68.0	33.9	0.0	0.0	0.0	64.9	1.0	0.4	0.0	0.0	4.4	0.0	0.0	31.3
10	592701.65	4795720.40	106.09	0	DEN	1000	71.4	33.9	0.0	0.0	0.0	64.9	1.8	-1.3	0.0	0.0	4.8	0.0	0.0	35.1
10	592701.65	4795720.40	106.09	0	DEN	2000	68.1	33.9	0.0	0.0	0.0	64.9	4.8	-1.4	0.0	0.0	4.8	0.0	0.0	28.9
10	592701.65	4795720.40	106.09	0	DEN	4000	62.0	33.9	0.0	0.0	0.0	64.9	16.3	-1.4	0.0	0.0	4.8	0.0	0.0	11.3
10	592701.65	4795720.40	106.09	0	DEN	8000	47.9	33.9	0.0	0.0	0.0	64.9	58.2	-1.4	0.0	0.0	4.8	0.0	0.0	-44.7
13	592732.87	4795689.16	106.34	0	DEN	32	38.5	29.5	0.0	0.0	0.0	64.9	0.0	-3.0	0.0	0.0	4.8	0.0	0.0	1.3
13	592732.87	4795689.16	106.34	0	DEN	63	55.9	29.5	0.0	0.0	0.0	64.9	0.1	-3.0	0.0	0.0	4.8	0.0	0.0	18.7
13	592732.87	4795689.16	106.34	0	DEN	125	62.3	29.5	0.0	0.0	0.0	64.9	0.2	0.7	0.0	0.0	4.1	0.0	0.0	21.9
13	592732.87	4795689.16	106.34	0	DEN	250	67.5	29.5	0.0	0.0	0.0	64.9	0.5	2.8	0.0	0.0	2.0	0.0	0.0	26.8
13	592732.87	4795689.16	106.34	0	DEN	500	68.0	29.5	0.0	0.0	0.0	64.9	1.0	0.2	0.0	0.0	4.6	0.0	0.0	26.9
13	592732.87	4795689.16	106.34	0	DEN	1000	71.4	29.5	0.0	0.0	0.0	64.9	1.8	-1.2	0.0	0.0	4.8	0.0	0.0	30.7
13	592732.87	4795689.16	106.34	0	DEN	2000	68.1	29.5	0.0	0.0	0.0	64.9	4.8	-1.3	0.0	0.0	4.8	0.0	0.0	24.5
13	592732.87	4795689.16	106.34	0	DEN	4000	62.0	29.5	0.0	0.0	0.0	64.9	16.3	-1.3	0.0	0.0	4.8	0.0	0.0	6.9
13	592732.87	4795689.16	106.34	0	DEN	8000	47.9	29.5	0.0	0.0	0.0	64.9	58.0	-1.3	0.0	0.0	4.8	0.0	0.0	-49.0

Point Source, ISO 9613, Name: "Cement Powder - Pneumatic Transport", ID: "CBM_PneuTrans"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
14	592518.38	4795391.18	104.50	0	D	32	76.2	0.0	0.0	0.0	0.0	69.7	0.0	-4.0	0.0	0.0	5.0	0.0	0.0	5.5
14	592518.38	4795391.18	104.50	0	D	63	92.1	0.0	0.0	0.0	0.0	69.7	0.1	-4.0	0.0	0.0	5.2	0.0	0.0	21.2
14	592518.38	4795391.18	104.50	0	D	125	94.4	0.0	0.0	0.0	0.0	69.7	0.4	-0.2	0.0	0.0	5.5	0.0	0.0	19.1
14	592518.38	4795391.18	104.50	0	D	250	101.8	0.0	0.0	0.0	0.0	69.7	0.9	0.8	0.0	0.0	5.3	0.0	0.0	25.1
14	592518.38	4795391.18	104.50	0	D	500	104.3	0.0	0.0	0.0	0.0	69.7	1.7	-0.1	0.0	0.0	7.1	0.0	0.0	25.9
14	592518.38	4795391.18	104.50	0	D	1000	106.6	0.0	0.0	0.0	0.0	69.7	3.1	-2.0	0.0	0.0	8.7	0.0	0.0	27.1
14	592518.38	4795391.18	104.50	0	D	2000	102.8	0.0	0.0	0.0	0.0	69.7	8.3	-2.3	0.0	0.0	10.7	0.0	0.0	16.4
14	592518.38	4795391.18	104.50	0	D	4000	96.4	0.0	0.0	0.0	0.0	69.7	28.2	-2.3	0.0	0.0	13.1	0.0	0.0	-12.3
14	592518.38	4795391.18	104.50	0	D	8000	84.5	0.0	0.0	0.0	0.0	69.7	100.6	-2.3	0.0	0.0	15.8	0.0	0.0	-99.3
14	592518.38	4795391.18	104.50	0	N	32	76.2	0.0	-188.0	0.0	0.0	69.7	0.0	-4.0	0.0	0.0	5.0	0.0	0.0	-182.5
14	592518.38	4795391.18	104.50	0	N	63	92.1	0.0	-188.0	0.0	0.0	69.7	0.1	-4.0	0.0	0.0	5.2	0.0	0.0	-166.8
14	592518.38	4795391.18	104.50	0	N	125	94.4	0.0	-188.0	0.0	0.0	69.7	0.4	-0.2	0.0	0.0	5.5	0.0	0.0	-168.9
14	592518.38	4795391.18	104.50	0	N	250	101.8	0.0	-188.0	0.0	0.0	69.7	0.9	0.8	0.0	0.0	5.3	0.0	0.0	-162.9
14	592518.38	4795391.18	104.50	0	N	500	104.3	0.0	-188.0	0.0	0.0	69.7	1.7	-0.1	0.0	0.0	7.1	0.0	0.0	-162.1
14	592518.38	4795391.18	104.50	0	N	1000	106.6	0.0	-188.0	0.0	0.0	69.7	3.1	-2.0	0.0	0.0	8.7	0.0	0.0	-160.9
14	592518.38	4795391.18	104.50	0	N	2000	102.8	0.0	-188.0	0.0	0.0	69.7	8.3	-2.3	0.0	0.0	10.7	0.0	0.0	-171.6
14	592518.38	4795391.18	104.50	0	N	4000	96.4	0.0	-188.0	0.0	0.0	69.7	28.2	-2.3	0.0	0.0	13.1	0.0	0.0	-200.3
14	592518.38	4795391.18	104.50	0	N	8000	84.5	0.0	-188.0	0.0	0.0	69.7	100.6	-2.3	0.0	0.0	15.8	0.0	0.0	-287.3
14	592518.38	4795391.18	104.50	0	E	32	76.2	0.0	0.0	0.0	0.0	69.7	0.0	-4.0	0.0	0.0	5.0	0.0	0.0	5.5
14	592518.38	4795391.18	104.50	0	E	63	92.1	0.0	0.0	0.0	0.0	69.7	0.1	-4.0	0.0	0.0	5.2	0.0	0.0	21.2
14	592518.38	4795391.18	104.50	0	E	125	94.4	0.0	0.0	0.0	0.0	69.7	0.4	-0.2	0.0	0.0	5.5	0.0	0.0	19.1
14	592518.38	4795391.18	104.50	0	E	250	101.8	0.0	0.0	0.0	0.0	69.7	0.9	0.8	0.0	0.0	5.3	0.0	0.0	25.1
14	592518.38	4795391.18	104.50	0	E	500	104.3	0.0	0.0	0.0	0.0	69.7	1.7	-0.1	0.0	0.0	7.1	0.0	0.0	25.9
14	592518.38	4795391.18	104.50	0	E	1000	106.6	0.0	0.0	0.0	0.0	69.7	3.1	-2.0	0.0	0.0	8.7	0.0	0.0	27.1
14	592518.38	4795391.18	104.50	0	E	2000	102.8	0.0	0.0	0.0	0.0	69.7	8.3	-2.3	0.0	0.0	10.7	0.0	0.0	16.4
14	592518.38	4795391.18	104.50	0	E	4000	96.4	0.0	0.0	0.0	0.0	69.7	28.2	-2.3	0.0	0.0	13.1	0.0	0.0	-12.3
14	592518.38	4795391.18	104.50	0	E	8000	84.5	0.0	0.0	0.0	0.0	69.7	100.6	-2.3	0.0	0.0	15.8	0.0	0.0	-99.3

Point Source, ISO 9613, Name: "Cement Truck Load Out (approx. 8 min per truck = 7.5 trks/hr, with 5 min at high idle)", ID: "CBM_TrkLoadOut"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
15	592529.47	4795386.26	104.50	0	D	32	65.6	0.0	-2.0	0.0	0.0	69.7	0.0	-4.0	0.0	0.0	4.8	0.0	0.0	-6.9
15	592529.47	4795386.26	104.50	0	D	63	83.1	0.0	-2.0	0.0	0.0	69.7	0.1	-4.0	0.0	0.0	4.8	0.0	0.0	10.5
15	592529.47	4795386.26	104.50	0	D	125	92.1	0.0	-2.0	0.0	0.0	69.7	0.4	0.1	0.0	0.0	5.1	0.0	0.0	14.9
15	592529.47	4795386.26	104.50	0	D	250	100.5	0.0	-2.0	0.0	0.0	69.7	0.9	1.3	0.0	0.0	5.7	0.0	0.0	20.9
15	592529.47	4795386.26	104.50	0	D	500	100.4	0.0	-2.0	0.0	0.0	69.7	1.7	0.2	0.0	0.0	6.8	0.0	0.0	20.0

Point Source, ISO 9613, Name: "Cement Truck Load Out (approx. 8 min per truck = 7.5 trks/hr, with 5 min at high idle)", ID: "CBM_TrkLoadOut"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
15	592529.47	4795386.26	104.50	0	D	1000	101.3	0.0	-2.0	0.0	0.0	69.7	3.1	-1.9	0.0	0.0	8.3	0.0	0.0	20.1
15	592529.47	4795386.26	104.50	0	D	2000	101.0	0.0	-2.0	0.0	0.0	69.7	8.3	-2.2	0.0	0.0	10.2	0.0	0.0	13.0
15	592529.47	4795386.26	104.50	0	D	4000	95.5	0.0	-2.0	0.0	0.0	69.7	28.1	-2.2	0.0	0.0	12.5	0.0	0.0	-14.5
15	592529.47	4795386.26	104.50	0	D	8000	85.6	0.0	-2.0	0.0	0.0	69.7	100.2	-2.2	0.0	0.0	14.9	0.0	0.0	-99.0
15	592529.47	4795386.26	104.50	0	N	32	65.6	0.0	-2.0	0.0	0.0	69.7	0.0	-4.0	0.0	0.0	4.8	0.0	0.0	-6.9
15	592529.47	4795386.26	104.50	0	N	63	83.1	0.0	-2.0	0.0	0.0	69.7	0.1	-4.0	0.0	0.0	4.8	0.0	0.0	10.5
15	592529.47	4795386.26	104.50	0	N	125	92.1	0.0	-2.0	0.0	0.0	69.7	0.4	0.1	0.0	0.0	5.1	0.0	0.0	14.9
15	592529.47	4795386.26	104.50	0	N	250	100.5	0.0	-2.0	0.0	0.0	69.7	0.9	1.3	0.0	0.0	5.7	0.0	0.0	20.9
15	592529.47	4795386.26	104.50	0	N	500	100.4	0.0	-2.0	0.0	0.0	69.7	1.7	0.2	0.0	0.0	6.8	0.0	0.0	20.0
15	592529.47	4795386.26	104.50	0	N	1000	101.3	0.0	-2.0	0.0	0.0	69.7	3.1	-1.9	0.0	0.0	8.3	0.0	0.0	20.1
15	592529.47	4795386.26	104.50	0	N	2000	101.0	0.0	-2.0	0.0	0.0	69.7	8.3	-2.2	0.0	0.0	10.2	0.0	0.0	13.0
15	592529.47	4795386.26	104.50	0	N	4000	95.5	0.0	-2.0	0.0	0.0	69.7	28.1	-2.2	0.0	0.0	12.5	0.0	0.0	-14.5
15	592529.47	4795386.26	104.50	0	N	8000	85.6	0.0	-2.0	0.0	0.0	69.7	100.2	-2.2	0.0	0.0	14.9	0.0	0.0	-99.0
15	592529.47	4795386.26	104.50	0	E	32	65.6	0.0	-2.0	0.0	0.0	69.7	0.0	-4.0	0.0	0.0	4.8	0.0	0.0	-6.9
15	592529.47	4795386.26	104.50	0	E	63	83.1	0.0	-2.0	0.0	0.0	69.7	0.1	-4.0	0.0	0.0	4.8	0.0	0.0	10.5
15	592529.47	4795386.26	104.50	0	E	125	92.1	0.0	-2.0	0.0	0.0	69.7	0.4	0.1	0.0	0.0	5.1	0.0	0.0	14.9
15	592529.47	4795386.26	104.50	0	E	250	100.5	0.0	-2.0	0.0	0.0	69.7	0.9	1.3	0.0	0.0	5.7	0.0	0.0	20.9
15	592529.47	4795386.26	104.50	0	E	500	100.4	0.0	-2.0	0.0	0.0	69.7	1.7	0.2	0.0	0.0	6.8	0.0	0.0	20.0
15	592529.47	4795386.26	104.50	0	E	1000	101.3	0.0	-2.0	0.0	0.0	69.7	3.1	-1.9	0.0	0.0	8.3	0.0	0.0	20.1
15	592529.47	4795386.26	104.50	0	E	2000	101.0	0.0	-2.0	0.0	0.0	69.7	8.3	-2.2	0.0	0.0	10.2	0.0	0.0	13.0
15	592529.47	4795386.26	104.50	0	E	4000	95.5	0.0	-2.0	0.0	0.0	69.7	28.1	-2.2	0.0	0.0	12.5	0.0	0.0	-14.5
15	592529.47	4795386.26	104.50	0	E	8000	85.6	0.0	-2.0	0.0	0.0	69.7	100.2	-2.2	0.0	0.0	14.9	0.0	0.0	-99.0

Point Source, ISO 9613, Name: "Cement Truck Wash and Mix (approx 8 min each at 7.5 trucks/hr)", ID: "CBM_TrkWshMix"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
16	592593.41	4795387.14	104.51	0	D	32	65.6	0.0	-4.0	0.0	0.0	69.2	0.0	-3.9	0.0	0.0	4.0	0.0	0.0	-7.7
16	592593.41	4795387.14	104.51	0	D	63	83.1	0.0	-4.0	0.0	0.0	69.2	0.1	-3.9	0.0	0.0	5.4	0.0	0.0	8.3
16	592593.41	4795387.14	104.51	0	D	125	92.1	0.0	-4.0	0.0	0.0	69.2	0.3	0.1	0.0	0.0	6.8	0.0	0.0	11.6
16	592593.41	4795387.14	104.51	0	D	250	100.5	0.0	-4.0	0.0	0.0	69.2	0.9	1.3	0.0	0.0	8.5	0.0	0.0	16.6
16	592593.41	4795387.14	104.51	0	D	500	100.4	0.0	-4.0	0.0	0.0	69.2	1.6	0.3	0.0	0.0	10.8	0.0	0.0	14.5
16	592593.41	4795387.14	104.51	0	D	1000	101.3	0.0	-4.0	0.0	0.0	69.2	3.0	-1.8	0.0	0.0	13.4	0.0	0.0	13.5
16	592593.41	4795387.14	104.51	0	D	2000	101.0	0.0	-4.0	0.0	0.0	69.2	7.9	-2.2	0.0	0.0	15.9	0.0	0.0	6.2
16	592593.41	4795387.14	104.51	0	D	4000	95.5	0.0	-4.0	0.0	0.0	69.2	26.8	-2.2	0.0	0.0	18.3	0.0	0.0	-20.6
16	592593.41	4795387.14	104.51	0	D	8000	85.6	0.0	-4.0	0.0	0.0	69.2	95.4	-2.2	0.0	0.0	20.4	0.0	0.0	-101.3
16	592593.41	4795387.14	104.51	0	N	32	65.6	0.0	-4.0	0.0	0.0	69.2	0.0	-3.9	0.0	0.0	4.0	0.0	0.0	-7.7
16	592593.41	4795387.14	104.51	0	N	63	83.1	0.0	-4.0	0.0	0.0	69.2	0.1	-3.9	0.0	0.0	5.4	0.0	0.0	8.3
16	592593.41	4795387.14	104.51	0	N	125	92.1	0.0	-4.0	0.0	0.0	69.2	0.3	0.1	0.0	0.0	6.8	0.0	0.0	11.6
16	592593.41	4795387.14	104.51	0	N	250	100.5	0.0	-4.0	0.0	0.0	69.2	0.9	1.3	0.0	0.0	8.5	0.0	0.0	16.6
16	592593.41	4795387.14	104.51	0	N	500	100.4	0.0	-4.0	0.0	0.0	69.2	1.6	0.3	0.0	0.0	10.8	0.0	0.0	14.5
16	592593.41	4795387.14	104.51	0	N	1000	101.3	0.0	-4.0	0.0	0.0	69.2	3.0	-1.8	0.0	0.0	13.4	0.0	0.0	13.5
16	592593.41	4795387.14	104.51	0	N	2000	101.0	0.0	-4.0	0.0	0.0	69.2	7.9	-2.2	0.0	0.0	15.9	0.0	0.0	6.2
16	592593.41	4795387.14	104.51	0	N	4000	95.5	0.0	-4.0	0.0	0.0	69.2	26.8	-2.2	0.0	0.0	18.3	0.0	0.0	-20.6
16	592593.41	4795387.14	104.51	0	N	8000	85.6	0.0	-4.0	0.0	0.0	69.2	95.4	-2.2	0.0	0.0	20.4	0.0	0.0	-101.3
16	592593.41	4795387.14	104.51	0	E	32	65.6	0.0	-4.0	0.0	0.0	69.2	0.0	-3.9	0.0	0.0	4.0	0.0	0.0	-7.7
16	592593.41	4795387.14	104.51	0	E	63	83.1	0.0	-4.0	0.0	0.0	69.2	0.1	-3.9	0.0	0.0	5.4	0.0	0.0	8.3
16	592593.41	4795387.14	104.51	0	E	125	92.1	0.0	-4.0	0.0	0.0	69.2	0.3	0.1	0.0	0.0	6.8	0.0	0.0	11.6
16	592593.41	4795387.14	104.51	0	E	250	100.5	0.0	-4.0	0.0	0.0	69.2	0.9	1.3	0.0	0.0	8.5	0.0	0.0	16.6
16	592593.41	4795387.14	104.51	0	E	500	100.4	0.0	-4.0	0.0	0.0	69.2	1.6	0.3	0.0	0.0	10.8	0.0	0.0	14.5
16	592593.41	4795387.14	104.51	0	E	1000	101.3	0.0	-4.0	0.0	0.0	69.2	3.0	-1.8	0.0	0.0	13.4	0.0	0.0	13.5
16	592593.41	4795387.14	104.51	0	E	2000	101.0	0.0	-4.0	0.0	0.0	69.2	7.9	-2.2	0.0	0.0	15.9	0.0	0.0	6.2
16	592593.41	4795387.14	104.51	0	E	4000	95.5	0.0	-4.0	0.0	0.0	69.2	26.8	-2.2	0.0	0.0	18.3	0.0	0.0	-20.6
16	592593.41	4795387.14	104.51	0	E	8000	85.6	0.0	-4.0	0.0	0.0	69.2	95.4	-2.2	0.0	0.0	20.4	0.0	0.0	-101.3

Point Source, ISO 9613, Name: "Cement Truck Wash and Mix (approx 8 min each at 7.5 trucks/hr)", ID: "CBM_TrkWshMix"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
17	592590.20	4795386.93	104.51	0	D	32	65.6	0.0	-4.0	0.0	0.0	69.3	0.0	-3.9	0.0	0.0	4.0	0.0	0.0	-7.7
17	592590.20	4795386.93	104.51	0	D	63	83.1	0.0	-4.0	0.0	0.0	69.3	0.1	-3.9	0.0	0.0	5.3	0.0	0.0	8.4
17	592590.20	4795386.93	104.51	0	D	125	92.1	0.0	-4.0	0.0	0.0	69.3	0.3	0.1	0.0	0.0	6.7	0.0	0.0	11.6
17	592590.20	4795386.93	104.51	0	D	250	100.5	0.0	-4.0	0.0	0.0	69.3	0.9	1.3	0.0	0.0	8.5	0.0	0.0	16.6
17	592590.20	4795386.93	104.51	0	D	500	100.4	0.0	-4.0	0.0	0.0	69.3	1.6	0.3	0.0	0.0	10.8	0.0	0.0	14.5
17	592590.20	4795386.93	104.51	0	D	1000	101.3	0.0	-4.0	0.0	0.0	69.3	3.0	-1.8	0.0	0.0	13.4	0.0	0.0	13.5
17	592590.20	4795386.93	104.51	0	D	2000	101.0	0.0	-4.0	0.0	0.0	69.3	7.9	-2.2	0.0	0.0	15.9	0.0	0.0	6.2
17	592590.20	4795386.93	104.51	0	D	4000	95.5	0.0	-4.0	0.0	0.0	69.3	26.8	-2.2	0.0	0.0	18.3	0.0	0.0	-20.6
17	592590.20	4795386.93	104.51	0	D	8000	85.6	0.0	-4.0	0.0	0.0	69.3	95.4	-2.2	0.0	0.0	20.4	0.0	0.0	-101.3

Point Source, ISO 9613, Name: "Cement Truck Wash and Mix (approx 8 min each at 7.5 trucks/hr)", ID: "CBM_TrkWshMix"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
17	592590.20	4795386.93	104.51	0	D	2000	101.0	0.0	-4.0	0.0	0.0	69.3	7.9	-2.2	0.0	0.0	15.7	0.0	0.0	6.4
17	592590.20	4795386.93	104.51	0	D	4000	95.5	0.0	-4.0	0.0	0.0	69.3	26.8	-2.2	0.0	0.0	18.1	0.0	0.0	-20.5
17	592590.20	4795386.93	104.51	0	D	8000	85.6	0.0	-4.0	0.0	0.0	69.3	95.7	-2.2	0.0	0.0	20.2	0.0	0.0	-101.4
17	592590.20	4795386.93	104.51	0	N	32	65.6	0.0	-4.0	0.0	0.0	69.3	0.0	-3.9	0.0	0.0	4.0	0.0	0.0	-7.7
17	592590.20	4795386.93	104.51	0	N	63	83.1	0.0	-4.0	0.0	0.0	69.3	0.1	-3.9	0.0	0.0	5.3	0.0	0.0	8.4
17	592590.20	4795386.93	104.51	0	N	125	92.1	0.0	-4.0	0.0	0.0	69.3	0.3	0.1	0.0	0.0	6.7	0.0	0.0	11.6
17	592590.20	4795386.93	104.51	0	N	250	100.5	0.0	-4.0	0.0	0.0	69.3	0.9	1.3	0.0	0.0	8.4	0.0	0.0	16.7
17	592590.20	4795386.93	104.51	0	N	500	100.4	0.0	-4.0	0.0	0.0	69.3	1.6	0.3	0.0	0.0	10.7	0.0	0.0	14.6
17	592590.20	4795386.93	104.51	0	N	1000	101.3	0.0	-4.0	0.0	0.0	69.3	3.0	-1.9	0.0	0.0	13.2	0.0	0.0	13.7
17	592590.20	4795386.93	104.51	0	N	2000	101.0	0.0	-4.0	0.0	0.0	69.3	7.9	-2.2	0.0	0.0	15.7	0.0	0.0	6.4
17	592590.20	4795386.93	104.51	0	N	4000	95.5	0.0	-4.0	0.0	0.0	69.3	26.8	-2.2	0.0	0.0	18.1	0.0	0.0	-20.5
17	592590.20	4795386.93	104.51	0	N	8000	85.6	0.0	-4.0	0.0	0.0	69.3	95.7	-2.2	0.0	0.0	20.2	0.0	0.0	-101.4
17	592590.20	4795386.93	104.51	0	E	32	65.6	0.0	-4.0	0.0	0.0	69.3	0.0	-3.9	0.0	0.0	4.0	0.0	0.0	-7.7
17	592590.20	4795386.93	104.51	0	E	63	83.1	0.0	-4.0	0.0	0.0	69.3	0.1	-3.9	0.0	0.0	5.3	0.0	0.0	8.4
17	592590.20	4795386.93	104.51	0	E	125	92.1	0.0	-4.0	0.0	0.0	69.3	0.3	0.1	0.0	0.0	6.7	0.0	0.0	11.6
17	592590.20	4795386.93	104.51	0	E	250	100.5	0.0	-4.0	0.0	0.0	69.3	0.9	1.3	0.0	0.0	8.4	0.0	0.0	16.7
17	592590.20	4795386.93	104.51	0	E	500	100.4	0.0	-4.0	0.0	0.0	69.3	1.6	0.3	0.0	0.0	10.7	0.0	0.0	14.6
17	592590.20	4795386.93	104.51	0	E	1000	101.3	0.0	-4.0	0.0	0.0	69.3	3.0	-1.9	0.0	0.0	13.2	0.0	0.0	13.7
17	592590.20	4795386.93	104.51	0	E	2000	101.0	0.0	-4.0	0.0	0.0	69.3	7.9	-2.2	0.0	0.0	15.7	0.0	0.0	6.4
17	592590.20	4795386.93	104.51	0	E	4000	95.5	0.0	-4.0	0.0	0.0	69.3	26.8	-2.2	0.0	0.0	18.1	0.0	0.0	-20.5
17	592590.20	4795386.93	104.51	0	E	8000	85.6	0.0	-4.0	0.0	0.0	69.3	95.7	-2.2	0.0	0.0	20.2	0.0	0.0	-101.4

Point Source, ISO 9613, Name: "Cement Truck Wash and Mix (approx 8 min each at 7.5 trucks/hr)", ID: "CBM_TrkWshMix"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
18	592586.94	4795386.29	104.51	0	D	32	65.6	0.0	-4.0	0.0	0.0	69.3	0.0	-3.9	0.0	0.0	3.9	0.0	0.0	-7.7
18	592586.94	4795386.29	104.51	0	D	63	83.1	0.0	-4.0	0.0	0.0	69.3	0.1	-3.9	0.0	0.0	5.3	0.0	0.0	8.4
18	592586.94	4795386.29	104.51	0	D	125	92.1	0.0	-4.0	0.0	0.0	69.3	0.3	0.1	0.0	0.0	6.7	0.0	0.0	11.7
18	592586.94	4795386.29	104.51	0	D	250	100.5	0.0	-4.0	0.0	0.0	69.3	0.9	1.3	0.0	0.0	8.3	0.0	0.0	16.8
18	592586.94	4795386.29	104.51	0	D	500	100.4	0.0	-4.0	0.0	0.0	69.3	1.6	0.3	0.0	0.0	10.5	0.0	0.0	14.7
18	592586.94	4795386.29	104.51	0	D	1000	101.3	0.0	-4.0	0.0	0.0	69.3	3.0	-1.9	0.0	0.0	13.0	0.0	0.0	13.9
18	592586.94	4795386.29	104.51	0	D	2000	101.0	0.0	-4.0	0.0	0.0	69.3	7.9	-2.2	0.0	0.0	15.5	0.0	0.0	6.5
18	592586.94	4795386.29	104.51	0	D	4000	95.5	0.0	-4.0	0.0	0.0	69.3	26.9	-2.2	0.0	0.0	17.9	0.0	0.0	-20.4
18	592586.94	4795386.29	104.51	0	D	8000	85.6	0.0	-4.0	0.0	0.0	69.3	96.0	-2.2	0.0	0.0	20.1	0.0	0.0	-101.5
18	592586.94	4795386.29	104.51	0	N	32	65.6	0.0	-4.0	0.0	0.0	69.3	0.0	-3.9	0.0	0.0	3.9	0.0	0.0	-7.7
18	592586.94	4795386.29	104.51	0	N	63	83.1	0.0	-4.0	0.0	0.0	69.3	0.1	-3.9	0.0	0.0	5.3	0.0	0.0	8.4
18	592586.94	4795386.29	104.51	0	N	125	92.1	0.0	-4.0	0.0	0.0	69.3	0.3	0.1	0.0	0.0	6.7	0.0	0.0	11.7
18	592586.94	4795386.29	104.51	0	N	250	100.5	0.0	-4.0	0.0	0.0	69.3	0.9	1.3	0.0	0.0	8.3	0.0	0.0	16.8
18	592586.94	4795386.29	104.51	0	N	500	100.4	0.0	-4.0	0.0	0.0	69.3	1.6	0.3	0.0	0.0	10.5	0.0	0.0	14.7
18	592586.94	4795386.29	104.51	0	N	1000	101.3	0.0	-4.0	0.0	0.0	69.3	3.0	-1.9	0.0	0.0	13.0	0.0	0.0	13.9
18	592586.94	4795386.29	104.51	0	N	2000	101.0	0.0	-4.0	0.0	0.0	69.3	7.9	-2.2	0.0	0.0	15.5	0.0	0.0	6.5
18	592586.94	4795386.29	104.51	0	N	4000	95.5	0.0	-4.0	0.0	0.0	69.3	26.9	-2.2	0.0	0.0	17.9	0.0	0.0	-20.4
18	592586.94	4795386.29	104.51	0	N	8000	85.6	0.0	-4.0	0.0	0.0	69.3	96.0	-2.2	0.0	0.0	20.1	0.0	0.0	-101.5
18	592586.94	4795386.29	104.51	0	E	32	65.6	0.0	-4.0	0.0	0.0	69.3	0.0	-3.9	0.0	0.0	3.9	0.0	0.0	-7.7
18	592586.94	4795386.29	104.51	0	E	63	83.1	0.0	-4.0	0.0	0.0	69.3	0.1	-3.9	0.0	0.0	5.3	0.0	0.0	8.4
18	592586.94	4795386.29	104.51	0	E	125	92.1	0.0	-4.0	0.0	0.0	69.3	0.3	0.1	0.0	0.0	6.7	0.0	0.0	11.7
18	592586.94	4795386.29	104.51	0	E	250	100.5	0.0	-4.0	0.0	0.0	69.3	0.9	1.3	0.0	0.0	8.3	0.0	0.0	16.8
18	592586.94	4795386.29	104.51	0	E	500	100.4	0.0	-4.0	0.0	0.0	69.3	1.6	0.3	0.0	0.0	10.5	0.0	0.0	14.7
18	592586.94	4795386.29	104.51	0	E	1000	101.3	0.0	-4.0	0.0	0.0	69.3	3.0	-1.9	0.0	0.0	13.0	0.0	0.0	13.9
18	592586.94	4795386.29	104.51	0	E	2000	101.0	0.0	-4.0	0.0	0.0	69.3	7.9	-2.2	0.0	0.0	15.5	0.0	0.0	6.5
18	592586.94	4795386.29	104.51	0	E	4000	95.5	0.0	-4.0	0.0	0.0	69.3	26.9	-2.2	0.0	0.0	17.9	0.0	0.0	-20.4
18	592586.94	4795386.29	104.51	0	E	8000	85.6	0.0	-4.0	0.0	0.0	69.3	96.0	-2.2	0.0	0.0	20.1	0.0	0.0	-101.5