PATERSON GROUP

Environmental Noise Control Study
Proposed Mixed-Use Building

224 Preston Street
Ottawa, Ontario

Prepared for 224 On Preston Inc.

Report PG6395-1 Revision 1 dated September 14, 2023

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1.0 Introduction

Paterson Group (Paterson) was commissioned by 224 On Preston Inc. to conduct an environmental noise control study for the proposed residential building to be located at 224 Preston Street, in the City of Ottawa.

The objective of the current study is to:

- Determine the primary noise sources impacting the site and compare the projected sound levels to guidelines set out by the Ministry of Environment and Climate Change (MOECC) and the City of Ottawa.

- Review the projected noise levels and offer recommendations regarding warning classes, construction materials or alternative sound barriers.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes acoustical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

This study has been conducted according to City of Ottawa document - Engineering Noise Control Guidelines (ENCG), dated January 2016, and the Ontario Ministry of the Environment Guideline NPC-300.

2.0 Proposed Development

It is understood that the proposed development will consist of a six (6) storey residential building with one (1) level of basement. The building will consist of 1 commercial unit on the ground floor, and 30 residential units from the second floor to sixth floor. The building will extend 20 m above grade. Associated walkway, driveway, waste access, and landscaped areas are further anticipated. An outdoor living area, a rooftop terrace, is identified on the proposed site plan.

3.0 Methodology and Noise Assessment Criteria

The City of Ottawa outlines three (3) sources of environmental noise that must be analyzed separately:

- Surface Transportation Noise
- Stationary Noise
  - new noise-sensitive development applications (noise receptors) in proximity to existing or approved stationary sources of noise, and
  - new stationary sources of noise (noise generating) in proximity to existing or approved noise-sensitive developments
- Aircraft Noise

Surface Transportation Noise

Surface roadway traffic noise, equivalent to sound level energy L_{eq}, provides a measure of the time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of 16-hour (L_{eq16}) daytime (07:00-23:00) and 8-hour (L_{eq8}) nighttime (23:00-7:00) split to assess its impact on residential, commercial and institutional buildings.

The City of Ottawa's Official Plan dictates that the influence area must contain any of following conditions to classify as a surface transportation noise source for a subject site:

- Within 100 m of the right-of-way of an existing or proposed arterial, collector or major collector road; a light rail transit corridor; bus rapid transit, or transit priority corridor
- Within 250 m of the right-of-way for an existing or proposed highway or secondary rail line
- Within 300 m from the right of way of a proposed or existing rail corridor or a secondary main railway line
- Within 500 m of an existing 400 series provincial highway, freeway or principle main railway line.

The Environmental Noise Guidelines for Stationary and Transportation Sources – NPC-300 outlines the limitations of noise levels in relation to the location of the receptors. These can be found in the following tables:

Table 1 – Noise Level Limit for Outdoor Living Areas

Time Period	L_{eq} Level (dBA)
Daytime, 7:00-23:00	55

- Standard taken from Table 2.2a; Sound Level Limit for Outdoor Living Areas – Road and Rail

Table 2 – Noise Level Limits for Indoor Living Areas

Type of Space	Time Period	L_{eq} Level (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	Daytime 7:00-23:00	50	45
Theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	Daytime 7:00-23:00	45	40
Living/dining/den areas of **residences**, hospitals, nursing/retirement homes, schools, day-care centres	Daytime 7:00-23:00	45	40
Living/dining/den areas of **residences**, hospitals, nursing/retirement homes etc. (except schools or day-care centres)	Nighttime 23:00-7:00	45	40
Sleeping quarters of hotels/motels	Nighttime 23:00-7:00	45	40
Sleeping quarters of **residences**, hospitals, nursing/retirement homes, etc.	Nighttime 23:00-7:00	40	35

- Standards taken from Table 2.2b, Sound Level Limit for Indoor Living Areas – Road and Rail and Table 2.2c, Supplementary Sound Level Limits for Indoor Spaces – Road and Rail

Predicted noise levels at the pane of window dictate the action required to achieve recommended noise levels. It is noted in ENCG that the limits outlined in Table 2 are for the noise levels on the interior of the window glass pane. An open window is considered to provide a 10 dBA noise reduction, while a standard closed window is capable to provide a minimum 20 dBA noise reduction. The noise level limits of residential building are 45 dBA daytime and 40 dBA nighttime. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, central air conditioning will be required, and the building components will require higher levels of sound attenuation.

When the noise levels are equal to or less than the specified criteria, no noise attenuation (control) measures are required.

When the exceedance of the recommended noise level limits is between 1 dBA and 5 dBA for outdoor living areas (55 dBA < Leq ≤ 60 dBA), the proposed development can be completed with no noise control measures incorporated into the site, but the prospective purchasers / tenants should be made aware by suitable Warning Clauses. When the exceedance of recommended noise level limits is more than 5 dBA for outdoor living areas (Leq > 60 dBA), noise control measures are required to reduce Leq to below 60 dBA and as close as 55 dBA as it is technically and economically feasible.

Noise attenuation (control) measures include any or all of the following:

- Noise attenuation barrier
- Provisions for the installation of central air conditioning
- Central air conditioning
- Architectural components designed to provide additional acoustic insulation

In addition to the implementation of noise attenuation features, if required, the following Warning Clauses may be recommended to advise the prospective purchasers / tenants of affected units of potential environmental noise problem:

Table 3 – Warning Clauses for Outdoor Living Areas

Leq (dBA)	Warning Clause	Description
55 dBA < $L_{eq(16)}$ ≤ 60 dBA	Warning Clause Type A	"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."
60 dBA < $L_{eq(16)}$	Warning Clause Type B	"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic (rail traffic) (air traffic) may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

- Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines for Stationary and Transportation Sources - NPC-300

Table 4 – Warning Clauses for Indoor Living Areas		
Leq (dBA)	**Warning Clause**	**Description**
55 dBA < $L_{eq(16)}$ ≤ 65 dBA 50 dBA < $L_{eq(8)}$ ≤ 60 dBA	Warning Clause Type C	"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."
65 dBA < $L_{eq(16)}$ 60 dBA < $L_{eq(8)}$	Warning Clause Type D	"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."
➢ Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines for Stationary and Transportation Sources - NPC-300		

Stationary Noise

Stationary noise sources include sources or facilities that are fixed or mobile and can cause a combination of sound and vibration levels emitted beyond the property line. These sources may include commercial air conditioner units, generators and fans. Facilities that may contribute to stationary noise may include car washes, snow disposal sites, transit stations and manufacturing facilities.

The subject site is not in proximity to existing or approved stationary sources of noise. Therefore, a stationary noise analysis will not be required.

Aircraft / Airport Noise

The subject site is not located within the Airport Vicinity Development Zone. Therefore this project will not require an aircraft/airport noise analysis. No warning clauses regarding aircraft or airport noise will be required.

4.0 Methodology and Vibration Assessment Criteria

Due to the location of the existing O-Train Railway Trillium Line, a ground vibration and ground-borne noise review was also performed for this development.

Effects of the Rail Corridor on the Proposed Development

The human body can be affected by exposure to vibration, in particular ground-borne vibrations occurring at low frequencies. These can be caused by the surrounding vibration sources previously identified, such as wheels on a road or rail system. These ground-borne vibrations can cause the building to shake (ground-borne vibration) and/or cause rumbling sounds (ground-borne noise).

The methods of defining and measuring vibrations has its own challenges, based on the oscillatory motion identified as a vibration. Due to the nature of the oscillatory motion of the vibration, there is no net movement of the vibration element, and therefore motion descriptors are zero.

There are two (2) main methods of defining the magnitude of the overall vibration. The main one utilized in construction activities is the peak particle velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration signal and is often used when monitoring blasting vibrations and is ideal for evaluating the potential for building damage.

However, human responses require a different method of analysis as the human body requires time to respond to vibration signals. The average vibration amplitude would be an applicable method of reporting the ground-borne vibrations that humans would respond to, however, with the vibration being represented as a sine wave, the average vibration amplitude would be zero. Therefore, the root mean square (RMS) amplitude, typically calculated over a 1 second interval, is utilized for the analysis. The RMS value is always less than the PPV.

General factors that could affect the magnitude of the created vibrations include, but are not limited to, whether the rail is above grade or below grade, speed, vehicle suspension, wheel and track condition, track support system, depth of system and soil conditions. It should be noted that vibrations that travel through the bedrock surface should be minimal, but can travel a further distance.

The Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual: FTA Report No. 0123 dated September 2018 outlines the vibration standards caused by rail sources. Upon review of this document, the following standards were obtained that are applicable to this analysis.

The criteria for the environmental impact from vibrations are based on the RMS vibration levels for repeated events. The proposed development would be classified as a Vibration Category 2 - Residential. The following table outlines the limits for ground-borne vibrations.

Table 5 - Ground-Borne Vibration (GBV) for General Assessment

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch/sec)		
	Frequent Events	Occasional Events	Infrequent Events
Category 2	72 VdB	75 VdB	80 VdB

Notes:
Standards taken from Table 6.3; Indoor Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Vibration Assessment

- Frequent events is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category
- Occasional events is define as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
- Infrequent events is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

Ground-borne vibration can also result in ground-borne noise. This is separate from the noise caused by the trains directly, and instead focuses on the vibration of objects to emit noise. Similar to ground-borne vibration, the noise impacts are based on a criteria for human annoyance and activity interference. For residential buildings, the criteria for acceptability is given in the table on the following page:

Table 6 - Ground-Borne Noise (GBN) for General Assessment

Land Use Category	GBN Impact Levels (dBA re 20 micro Pascals)		
	Frequent Events	Occasional Events	Infrequent Events
Category 2	35 dBA	38 dBA	43 dBA

Notes:
Standards taken from Table 6.3; Indoor Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Vibration Assessment

- Frequent events is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category
- Occasional events is define as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
- Infrequent events is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

5.0 Analysis

Surface Transportation Noise

The subject building is bordered to the north by Larch Street followed by the residential dwellings, commercial buildings, and Laurel Street East, to the east by Preston Street followed by commercial buildings and Balsam Street, to the south by Balsam Street followed by commercial buildings and Gladstone Avenue, and to the west by residential dwellings and Larch Street. Larch Street, Laurel Street East, Preston Street, Balsam Street, and Gladstone Avenue are identified within the 100 m radius of proposed building.

Based on the City of Ottawa's Official Plan, Schedule F, Preston Street is considered a 2-lane urban arterial road (2-UAU). Gladstone Avenue is considered a 2-lane major collector road (2-UMCU). Other roads within the 100 m radius of the proposed development are not classified as either arterial, collector or major collector roads and therefore are not included in this study. Additionally, the 3-lane Highway 417 Westbound and the 3-lane Highway 417 Eastbound are within the 500 m radius from the proposed building and are therefore included in this study.

The Trillium Rail Line is identified within 300 m of the proposed development. It is understood that the Trillium Rail Line is used by O-Train Rail. Based on a phone discussion with OC Transpo personnel, the method to approximate the volume of trains along rail line is based on the operation hours of 6 am to 12 am and the train service frequency of 10 to 15 minutes. It was further confirmed by OC Transpo personnel that, after Trillium Rail Line extension construction, the O-Trains in Trillium Rail Line will be electrical operated. Each O-Train consists of an electric locomotive pulling 1 car.

The major sources of traffic noise are due to the Preston Street to the east, Trillium Rail Line to the west, Gladstone Avenue, Highway 417 Westbound, and Highway 417 Eastbound to the south of the proposed building.

All noise sources are presented in Drawing PG6395-3 - Site Geometry located in Appendix 1.

The noise levels from road traffic are provided by the City of Ottawa, taking into consideration the right-of-way width and the implied roadway classification. It is understood that these values represent the maximum allowable capacity of the proposed roadways. The parameters to be used for sound level predictions can be found below.

Table 7 – Traffic and Road Parameters						
Segment	**Roadway Classification**	**AADT Veh/Day**	**Speed Limit (km/h)**	**Day/Night Split %**	**Medium Truck %**	**Heavy Truck %**
Highway 417 Westbound	3- Queensway	54,999	100	92/8	7	5
Highway 417 Eastbound	3- Queensway	54,999	100	92/8	7	5
Preston Street	2-UAU	15,000	50	92/8	7	5
Gladstone Avenue	2-UMCU	12,000	40	92/8	7	5
➢ Data obtained from the City of Ottawa document ENCG						

Table 8 – Rail Parameters				
Rail Line	**Engine Type**	**Maximum Speed (km/hr)**	**Number of Trips/day**	**Length of Train**
O-Train Rail	Electric	80	190	2

Three (3) levels of reception points were selected for this analysis. The following elevations were selected from the heights provided on the survey plan for the subject building.

Table 9 – Elevations of Reception Points			
Floor Number	**Elevation at Centre of Window (m)**	**Floor Use**	**Daytime / Nighttime Analysis**
First Floor	1.5	Living Area/Bedroom	Daytime / Nighttime
Sixth Floor	18.5	Living Area/Bedroom	Daytime / Nighttime
Rooftop Terrace	21.5	--	Outdoor Living Area

For this analysis, a reception point was taken at the centre of each floor, at the first floor and top floor. Outdoor living area – rooftop terrace is anticipated at the proposed building. One receptor (REC 5) was selected in the centre of rooftop terrace, 21.5 m. Reception points are detailed on Drawing PG6395-2 - Receptor Locations presented in Appendix 1.

All horizontal distances have been measured from the reception point to the edge of the right-of-way. The roadway was analyzed where it intersected the 100 m buffer zone, the railway was analyzed where it intersected the 300 m buffer zone, and the highway was analyzed where it intersected the 500 m buffer zone, which are reflected in the local angles described in Paterson Drawings PG6395-3A to 3G - Site Geometry in Appendix 1.

Table 11 - Summary of Reception Points and Geometry, located in Appendix 1, provides a summary of the points of reception and their geometry with respect to the noise sources. The analysis is completed so that no effects of sound reflection off of the building facade are considered, as stipulated by the ENGC.

The subject site gently slopes down to the north, and it is at grade with the neighbouring roads within the 500 m radius.

The analysis was completed using STAMSON version 5.04, a computer program which uses the road and rail traffic noise prediction methods using ORNAMENT (Ontario Road Noise Analysis Method for Environment and Transportation) and STEAM (Sound from Trains Environment Analysis Method), publications from the Ontario Ministry of Environment and Energy.

Standard mitigation measures for the O-Train Rail Line - principle main line include a 30 m setback, a 2.5 m high earthen berm, and a possible 3 m high acoustical fence. In this analysis, the mitigation measure includes a 190 m setback from the O-Train railway, and an open-cut trench that is 6 m lower than the neighbouring properties. It is understood that acoustic fence and earthen berm are not included in this project.

Ground-Borne Noise and Vibration

The O-Train Rail Line is located along the western property line. It is understood that there will be 190 trains a day, at a maximum speed of approximately 80 km/hr (50 mph). It is further understood that there will be a 195 m (640 ft) buffer zone from the centerline of O-Train railway to the closest possible location of the proposed building.

The following figure is a base curve for ground surface vibration levels, assuming the equipment is in good condition and speeds of 80 km/hr (50 mph). Due to the nature of the Rail Line, identified as locomotive powered passenger train, this figure is applicable for the proposed building.

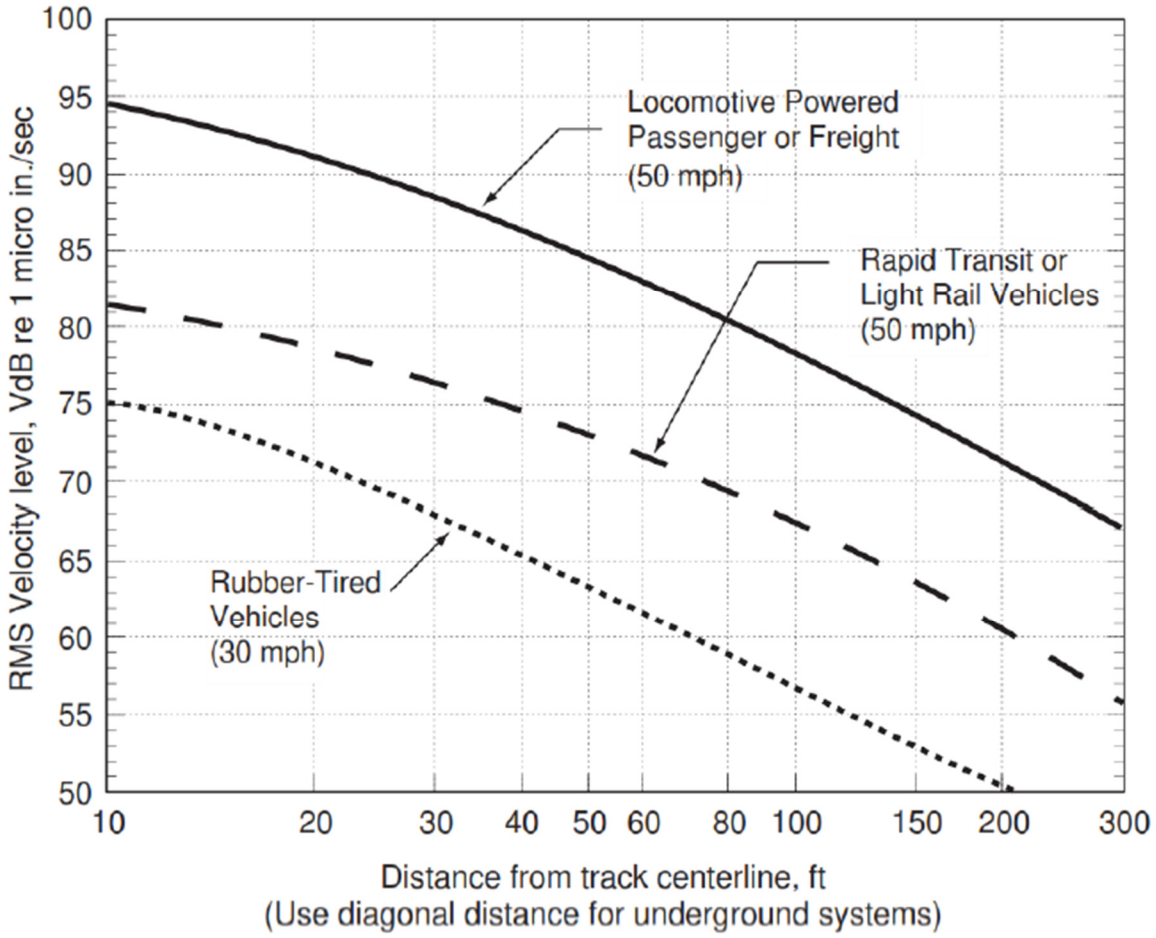


Figure 1 – Generalized Ground Surface Vibration Curve

Curve	Equation	
Locomotive Powered Passenger or Freight Curve	$L_v = 92.28 + 14.81\log(D) - 14.17\log(D)^2 + 1.65\log(D)^3$	**Eq. 6-1**
Rapid Transit or Light Rail Vehicles Curve	$L_v = 85.88 - 1.06\log(D) - 2.32\log(D)^2 - 0.87\log(D)^3$	**Eq. 6-2**
Rubber-Tired Vehicles Curve	$L_v = 66.08 + 34.28\log(D) - 30.25\log(D)^2 + 5.40\log(D)^3$	**Eq. 6-3**
L_v = velocity level, VdB D = distance, ft		

Figure 2 – Equations for the curves in Figure 1

Figure 1 provides the generalized ground surface vibration curve, but adjustments, noted in Tables 6-11, 6-12 and 6-13 of the Transit Noise and Vibration Impact Assessment, can be made to the ground-borne vibration parameters. The most common adjustments are noted below:

Speed:	Vehicle speed - 80 km/hr (50 mph)	0 dB
Track Conditions:	stiff primary suspension:	+8 dB
Track Treatments:	Ballast mats	-10 dB
	High-resistence fasteners	-5 dB
	Resiliently supported ties	-10 dB
Track Structure:	at-grade tie & ballast; Elevated	-10 dB
	at-grade tie & ballast; Open cut	0 dB
Ground-borne Propagation Effects:		
Geologic Conditions:	in Soil	+10 dB
	in Rock layer (50 ft bgs.)	+2 dB
	in Rock layer (100 ft bgs.)	+4 dB
Building Foundation:	1-2 Storey Masonry	-7 dB
	3-4 Storey Masonry	-10 dB
	Large Masonry on Spread Footings	-13 dB
Floor-to-Floor Attenuation:	1 to 5 Floors above Grade	-2 dB/Floor
	5 to 10 Floors above Grade	-1 dB/Floor
Amplification due to Resonances:		+6 dB

From a review of the neighbouring railway, the following conditions were confirmed:

Vehicle speed: 80 km/hr (50 mph)
Soft Primary Suspension (resonance around 8-10 Hz)
No track treatment: Floating slab trackbed
No track treatment: Ballast Mats
No track treatment: High resilience fasteners
No track treatment: Resiliently supported ties.
No Worn or Corrugated Track
Track located at a 6 m depth open-cut trench

From a review of the geotechnical founding conditions and the proposed building, the following conditions were confirmed:

Bedrock anticipated at 10 m below ground surface
Proposed building to be founded on glacial till deposit
The rail line is constructed on (assumed) glacial till deposit
Proposed building to be 6 storey masonry

6.0 Results

Surface Transportation Noise

The primary descriptors are the 16-hour daytime (7:00-23:00) and the 8-hour nighttime (23:00-7:00) equivalent sound levels, $L_{eq(16)}$ and $L_{eq(8)}$ for City roads.

The exterior noise levels due to roadway traffic sources were analyzed with the STAMSON version 5.04 software at all reception points. The input and output data of the STAMSON modeling can be found in Appendix 2, and the summary of the results can be found in Table 10.

Table 10: Exterior Noise Levels due to Roadway Traffic Sources

Reception Point	Height Above Grade (m)	Receptor Location	Daytime $L_{eq(16)}$ (dBA)	Nighttime $L_{eq(8)}$ (dBA)
REC 1-1	1.5	Northern Elevation, 1st Floor	60	53
REC 1-6	18.5	Northern Elevation, 6th Floor	62	55
REC 2-1	1.5	Western Elevation, 1st Floor	48	40
REC 2-6	18.5	Western Elevation, 6th Floor	53	45
REC 3-1	1.5	Eastern Elevation, 1st Floor	67	59
REC 3-6	18.5	Eastern Elevation, 6th Floor	68	61
REC 4-1	1.5	Southern Elevation, 1st Floor	61	53
REC 4-6	18.5	Southern Elevation, 6th Floor	63	55
REC 5	21.5	Rooftop Terrace	57	--

Ground-Borne Noise and Vibration

Based on the site proximity to the rail line, the closest location was selected for the analysis at 195 m (640'). Therefore, the maximum ground-borne vibration will be 45 VdB based on Figure 2. Applying the efficient propagation in shallow bedrock at depth less than 50 feet below ground surface (+2 dB), the construction of a 6 storey masonry building on glacial till deposit (-10 dB for coupling loss). This will result in an estimated ground-borne noise of 37 VdB before taking into consideration propagation between floors. With floor propagation taken into consideration the ground-borne vibrations should range between 41 VdB in the basement to 30 VdB in the 6th floor. These are below the 72 dBA for frequent event that is specified by the FTA and outlined in Table 5. Therefore, the ground-borne vibration satisfies the industry standards for residential uses at the proposed building.

Ground-borne noise is a common concern for buildings in close proximity to a rail line. The vibration of the transit structure excites the adjacent ground, creating vibration waves that propagate through the subsurface materials, and into the foundation of neighbouring buildings. This vibration will then be transferred throughout the building, often at the resonance frequency of the various components of the building. This ground-borne vibration of floors and walls may cause items to rattle, or it may manifest itself as a rumble, defined as ground-borne noise.

A conservative conversion from ground-borne vibration to ground-borne noise noted in Table 6-14 of the Transit Noise and Vibration Impact Assessment, can be made to the adjusted ground-borne vibration parameters. The conversion is as follow:

Low frequency (<30 Hz):	-50 dB
Typical (peak 30 to 60 Hz):	-35 dB
High frequency (>60 Hz):	-20 dB

The proposed building will be founded on glacial till deposit and the railway will be founded on bedrock. Therefore, the peak frequency of ground vibration will be of low frequency (<30 Hz). The conservation from ground-borne vibration to ground-borne noise will result in the estimated ground-borne noise of 6 dBA within the basement and 0 dBA in the 6th floor. These are below the 35 dBA for frequent event that is specified by the FTA and outlined in Table 6. Therefore, the ground-borne noise satisfies the industry standards for residential uses at the proposed building.

7.0 Discussion and Recommendations

7.1 Outdoor Living Areas

Outdoor living area – rooftop terrace is anticipated at the proposed mixed-use building. One (1) receptor point was selected for the analysis at outdoor living areas (REC 5). It is assumed that the rooftop terrace will only be utilized as outdoor living area provided that the proposed building is constructed. Utilizing the exteriors of proposed building as noise barriers, the proposed Leq(16) at the rooftop terrace will be 57 dBA, which slightly exceeds the 55 dBA threshold value specified by the ENCG. This exceedance is acceptable provided that Warning Clause A is included on all deeds of sale.

7.2 Indoor Living Areas and Ventilation

The results of the STAMSON modeling indicate that the noise levels at proposed mixed-use building will range between 48 dBA and 68 dBA during the daytime period (07:00-23:00) and between 40 dBA and 61 dBA during the nighttime period (23:00-7:00). The noise levels on the northern, eastern, and southern elevations of proposed building will exceed the limit for the exterior of the pane of glass (55 dBA) specified by the ENCG. It is also noted that the noise levels on the eastern elevation will exceed 65 dBA. Therefore, units on the northern, eastern, and southern elevations of this building should be supplied with a central air conditioning unit, along with the warning clause Type D, as outlined in Table 3.

This building does exceed the 65 dBA threshold for noise on the eastern elevation. Therefore, an analysis of the building materials is required. Paterson reviewed the preliminary exterior wall construction details received from the client. It is understood that the exterior cladding will consist of brick veneer. The brick veneer exterior cladding will consist of 3 5/8” x 2 ¼” x 7 5/8” stone veneer, 1” air space, 2” non-combustible R10 semi-rigid insulation, peel and stick weather barrier, 5/8” densglass gold board, 3 5/8” 20GA metal studs, 3 ½” non-combustible fibreglass, 6 mil polyethylene vapour barrier, and 5/8” type X gypsum board. The analysis for the acoustical properties of the proposed building was completed with all windows consisting of double pane glass, and the exterior cladding consisting of brick veneer. If alternative construction materials are proposed, a review will be required.

The preliminary exterior wall construction details are presented in Appendix 3.

Proposed Construction Specifications

It is understood that typical window and wall details are proposed for the residential buildings. The effectiveness of the noise insulation can be expressed as the Acoustical Insulation Factor (AIF), calculated as follows:

$$AIF = L_{eq(16)(Exterior)} - L_{eq(16)(Interior)} + 10\log_{10}(N) + 2 \text{ dBA}$$

Where:

$L_{eq(16)(Exterior)}$ = Calculated value at the window pane
$L_{eq(16)(Interior)}$ = 45 dBA
N = number of components in the room

No floor plans or detailed design drawings were provided for this portion of the review. A conservative approach is to assume that there are 2 components per room. Therefore, the AIF would need to be at least 28 dBA.

A conversion from AIF to a Standard Transmission Class (STC) rating will require the knowledge of room dimensions in addition to the wall and window dimensions. However, a conservative approach would be to increase the AIF factor by 3. **Therefore, provided the building materials of either the windows and/or exterior walls have an STC rating of 31 or higher, this would be a sufficient noise attenuation device.**

A review of industry standards for construction material indicates that, provided the exterior cladding of the eastern elevation consist of brick or concrete panels and that all windows consist of double pane glass, these materials have an STC rating of greater than 31 and are considered acceptable. If alternative materials are to be utilized on the eastern elevation, then a review will need to be completed once design details are finalized.

Preliminary exterior wall details have been provided to Paterson and are included in Appendix 3. A review of these details indicate that the exterior cladding will exist of brick (masonry veneer). A review of these construction materials indicates that the exterior cladding exceeds the STC rating of 31 and is considered acceptable.

8.0 Summary of Findings

The subject site is located at 224 Preston Street, in the City of Ottawa. It is understood that the proposed development will consist of six (6) storey mixed-use building with one (1) level of basement. The building will rise 20 metres above grade. There are five major sources of surface transportation noise to the proposed development: Highway 417 West, Highway 417 East, Preston Street, Gladstone Avenue, and the Trillium Corridor O-Train Rail Line.

Several reception points were selected for the analysis, consisting of pane of glass reception points on both the first and top level. The estimated ground-borne vibrations for the receivers at the first floor and the sixth floor are below the 72 VdB for frequent event that is specified by the FTA and is therefore considered acceptable without further mitigation measures. The estimated ground-borne noises for the receivers at the first floor and the sixth floor are below the 35 dBA for frequent event that is specified by the FTA. The estimated ground-borne noises of the proposed building are considered acceptable without additional mitigation measures.

The surface transportation noise analysis was completed at the Outdoor Living Area – rooftop terrace of proposed building. Utilizing the exteriors of proposed building as noise barriers, the results of STAMSON modeling indicate that the noise level at the rooftop terrace of proposed building is expected to be 57 dBA, during the daytime period, which slightly exceeds the 55 dBA threshold value specified by the ENCG. This exceedance is considered acceptable provided that the warning clause Type A is included on all deeds of sale.

Several reception points were selected for the surface transportation noise analysis, consisting of the centre of first level and top level. The results of STAMSON modeling indicate that noise levels on the northern, eastern, and southern elevations of proposed building are expected to exceed the 55 dBA threshold specified by the ENCG. It is also noted that the noise level on the eastern elevation will exceed 65 dBA. Therefore, the installation of a central air conditioning unit, along with a warning clause Type D, will be required for the units on the northern, eastern, and southern elevations of proposed building.

The results of STAMSON modeling indicate that the noise levels on the eastern elevation will exceed 65 dBA. Therefore, an analysis of the building materials is required. Paterson reviewed the preliminary exterior wall construction details provided by the client. It was determined that the exterior cladding being brick veneer would be suitable for proposed noise attenuation. If alternative construction materials are proposed, a review will be required.

The following warning clause is to be included on all Offers of Purchase and Sale and/or lease agreements:

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

9.0 Statement of Limitations

The recommendations made in this report are in accordance with our present understanding of the project. Our recommendations should be reviewed when the project drawings and specifications are complete.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than 224 On Preston Inc. or their agent(s) is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.

September 14,2023

Yolanda Tang, M.A.Sc

Stephanie A. Boisvenue, P.Eng.

Report Distribution:

- ❑ 224 On Preston Inc. (email copy)
- ❑ Paterson Group (1 copy)

APPENDIX 1

Table 11 - Summary of Reception Points and Geometry

Drawing PG6395-1 - Site Plan

Drawing PG6395-2 - Receptor Location Plan

Drawing PG6395-3 - Site Geometry

Drawing PG6395-3A - Site Geometry - REC 1-1

Drawing PG6395-3B - Site Geometry - REC 1-6

Drawing PG6395-3C - Site Geometry - REC 2-1 and REC 2-6

Drawing PG6395-3D - Site Geometry - REC 3-1

Drawing PG6395-3E - Site Geometry - REC 3-6

Drawing PG6395-3F - Site Geometry - REC 4-1 and REC 4-6

Drawing PG6395-3G - Site Geometry - REC 5

Table 11 - Summary of Reception Points and Geometry
224 Preston Street

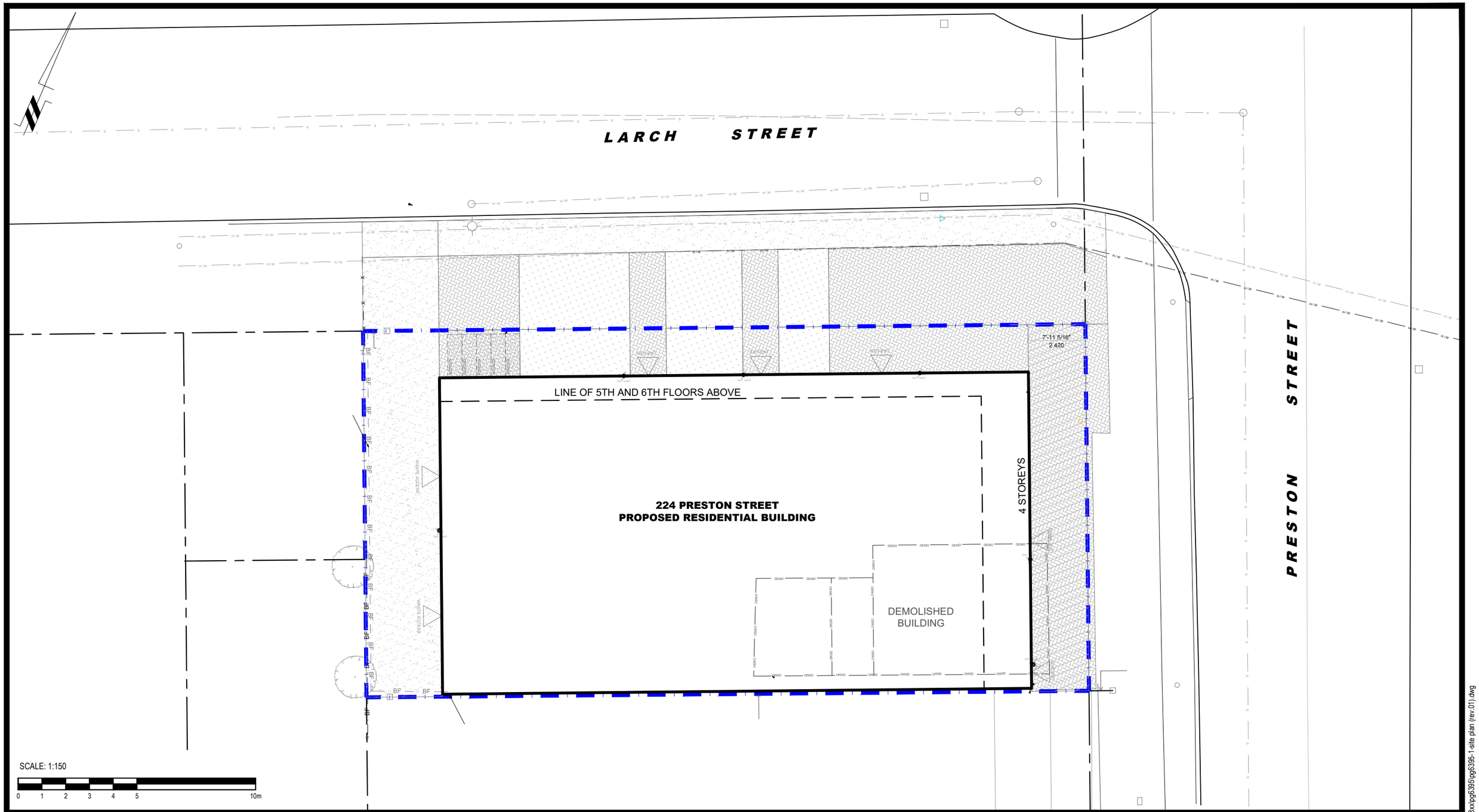
Point of Reception	Location	Leq Day (dBA)	Highway 417 Eastbound						Highway 417 Westbound					
			Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)
REC 1-1	Northern Elevation, 1st Floor	60	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 1-6	Northern Elevation, 6th Floor	62	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 2-1	Western Elevation, 1st Floor	48	318	1.5	318	0, 54	6	80	298	1.5	298	0, 57	6	80
REC 2-6	Western Elevation, 6th Floor	53	318	18.5	318.5	0, 54	6	80	298	18.5	298.6	0, 57	6	80
REC 3-1	Eastern Elevation, 1st Floor	67	318	1.5	318	-44, 0	6	80	298	1.5	298	-46, 0	6	80
REC 3-6	Eastern Elevation, 6th Floor	68	318	18.5	318.5	-44, 0	6	80	298	18.5	298.6	-47, 0	6	80
REC 4-1	Southern Elevation, 1st Floor	61	313	1.5	313	-46, 56	6	80	293	1.5	293	-48, 59	6	80
REC 4-6	Southern Elevation, 6th Floor	63	313	18.5	313.6	-46, 56	6	80	293	18.5	293.6	-48, 59	6	80
REC 5	Rooftop Patio	57	318	21.5	318.7	-45, 55	6	80	298	21.5	298.8	-47, 58	6	80

Table 11 - Summary of Reception Points and Geometry
224 Preston Street

Point of Reception	Location	Leq Day (dBA)	Preston Street						Gladstone Avenue					
			Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)
REC 1-1	Northern Elevation, 1st Floor	60	25	1.5	25.0	-81, 0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 1-6	Northern Elevation, 6th Floor	62	25	18.5	31.1	-81, 0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 2-1	Western Elevation, 1st Floor	48	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 2-6	Western Elevation, 6th Floor	53	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 3-1	Eastern Elevation, 1st Floor	67	15	1.5	15.1	-89, 89	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 3-6	Eastern Elevation, 6th Floor	68	15	18.5	23.8	-89, 89	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 4-1	Southern Elevation, 1st Floor	61	25	1.5	25.0	0, 82	n/a	n/a	105	1.5	105.0	-20, 18	2	40
REC 4-6	Southern Elevation, 6th Floor	63	25	18.5	31.1	0, 82	n/a	n/a	105	18.5	106.6	-20, 18	2	40
REC 5	Rooftop Patio	57	25	21.5	33.0	-83, 83	n/a	n/a	110	21.5	112.1	-17, 16	2	40

Table 11 - Summary of Reception Points and Geometry
224 Preston Street

Point of Reception	Location	Leq Day (dBA)	Trillium Rail Line					
			Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)
REC 1-1	Northern Elevation, 1st Floor	60	215	1.5	215.0	0, 30	2	40
REC 1-6	Northern Elevation, 6th Floor	62	215	18.5	215.8	0, 29	2	40
REC 2-1	Western Elevation, 1st Floor	48	190	1.5	190.0	-71, 31	2	40
REC 2-6	Western Elevation, 6th Floor	53	190	18.5	190.9	-71, 31	2	40
REC 3-1	Eastern Elevation, 1st Floor	67	n/a	n/a	n/a	n/a	n/a	n/a
REC 3-6	Eastern Elevation, 6th Floor	68	n/a	n/a	n/a	n/a	n/a	n/a
REC 4-1	Southern Elevation, 1st Floor	61	200	1.5	200.0	-68, 0	2	40
REC 4-6	Southern Elevation, 6th Floor	63	200	18.5	200.9	-68, 0	2	40
REC 5	Rooftop Patio	57	200	21.5	201.2	-69, 30	2	40



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-1
Approved by: SB	Revision No.: 1

11x17

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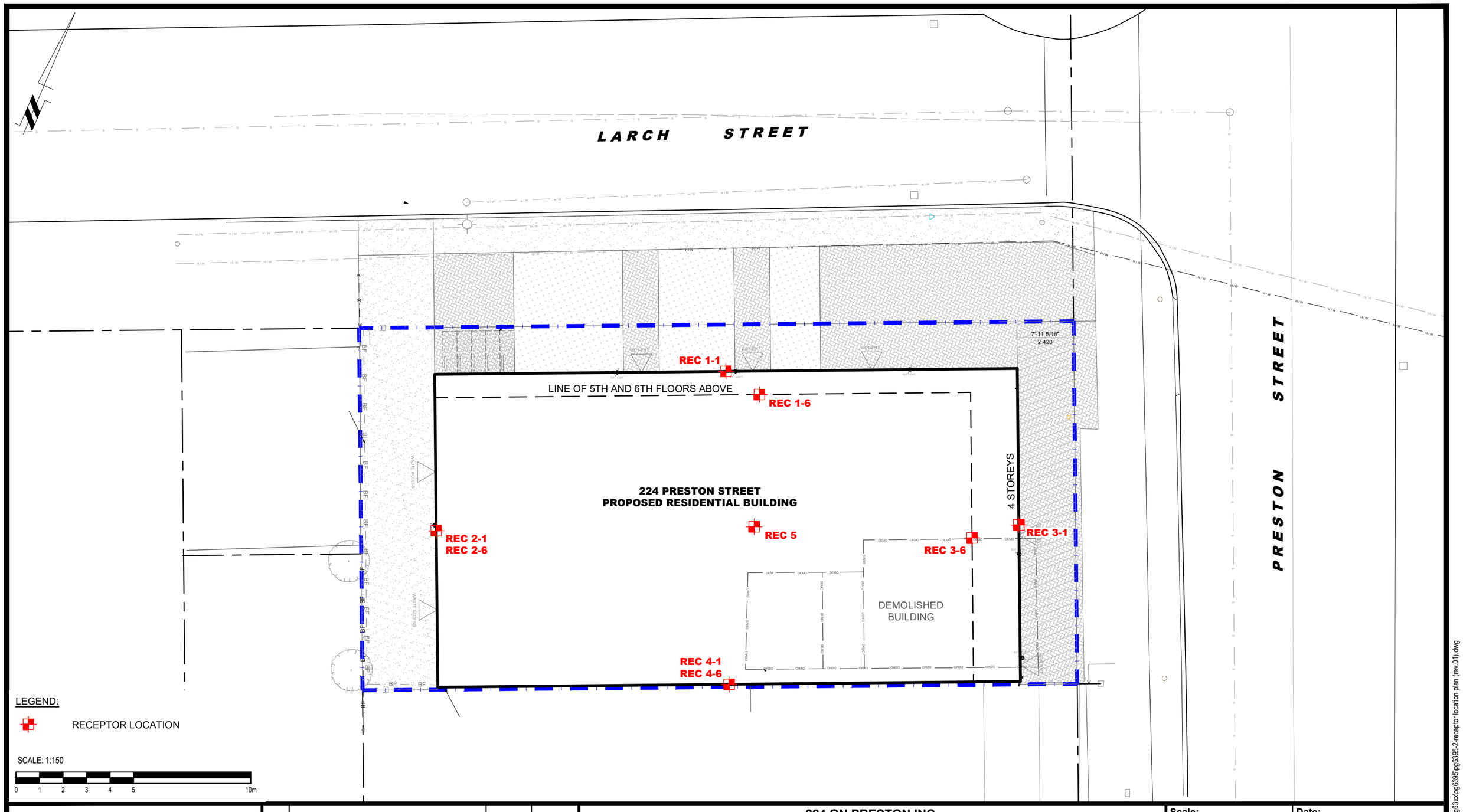

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TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

RECEPTOR LOCATION PLAN

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-2
Approved by: SB	Revision No.: 1

11x17

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1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE GEOMETRY

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3
Approved by: SB	Revision No.: 1

11x17

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500 m RADIUS

100 m RADIUS

300 m RADIUS

PRESTON STREET
2-LANE URBAN ARTERIAL (2-UAU)
AADT: 15,000
SPEED: 50 KM /HR

SITE: 224 PRESTON STREET
APPROX. ELEVATION: 58 m
APPROX. HEIGHT: 20 m

O-TRAIN RAIL
TRILLIUM LINE
VOLUME: 190 TRAINS /DAY
SPEED: 80 KM / HR
APPROX. ELEVATION : 56 m

GLADSTONE AVENUE
2-LANE MAJOR COLLECTOR
(2-UMCU)
AADT: 12,000
SPEED: 40 KM /HR

HIGHWAY 417 WESTBOUND
3-LANE QUEENSWAY
AADT: 54,999
SPEED: 100 KM / HR
APPROX. ELEVATION 68 m

HIGHWAY 417 EASTBOUND
3-LANE QUEENSWAY
AADT: 54,999
SPEED: 100 KM / HR
APPROX. ELEVATION 68 m

REC 1-1

-81°

0°

30°

0°

PRESTON STREET

BOOTH STREET

GLADSTONE AVENUE

TRILLIUM RAIL CORRIDOR

ROCHESTER STREET

HWY 417

LEGEND:

RECEPTOR LOCATION

SCALE: 1:5000

0 50 100 150 200 250 300m

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NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 1-1

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3A
Approved by: SB	Revision No.: 1

11x17

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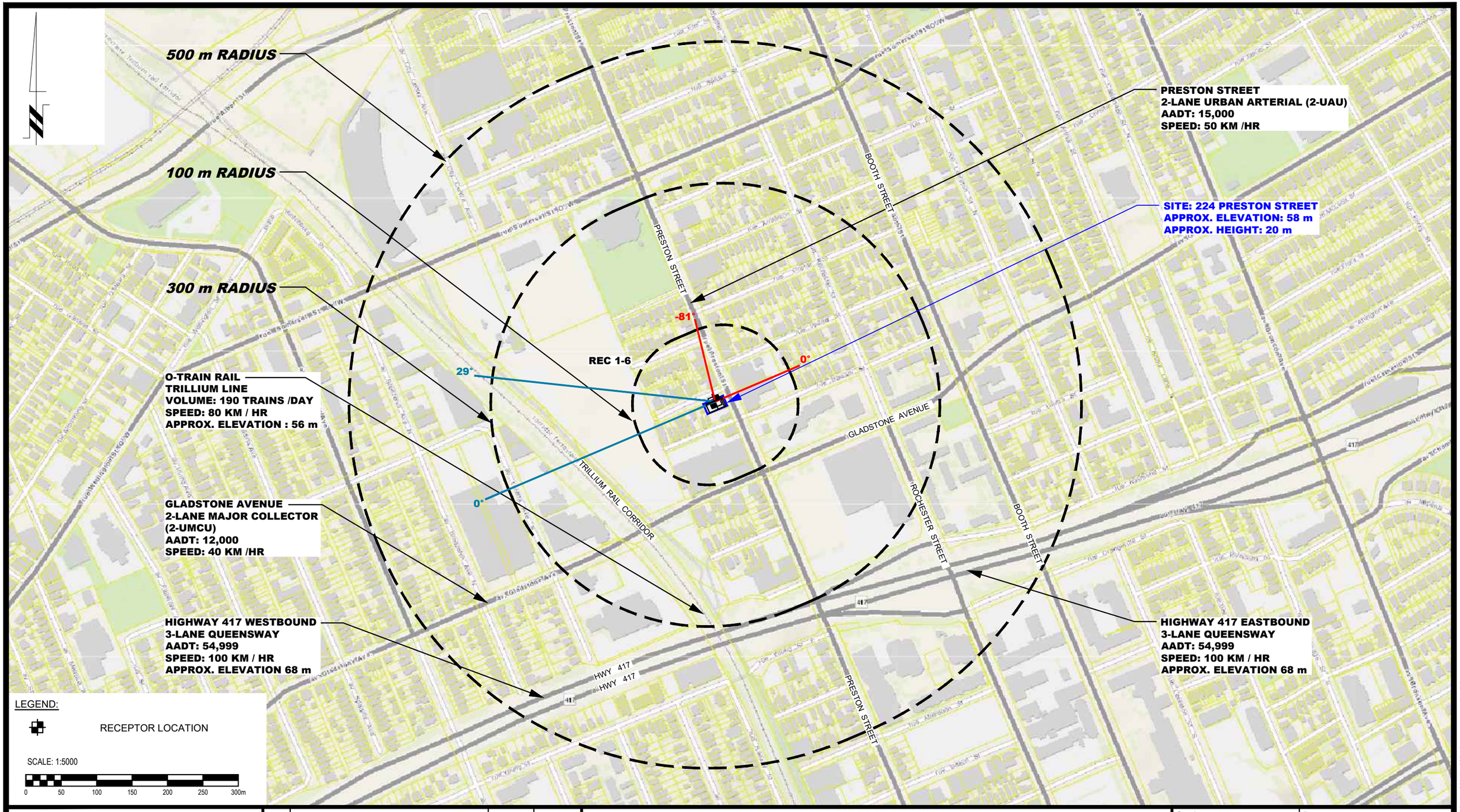

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NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

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NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 1-6

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3B
Approved by: SB	Revision No.: 1

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1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET
OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 2-1 AND REC 2-6

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3C
Approved by: SB	Revision No.: 1

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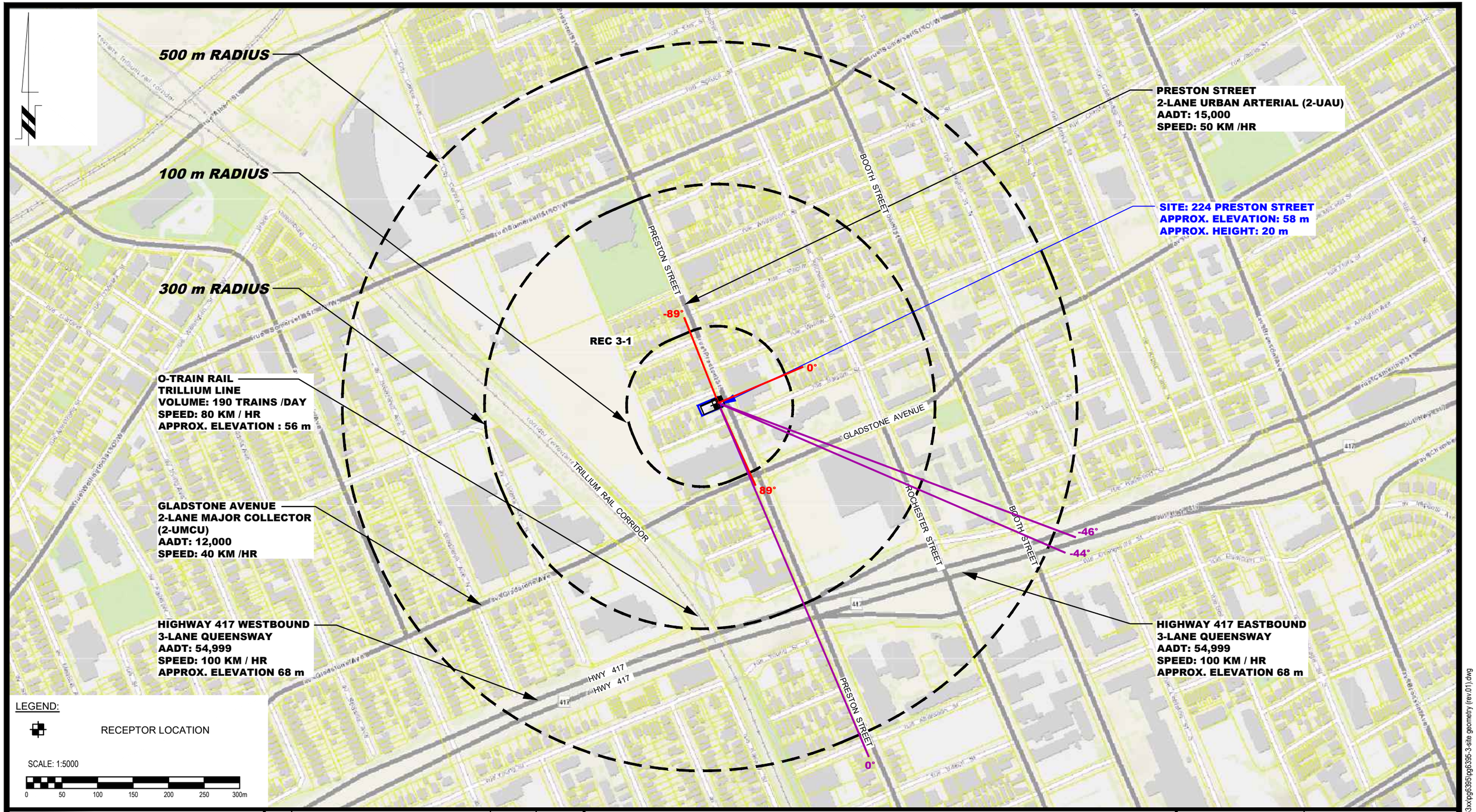

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NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 3-1

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3D
Approved by: SB	Revision No.: 1

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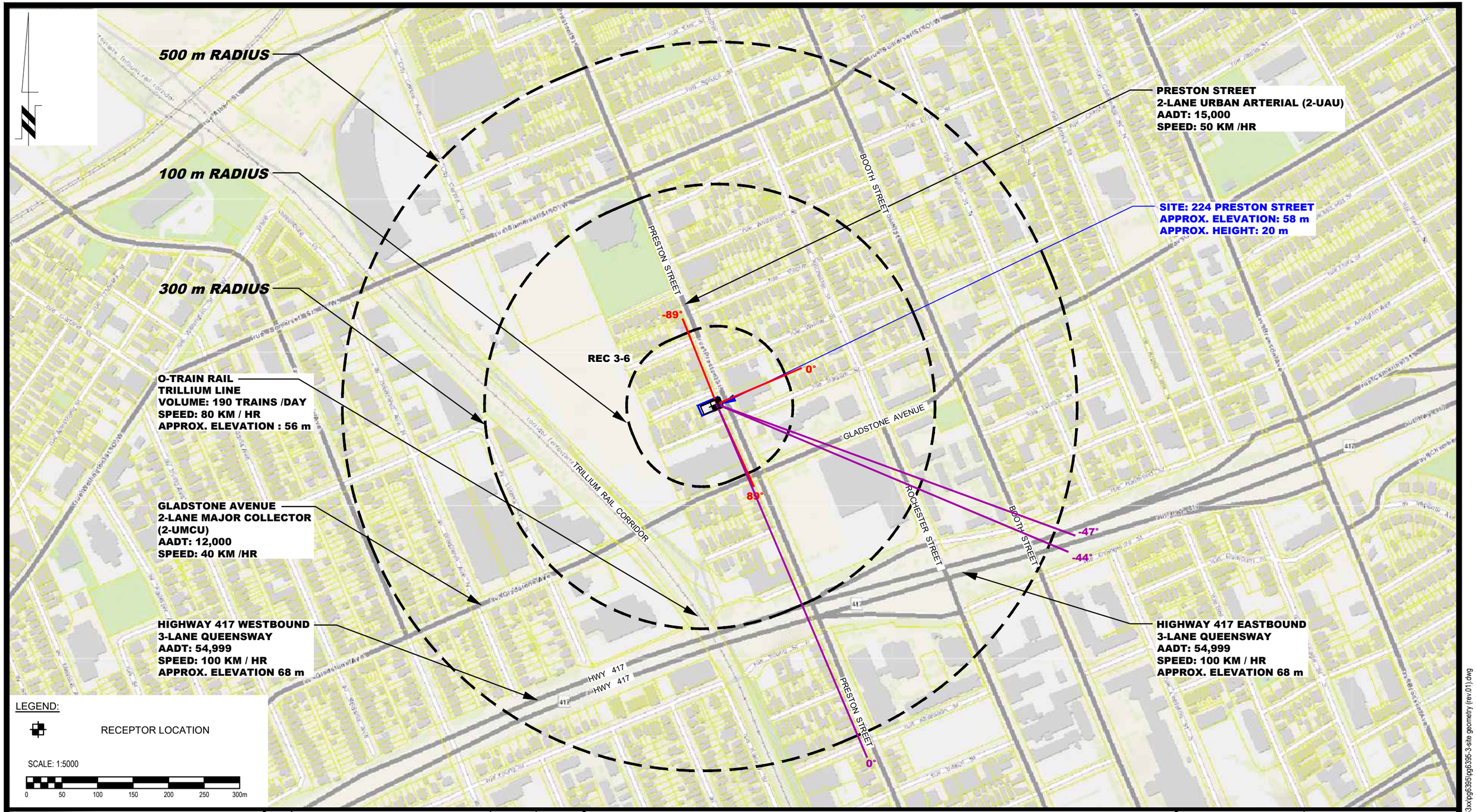

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NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 3-6

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3E
Approved by: SB	Revision No.: 1

11x17

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500 m RADIUS

100 m RADIUS

300 m RADIUS

PRESTON STREET
2-LANE URBAN ARTERIAL (2-UAU)
AADT: 15,000
SPEED: 50 KM /HR

SITE: 224 PRESTON STREET
APPROX. ELEVATION: 58 m
APPROX. HEIGHT: 20 m

REC 4-1
REC 4-6

O-TRAIN RAIL
TRILLIUM LINE
VOLUME: 190 TRAINS /DAY
SPEED: 80 KM / HR
APPROX. ELEVATION : 56 m

GLADSTONE AVENUE
2-LANE MAJOR COLLECTOR
(2-UMCU)
AADT: 12,000
SPEED: 40 KM /HR

HIGHWAY 417 WESTBOUND
3-LANE QUEENSWAY
AADT: 54,999
SPEED: 100 KM / HR
APPROX. ELEVATION 68 m

HIGHWAY 417 EASTBOUND
3-LANE QUEENSWAY
AADT: 54,999
SPEED: 100 KM / HR
APPROX. ELEVATION 68 m

0°
0°
82°
-20°
18°
0°
-48°
-46°
-68°
59°
56°
0°

BOOTH STREET
PRESTON STREET
GLADSTONE AVENUE
TRILLIUM RAIL CORRIDOR
ROCHESTER STREET
HWY 417
HWY 417

LEGEND:

RECEPTOR LOCATION

SCALE: 1:5000

0 50 100 150 200 250 300m

PATERSON GROUP
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NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 4-1 AND 4-6

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3F
Approved by: SB	Revision No.: 1

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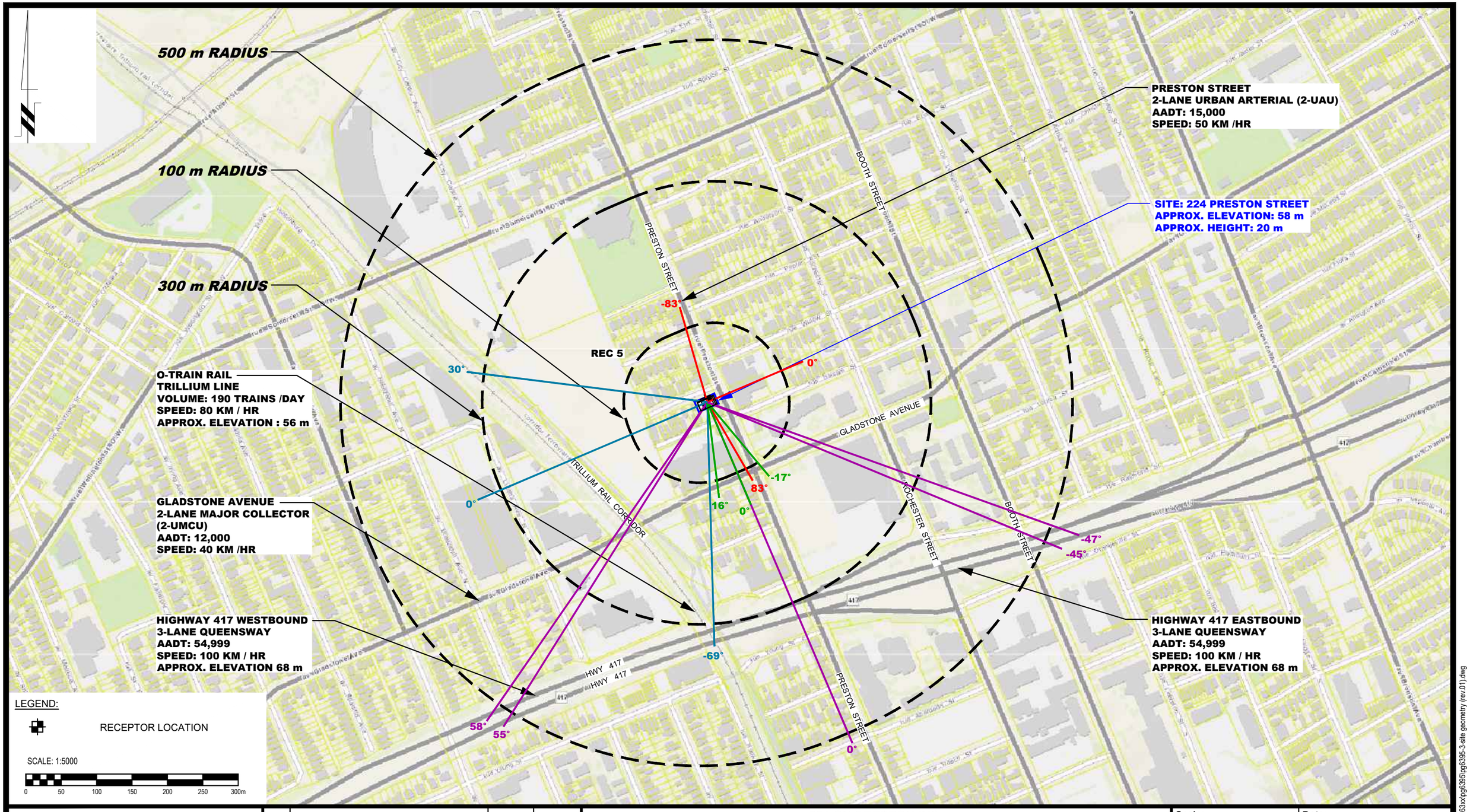

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NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	16/08/2023	YT

224 ON PRESTON INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL BUILDING
224 PRESTON STREET

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 5

Scale: 1:150	Date: 08/2022
Drawn by: YA	Report No.: PG6395-1
Checked by: YT	Dwg. No.: PG6395-3G
Approved by: SB	Revision No.: 1

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APPENDIX 2

STAMSON RESULTS

STAMSON 5.0 NORMAL REPORT Date: 23-08-2022 17:04:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec11.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 1-1

Rail data, segment # 1: O-Train Rail (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. O-Train Rail	190.0/1.0	80.0	1.0	1.0	Elec	Yes

Data for Segment # 1: O-Train Rail (day/night)

Angle1 Angle2	0.00 deg	30.00 deg
Wood depth	0	(No woods.)
No of house rows	2 / 2	
House density	40 %	
Surface	1	(Absorptive ground surface)
Receiver source distance	215.00 / 215.00 m	
Receiver height	1.50 / 1.50 m	
Topography	3	(Elevated; no barrier)

No Whistle

Elevation	6.00 m
Reference angle	0.00

Results segment # 1: O-Train Rail (day)

LOCOMOTIVE (0.00 + 33.00 + 0.00) = 33.00 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	30	0.41	60.53	-16.25	-7.86	0.00	-3.42	0.00	33.00

WHEEL (0.00 + 31.77 + 0.00) = 31.77 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	30	0.51	60.54	-17.46	-7.88	0.00	-3.42	0.00	31.77

Segment Leq : 35.44 dBA

Total Leq All Segments: 35.44 dBA

Results segment # 1: O-Train Rail (night)

LOCOMOTIVE (0.00 + 13.22 + 0.00) = 13.22 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	30	0.41	40.75	-16.25	-7.86	0.00	-3.42	0.00	13.22

WHEEL (0.00 + 11.99 + 0.00) = 11.99 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	30	0.51	40.76	-17.46	-7.88	0.00	-3.42	0.00	11.99

Segment Leq : 15.66 dBA

Total Leq All Segments: 15.66 dBA

↟

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

```
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

```
    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
```

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

```
Angle1   Angle2           : -81.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

Results segment # 1: Preston St (day)

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

Source height = 1.50 m

ROAD (0.00 + 60.22 + 0.00) = 60.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -81      0   0.66  68.48   0.00  -3.68  -4.58   0.00   0.00   0.00  60.22
-------------------------------------------------------------------------------

Segment Leq : 60.22 dBA

Total Leq All Segments: 60.22 dBA

↟
Results segment # 1: Preston St (night)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 52.62 + 0.00) = 52.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -81      0   0.66  60.88   0.00  -3.68  -4.58   0.00   0.00   0.00  52.62
-------------------------------------------------------------------------------

Segment Leq : 52.62 dBA

Total Leq All Segments: 52.62 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 60.23
                           (NIGHT): 52.62
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 23-08-2022 17:15:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec16.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 1-6

Rail data, segment # 1: O-Train Rail (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. O-Train Rail	190.0/1.0	80.0	1.0	1.0	Elec	Yes

Data for Segment # 1: O-Train Rail (day/night)

Angle1 Angle2	0.00 deg	29.00 deg
Wood depth	0	(No woods.)
No of house rows	2 / 2	
House density	40 %	
Surface	1	(Absorptive ground surface)
Receiver source distance	215.00 / 215.00 m	
Receiver height	18.50 / 18.50 m	
Topography	3	(Elevated; no barrier)
No Whistle		
Elevation	6.00 m	
Reference angle	0.00	

Results segment # 1: O-Train Rail (day)

LOCOMOTIVE (0.00 + 37.61 + 0.00) = 37.61 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	29	0.00	60.53	-11.56	-7.93	0.00	-3.42	0.00	37.61

WHEEL (0.00 + 37.62 + 0.00) = 37.62 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	29	0.00	60.54	-11.56	-7.93	0.00	-3.42	0.00	37.62

Segment Leq : 40.63 dBA

Total Leq All Segments: 40.63 dBA

Results segment # 1: O-Train Rail (night)

LOCOMOTIVE (0.00 + 17.84 + 0.00) = 17.84 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	29	0.00	40.75	-11.56	-7.93	0.00	-3.42	0.00	17.84

WHEEL (0.00 + 17.85 + 0.00) = 17.85 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	29	0.00	40.76	-11.56	-7.93	0.00	-3.42	0.00	17.85

Segment Leq : 20.86 dBA

Total Leq All Segments: 20.86 dBA

↟

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

```
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

```
    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
```

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

```
Angle1   Angle2           : -81.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

Results segment # 1: Preston St (day)

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

Source height = 1.50 m

ROAD (0.00 + 62.18 + 0.00) = 62.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -81      0   0.15  68.48   0.00  -2.55  -3.75   0.00   0.00   0.00  62.18
-------------------------------------------------------------------------------

Segment Leq : 62.18 dBA

Total Leq All Segments: 62.18 dBA

↟
Results segment # 1: Preston St (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.58 + 0.00) = 54.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -81      0   0.15  60.88   0.00  -2.55  -3.75   0.00   0.00   0.00  54.58
-------------------------------------------------------------------------------

Segment Leq : 54.58 dBA

Total Leq All Segments: 54.58 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 62.21
                           (NIGHT): 54.58
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 23-08-2022 15:23:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec21.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 2-1

Rail data, segment # 1: O-Train Rail (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. O-Train Rail	190.0/1.0	80.0	1.0	1.0	Elec	Yes

Data for Segment # 1: O-Train Rail (day/night)

Angle1 Angle2	: -71.00 deg	31.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 2 / 2	
House density	: 40 %	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 190.00 / 190.00 m	
Receiver height	: 1.50 / 1.50 m	
Topography	: 3	(Elevated; no barrier)
No Whistle		
Elevation	: 6.00 m	
Reference angle	: 0.00	

Results segment # 1: O-Train Rail (day)

LOCOMOTIVE (0.00 + 38.74 + 0.00) = 38.74 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	31	0.41	60.53	-15.49	-2.85	0.00	-3.44	0.00	38.74

WHEEL (0.00 + 37.50 + 0.00) = 37.50 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	31	0.51	60.54	-16.65	-2.94	0.00	-3.44	0.00	37.50

Segment Leq : 41.17 dBA

Total Leq All Segments: 41.17 dBA

Results segment # 1: O-Train Rail (night)

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

LOCOMOTIVE (0.00 + 18.97 + 0.00) = 18.97 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -71     31   0.41  40.75 -15.49  -2.85   0.00  -3.44   0.00  18.97
-------------------------------------------------------------------------

WHEEL (0.00 + 17.73 + 0.00) = 17.73 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -71     31   0.51  40.76 -16.65  -2.94   0.00  -3.44   0.00  17.73
-------------------------------------------------------------------------

Segment Leq : 21.40 dBA

Total Leq All Segments: 21.40 dBA

♠
Road data, segment # 1: Hwy417 East (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Hwy417 East (day/night)
---------------------------------------------
Angle1   Angle2           :   0.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 6
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 318.00 / 318.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  10.00 m
Reference angle           :   0.00
```

Road data, segment # 2: Hwy417 West (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 54999
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Hwy417 West (day/night)

Angle1 Angle2 : 0.00 deg 57.00 deg
Wood depth : 0 (No woods.)
No of house rows : 6 / 6
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 298.00 / 298.00 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 10.00 m
Reference angle : 0.00

Results segment # 1: Hwy417 East (day)

Source height = 1.50 m

ROAD (0.00 + 43.99 + 0.00) = 43.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	54	0.36	80.15	0.00	-18.04	-5.48	0.00	-12.64	0.00	43.99

Segment Leq : 43.99 dBA

Results segment # 2: Hwy417 West (day)

Source height = 1.50 m

ROAD (0.00 + 44.54 + 0.00) = 44.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	57	0.36	80.15	0.00	-17.66	-5.28	0.00	-12.68	0.00	44.54

Segment Leq : 44.54 dBA

Total Leq All Segments: 47.28 dBA

↟

Results segment # 1: Hwy417 East (night)

Source height = 1.50 m

ROAD (0.00 + 36.39 + 0.00) = 36.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	54	0.36	72.55	0.00	-18.04	-5.48	0.00	-12.64	0.00	36.39

Segment Leq : 36.39 dBA

↟

Results segment # 2: Hwy417 West (night)

Source height = 1.50 m

ROAD (0.00 + 36.94 + 0.00) = 36.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	57	0.36	72.55	0.00	-17.66	-5.28	0.00	-12.68	0.00	36.94

Segment Leq : 36.94 dBA

Total Leq All Segments: 39.68 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 48.23
(NIGHT): 39.75

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↟

STAMSON 5.0 NORMAL REPORT Date: 29-08-2023 15:41:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec26.te Time Period: Day/Night 16/8 hours
Description: Reception Point 2-6

Rail data, segment # 1: O-Train Rail (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. O-Train Rail	190.0/1.0	80.0	1.0	1.0	Elec	Yes

Data for Segment # 1: O-Train Rail (day/night)

Angle1 Angle2	: -71.00 deg	31.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 2 / 2	
House density	: 40 %	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 190.00 / 190.00 m	
Receiver height	: 18.50 / 18.50 m	
Topography	: 3	(Elevated; no barrier)
No Whistle		
Elevation	: 6.00 m	
Reference angle	: 0.00	

↟
Results segment # 1: O-Train Rail (day)

LOCOMOTIVE (0.00 + 43.59 + 0.00) = 43.59 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	31	0.00	60.53	-11.03	-2.47	0.00	-3.44	0.00	43.59

WHEEL (0.00 + 43.60 + 0.00) = 43.60 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	31	0.00	60.54	-11.03	-2.47	0.00	-3.44	0.00	43.60

Segment Leq : 46.61 dBA

Total Leq All Segments: 46.61 dBA

↟
Results segment # 1: O-Train Rail (night)

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

LOCOMOTIVE (0.00 + 23.81 + 0.00) = 23.81 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -71     31   0.00  40.75 -11.03  -2.47   0.00  -3.44   0.00  23.81
-------------------------------------------------------------------------

WHEEL (0.00 + 23.83 + 0.00) = 23.83 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -71     31   0.00  40.76 -11.03  -2.47   0.00  -3.44   0.00  23.83
-------------------------------------------------------------------------

Segment Leq : 26.83 dBA

Total Leq All Segments: 26.83 dBA

↟
Road data, segment # 1: Hwy417 East (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Hwy417 East (day/night)
---------------------------------------------
Angle1   Angle2           :   0.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 6
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 318.00 / 318.00 m
Receiver height           :  18.50 / 18.50  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  10.00 m
Reference angle           :   0.00
```

Road data, segment # 2: Hwy417 West (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 54999
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Hwy417 West (day/night)

Angle1 Angle2 : 0.00 deg 57.00 deg
Wood depth : 0 (No woods.)
No of house rows : 6 / 6
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 298.00 / 298.00 m
Receiver height : 18.50 / 18.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 10.00 m
Reference angle : 0.00

Results segment # 1: Hwy417 East (day)

Source height = 1.50 m

ROAD (0.00 + 49.02 + 0.00) = 49.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	54	0.00	80.15	0.00	-13.26	-5.23	0.00	-12.64	0.00	49.02

Segment Leq : 49.02 dBA

Results segment # 2: Hwy417 West (day)

Source height = 1.50 m

ROAD (0.00 + 49.49 + 0.00) = 49.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	57	0.00	80.15	0.00	-12.98	-4.99	0.00	-12.68	0.00	49.49

Segment Leq : 49.49 dBA

Total Leq All Segments: 52.27 dBA

↟

Results segment # 1: Hwy417 East (night)

Source height = 1.50 m

ROAD (0.00 + 41.42 + 0.00) = 41.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	54	0.00	72.55	0.00	-13.26	-5.23	0.00	-12.64	0.00	41.42

Segment Leq : 41.42 dBA

↟

Results segment # 2: Hwy417 West (night)

Source height = 1.50 m

ROAD (0.00 + 41.90 + 0.00) = 41.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	57	0.00	72.55	0.00	-12.98	-4.99	0.00	-12.68	0.00	41.90

Segment Leq : 41.90 dBA

Total Leq All Segments: 44.68 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 53.31
(NIGHT): 44.75

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STAMSON 5.0 NORMAL REPORT Date: 23-08-2022 16:45:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec31.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 3-1

Road data, segment # 1: Hwy417 East (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 54999
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hwy417 East (day/night)

Angle1 Angle2 : -44.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 6 / 6
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 318.00 / 318.00 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 10.00 m
Reference angle : 0.00

↑
Road data, segment # 2: Hwy417 West (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Hwy417 West (day/night)
--------------------------------------------
Angle1   Angle2           : -46.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 6
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 298.00 / 298.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  10.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Preston St (day/night)
--------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Preston St (day/night)
--------------------------------------------
Angle1   Angle2           : -89.00 deg   89.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: Hwy417 East (day)

Source height = 1.50 m

ROAD (0.00 + 43.19 + 0.00) = 43.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-44	0	0.36	80.15	0.00	-18.04	-6.28	0.00	-12.64	0.00	43.19

Segment Leq : 43.19 dBA

Results segment # 2: Hwy417 West (day)

Source height = 1.50 m

ROAD (0.00 + 43.71 + 0.00) = 43.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	0	0.36	80.15	0.00	-17.66	-6.10	0.00	-12.68	0.00	43.71

Segment Leq : 43.71 dBA

Results segment # 3: Preston St (day)

Source height = 1.50 m

ROAD (0.00 + 67.02 + 0.00) = 67.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-89	89	0.66	68.48	0.00	0.00	-1.46	0.00	0.00	0.00	67.02

Segment Leq : 67.02 dBA

Total Leq All Segments: 67.06 dBA

Results segment # 1: Hwy417 East (night)

Source height = 1.50 m

ROAD (0.00 + 35.59 + 0.00) = 35.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-44	0	0.36	72.55	0.00	-18.04	-6.28	0.00	-12.64	0.00	35.59

Segment Leq : 35.59 dBA

↟

Results segment # 2: Hwy417 West (night)

Source height = 1.50 m

ROAD (0.00 + 36.11 + 0.00) = 36.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	0	0.36	72.55	0.00	-17.66	-6.10	0.00	-12.68	0.00	36.11

Segment Leq : 36.11 dBA

↟

Results segment # 3: Preston St (night)

Source height = 1.50 m

ROAD (0.00 + 59.42 + 0.00) = 59.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-89	89	0.66	60.88	0.00	0.00	-1.46	0.00	0.00	0.00	59.42

Segment Leq : 59.42 dBA

Total Leq All Segments: 59.46 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 67.06
(NIGHT): 59.46

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STAMSON 5.0 NORMAL REPORT Date: 23-08-2022 16:48:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec36.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 3-6

Road data, segment # 1: Hwy417 East (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 54999
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hwy417 East (day/night)

Angle1 Angle2 : -44.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 6 / 6
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 318.00 / 318.00 m
Receiver height : 18.50 / 18.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 10.00 m
Reference angle : 0.00

↑
Road data, segment # 2: Hwy417 West (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Hwy417 West (day/night)
-------------------------------------------
Angle1   Angle2           : -47.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 6
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 298.00 / 298.00 m
Receiver height           :  18.50 / 18.50  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  10.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Preston St (day/night)
-------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Preston St (day/night)
-------------------------------------------
Angle1   Angle2           : -89.00 deg   89.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: Hwy417 East (day)

Source height = 1.50 m

ROAD (0.00 + 48.13 + 0.00) = 48.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-44	0	0.00	80.15	0.00	-13.26	-6.12	0.00	-12.64	0.00	48.13

Segment Leq : 48.13 dBA

Results segment # 2: Hwy417 West (day)

Source height = 1.50 m

ROAD (0.00 + 48.66 + 0.00) = 48.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-47	0	0.00	80.15	0.00	-12.98	-5.83	0.00	-12.68	0.00	48.66

Segment Leq : 48.66 dBA

Results segment # 3: Preston St (day)

Source height = 1.50 m

ROAD (0.00 + 68.04 + 0.00) = 68.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-89	89	0.15	68.48	0.00	0.00	-0.44	0.00	0.00	0.00	68.04

Segment Leq : 68.04 dBA

Total Leq All Segments: 68.13 dBA

Results segment # 1: Hwy417 East (night)

Source height = 1.50 m

ROAD (0.00 + 40.53 + 0.00) = 40.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-44	0	0.00	72.55	0.00	-13.26	-6.12	0.00	-12.64	0.00	40.53

Segment Leq : 40.53 dBA

↟

Results segment # 2: Hwy417 West (night)

Source height = 1.50 m

ROAD (0.00 + 41.06 + 0.00) = 41.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-47	0	0.00	72.55	0.00	-12.98	-5.83	0.00	-12.68	0.00	41.06

Segment Leq : 41.06 dBA

↟

Results segment # 3: Preston St (night)

Source height = 1.50 m

ROAD (0.00 + 60.44 + 0.00) = 60.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-89	89	0.15	60.88	0.00	0.00	-0.44	0.00	0.00	0.00	60.44

Segment Leq : 60.44 dBA

Total Leq All Segments: 60.53 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 68.13
(NIGHT): 60.53

↟
↟

STAMSON 5.0 NORMAL REPORT Date: 23-08-2022 15:57:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec41.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 4-1

Rail data, segment # 1: O-Train Rail (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. O-Train Rail	190.0/1.0	80.0	1.0	1.0	Elec	Yes

Data for Segment # 1: O-Train Rail (day/night)

Angle1 Angle2	: -68.00 deg	0.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 2 / 2	
House density	: 40 %	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 200.00 / 200.00 m	
Receiver height	: 1.50 / 1.50 m	
Topography	: 3	(Elevated; no barrier)
No Whistle		
Elevation	: 6.00 m	
Reference angle	: 0.00	

↟

Results segment # 1: O-Train Rail (day)

LOCOMOTIVE (0.00 + 36.59 + 0.00) = 36.59 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	0	0.41	60.53	-15.81	-4.70	0.00	-3.43	0.00	36.59

WHEEL (0.00 + 35.31 + 0.00) = 35.31 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	0	0.51	60.54	-16.99	-4.81	0.00	-3.43	0.00	35.31

Segment Leq : 39.01 dBA

Total Leq All Segments: 39.01 dBA

↟

Results segment # 1: O-Train Rail (night)

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

LOCOMOTIVE (0.00 + 16.81 + 0.00) = 16.81 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -68      0   0.41  40.75 -15.81  -4.70   0.00  -3.43   0.00  16.81
-------------------------------------------------------------------------

WHEEL (0.00 + 15.53 + 0.00) = 15.53 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -68      0   0.51  40.76 -16.99  -4.81   0.00  -3.43   0.00  15.53
-------------------------------------------------------------------------

Segment Leq : 19.23 dBA

Total Leq All Segments: 19.23 dBA

♠
Road data, segment # 1: Hwy417 East (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Hwy417 East (day/night)
---------------------------------------------
Angle1   Angle2           : -46.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 6
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 313.00 / 313.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  10.00 m
Reference angle           :   0.00
```

Road data, segment # 2: Hwy417 West (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 54999
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Hwy417 West (day/night)

Angle1 Angle2 : -48.00 deg 59.00 deg
Wood depth : 0 (No woods.)
No of house rows : 6 / 6
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 293.00 / 293.00 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 10.00 m
Reference angle : 0.00

Road data, segment # 3: Preston St (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

```
Data for Segment # 3: Preston St (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: GladstoneAve (day/night)
------------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: GladstoneAve (day/night)
----------------------------------------------
Angle1   Angle2           : -20.00 deg   18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     40 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

```
Results segment # 1: Hwy417 East (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 46.86 + 0.00) = 46.86 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46     56   0.36  80.15   0.00 -17.95  -2.70   0.00 -12.65   0.00  46.86
-------------------------------------------------------------------------------

Segment Leq : 46.86 dBA

↟
Results segment # 2: Hwy417 West (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.39 + 0.00) = 47.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48     59   0.36  80.15   0.00 -17.56  -2.51   0.00 -12.69   0.00  47.39
-------------------------------------------------------------------------------

Segment Leq : 47.39 dBA

↟
Results segment # 3: Preston St (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.24 + 0.00) = 60.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     82   0.66  68.48   0.00  -3.68  -4.56   0.00   0.00   0.00  60.24
-------------------------------------------------------------------------------

Segment Leq : 60.24 dBA

↟
Results segment # 4: GladstoneAve (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 41.38 + 0.00) = 41.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     18   0.66  65.72   0.00 -14.03  -6.81   0.00  -3.50   0.00  41.38
-------------------------------------------------------------------------------

Segment Leq : 41.38 dBA

Total Leq All Segments: 60.70 dBA
```

↟
Results segment # 1: Hwy417 East (night)

Source height = 1.50 m

ROAD (0.00 + 39.26 + 0.00) = 39.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	56	0.36	72.55	0.00	-17.95	-2.70	0.00	-12.65	0.00	39.26

Segment Leq : 39.26 dBA

↟
Results segment # 2: Hwy417 West (night)

Source height = 1.50 m

ROAD (0.00 + 39.79 + 0.00) = 39.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	59	0.36	72.55	0.00	-17.56	-2.51	0.00	-12.69	0.00	39.79

Segment Leq : 39.79 dBA

↟
Results segment # 3: Preston St (night)

Source height = 1.50 m

ROAD (0.00 + 52.64 + 0.00) = 52.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	82	0.66	60.88	0.00	-3.68	-4.56	0.00	0.00	0.00	52.64

Segment Leq : 52.64 dBA

↟
Results segment # 4: GladstoneAve (night)

Source height = 1.50 m

ROAD (0.00 + 33.78 + 0.00) = 33.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	18	0.66	58.12	0.00	-14.03	-6.81	0.00	-3.50	0.00	33.78

Segment Leq : 33.78 dBA

Total Leq All Segments: 53.10 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.73
(NIGHT): 53.10

STAMSON 5.0 NORMAL REPORT Date: 23-08-2022 16:05:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec46.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 4-6

Rail data, segment # 1: O-Train Rail (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. O-Train Rail	190.0/1.0	80.0	1.0	1.0	Elec	Yes

Data for Segment # 1: O-Train Rail (day/night)

Angle1 Angle2	: -68.00 deg	0.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 2 / 2	
House density	: 40 %	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 200.00 / 200.00 m	
Receiver height	: 18.50 / 18.50 m	
Topography	: 3	(Elevated; no barrier)
No Whistle		
Elevation	: 6.00 m	
Reference angle	: 0.00	

↟
Results segment # 1: O-Train Rail (day)

LOCOMOTIVE (0.00 + 41.62 + 0.00) = 41.62 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	0	0.00	60.53	-11.25	-4.23	0.00	-3.43	0.00	41.62

WHEEL (0.00 + 41.63 + 0.00) = 41.63 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	0	0.00	60.54	-11.25	-4.23	0.00	-3.43	0.00	41.63

Segment Leq : 44.64 dBA

Total Leq All Segments: 44.64 dBA

↟
Results segment # 1: O-Train Rail (night)

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

LOCOMOTIVE (0.00 + 21.84 + 0.00) = 21.84 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -68      0   0.00  40.75 -11.25  -4.23   0.00  -3.43   0.00  21.84
-------------------------------------------------------------------------

WHEEL (0.00 + 21.85 + 0.00) = 21.85 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -68      0   0.00  40.76 -11.25  -4.23   0.00  -3.43   0.00  21.85
-------------------------------------------------------------------------

Segment Leq : 24.86 dBA

Total Leq All Segments: 24.86 dBA

♠
Road data, segment # 1: Hwy417 East (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Hwy417 East (day/night)
---------------------------------------------
Angle1   Angle2           : -46.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 6
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 313.00 / 313.00 m
Receiver height           :  18.50 / 18.50  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  10.00 m
Reference angle           :   0.00
```

Road data, segment # 2: Hwy417 West (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 54999
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Hwy417 West (day/night)

Angle1 Angle2 : -48.00 deg 59.00 deg
Wood depth : 0 (No woods.)
No of house rows : 6 / 6
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 293.00 / 293.00 m
Receiver height : 18.50 / 18.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 10.00 m
Reference angle : 0.00

Road data, segment # 3: Preston St (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

```
Data for Segment # 3: Preston St (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: GladstoneAve (day/night)
------------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: GladstoneAve (day/night)
----------------------------------------------
Angle1   Angle2           : -20.00 deg   18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     40 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           :  18.50 / 18.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

```
Results segment # 1: Hwy417 East (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.84 + 0.00) = 51.84 dBA
```

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	56	0.00	80.15	0.00	-13.19	-2.47	0.00	-12.65	0.00	51.84

Segment Leq : 51.84 dBA

↟
Results segment # 2: Hwy417 West (day)

Source height = 1.50 m

ROAD (0.00 + 52.29 + 0.00) = 52.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	59	0.00	80.15	0.00	-12.91	-2.26	0.00	-12.69	0.00	52.29

Segment Leq : 52.29 dBA

↟
Results segment # 3: Preston St (day)

Source height = 1.50 m

ROAD (0.00 + 62.22 + 0.00) = 62.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	82	0.15	68.48	0.00	-2.55	-3.71	0.00	0.00	0.00	62.22

Segment Leq : 62.22 dBA

↟
Results segment # 4: GladstoneAve (day)

Source height = 1.50 m

ROAD (0.00 + 45.73 + 0.00) = 45.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	18	0.15	65.72	0.00	-9.72	-6.77	0.00	-3.50	0.00	45.73

Segment Leq : 45.73 dBA

Total Leq All Segments: 63.07 dBA

↟
Results segment # 1: Hwy417 East (night)

Source height = 1.50 m

ROAD (0.00 + 44.24 + 0.00) = 44.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	56	0.00	72.55	0.00	-13.19	-2.47	0.00	-12.65	0.00	44.24

Segment Leq : 44.24 dBA

↟
Results segment # 2: Hwy417 West (night)

Source height = 1.50 m

ROAD (0.00 + 44.69 + 0.00) = 44.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	59	0.00	72.55	0.00	-12.91	-2.26	0.00	-12.69	0.00	44.69

Segment Leq : 44.69 dBA

↟
Results segment # 3: Preston St (night)

Source height = 1.50 m

ROAD (0.00 + 54.62 + 0.00) = 54.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	82	0.15	60.88	0.00	-2.55	-3.71	0.00	0.00	0.00	54.62

Segment Leq : 54.62 dBA

↟
Results segment # 4: GladstoneAve (night)

Source height = 1.50 m

ROAD (0.00 + 38.13 + 0.00) = 38.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	18	0.15	58.12	0.00	-9.72	-6.77	0.00	-3.50	0.00	38.13

Segment Leq : 38.13 dBA

Total Leq All Segments: 55.47 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.13
(NIGHT): 55.47

STAMSON 5.0 NORMAL REPORT Date: 29-08-2023 16:17:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec5.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 5

Rail data, segment # 1: O-Train Rail (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. O-Train Rail	190.0/1.0	80.0	1.0	1.0	Elec	Yes

Data for Segment # 1: O-Train Rail (day/night)

Angle1 Angle2	-69.00 deg	30.00 deg
Wood depth	0	(No woods.)
No of house rows	2 / 2	
House density	40 %	
Surface	1	(Absorptive ground surface)
Receiver source distance	200.00 / 200.00 m	
Receiver height	21.50 / 21.50 m	
Topography	4	(Elevated; with barrier)
No Whistle		
Barrier angle1	-69.00 deg	Angle2 : 30.00 deg
Barrier height	20.00 m	
Elevation	6.00 m	
Barrier receiver distance	15.00 / 15.00 m	
Source elevation	56.00 m	
Receiver elevation	58.00 m	
Barrier elevation	58.00 m	
Reference angle	0.00	

↑
Results segment # 1: O-Train Rail (day)

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
4.00	21.50	20.04	78.04
0.50	21.50	19.77	77.78

LOCOMOTIVE (0.00 + 43.25 + 0.00) = 43.25 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	30	0.00	60.53	-11.25	-2.60	0.00	-3.43	0.00	43.25

```
   -69     30   0.00  60.53 -11.25  -2.60   0.00   0.00  -5.00  41.68*
   -69     30   0.00  60.53 -11.25  -2.60   0.00   0.00   0.00  46.68
-------------------------------------------------------------------------

 * Bright Zone !

WHEEL (0.00 + 41.61 + 0.00) = 41.61 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -69     30   0.00  60.54 -11.25  -2.60   0.00  -3.43   0.00  43.26
   -69     30   0.00  60.54 -11.25  -2.60   0.00   0.00  -5.08  41.61
-------------------------------------------------------------------------

Segment Leq : 45.52 dBA

Total Leq All Segments: 45.52 dBA

🠉
Results segment # 1: O-Train Rail (night)
-----------------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       4.00 !       21.50 !       20.04 !        78.04
       0.50 !       21.50 !       19.77 !        77.78

LOCOMOTIVE (0.00 + 23.47 + 0.00) = 23.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -69     30   0.00  40.75 -11.25  -2.60   0.00  -3.43   0.00  23.47
   -69     30   0.00  40.75 -11.25  -2.60   0.00   0.00  -5.00  21.91*
   -69     30   0.00  40.75 -11.25  -2.60   0.00   0.00   0.00  26.90
-------------------------------------------------------------------------

 * Bright Zone !

WHEEL (0.00 + 21.84 + 0.00) = 21.84 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -69     30   0.00  40.76 -11.25  -2.60   0.00  -3.43   0.00  23.48
   -69     30   0.00  40.76 -11.25  -2.60   0.00   0.00  -5.08  21.84
-------------------------------------------------------------------------

Segment Leq : 25.74 dBA

Total Leq All Segments: 25.74 dBA
```

Road data, segment # 1: Hwy417 East (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 54999
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Hwy417 East (day/night)

Angle1 Angle2 : -45.00 deg 55.00 deg
Wood depth : 0 (No woods.)
No of house rows : 6 / 6
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 318.00 / 318.00 m
Receiver height : 21.50 / 21.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -45.00 deg Angle2 : 55.00 deg
Barrier height : 20.00 m
Elevation : 10.00 m
Barrier receiver distance : 8.00 / 8.00 m
Source elevation : 68.00 m
Receiver elevation : 58.00 m
Barrier elevation : 58.00 m
Reference angle : 0.00

Road data, segment # 2: Hwy417 West (day/night)

Car traffic volume : 44527/3872 veh/TimePeriod *
Medium truck volume : 3542/308 veh/TimePeriod *
Heavy truck volume : 2530/220 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Hwy417 West (day/night)
---------------------------------------------
Angle1   Angle2           : -47.00 deg   58.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 6
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 298.00 / 298.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -47.00 deg   Angle2 : 58.00 deg
Barrier height            :  20.00 m
Elevation                 :  10.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :  68.00 m
Receiver elevation        :  58.00 m
Barrier elevation         :  58.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Preston St (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Preston St (day/night)
---------------------------------------------
Angle1   Angle2           : -83.00 deg   83.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
```

```
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   :  25.00 / 25.00  m
Receiver height            :  21.50 / 21.50  m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             : -83.00 deg   Angle2 : 83.00 deg
Barrier height             :  20.00 m
Barrier receiver distance  :  10.00 / 10.00  m
Source elevation           :  58.00 m
Receiver elevation         :  58.00 m
Barrier elevation          :  58.00 m
Reference angle            :   0.00
```

↟

```
Road data, segment # 4: GladstoneAve (day/night)
-----------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: GladstoneAve (day/night)
-----------------------------------------------
Angle1   Angle2            : -17.00 deg   16.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      2 / 2
House density              :     40 %
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   : 110.00 / 110.00 m
Receiver height            :  21.50 / 21.50  m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             : -17.00 deg   Angle2 : 16.00 deg
Barrier height             :  20.00 m
Barrier receiver distance  :   8.00 / 8.00   m
Source elevation           :  58.00 m
Receiver elevation         :  58.00 m
Barrier elevation          :  58.00 m
Reference angle            :   0.00
```

↟

Results segment # 1: Hwy417 East (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	21.25	79.25

ROAD (0.00 + 51.69 + 0.00) = 51.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	55	0.00	80.15	0.00	-13.26	-2.55	0.00	-12.64	0.00	51.69
-45	55	0.00	80.15	0.00	-13.26	-2.55	0.00	0.00	-0.03	64.30*
-45	55	0.00	80.15	0.00	-13.26	-2.55	0.00	0.00	0.00	64.33

 * Bright Zone !

Segment Leq : 51.69 dBA

↟

Results segment # 2: Hwy417 West (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	21.23	79.23

ROAD (0.00 + 52.15 + 0.00) = 52.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-47	58	0.00	80.15	0.00	-12.98	-2.34	0.00	-12.68	0.00	52.15
-47	58	0.00	80.15	0.00	-12.98	-2.34	0.00	0.00	-0.07	64.75*
-47	58	0.00	80.15	0.00	-12.98	-2.34	0.00	0.00	0.00	64.83

 * Bright Zone !

Segment Leq : 52.15 dBA

↟

Results segment # 3: Preston St (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	13.50	71.50

ROAD (0.00 + 48.33 + 0.00) = 48.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	83	0.00	68.48	0.00	-2.22	-0.35	0.00	0.00	-17.58	48.33

Segment Leq : 48.33 dBA

Results segment # 4: GladstoneAve (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	20.05	78.05

ROAD (0.00 + 45.67 + 0.00) = 45.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-17	16	0.06	65.72	0.00	-9.17	-7.37	0.00	-3.50	0.00	45.67
-17	16	0.00	65.72	0.00	-8.65	-7.37	0.00	0.00	-4.99	44.70*
-17	16	0.06	65.72	0.00	-9.17	-7.37	0.00	0.00	0.00	49.17

* Bright Zone !

Segment Leq : 45.67 dBA

Total Leq All Segments: 56.20 dBA

Results segment # 1: Hwy417 East (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	21.25	79.25

ROAD (0.00 + 44.10 + 0.00) = 44.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	55	0.00	72.55	0.00	-13.26	-2.55	0.00	-12.64	0.00	44.10
-45	55	0.00	72.55	0.00	-13.26	-2.55	0.00	0.00	-0.03	56.70*
-45	55	0.00	72.55	0.00	-13.26	-2.55	0.00	0.00	0.00	56.73

* Bright Zone !

Segment Leq : 44.10 dBA

↟

Results segment # 2: Hwy417 West (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	21.23	79.23

ROAD (0.00 + 44.55 + 0.00) = 44.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-47	58	0.00	72.55	0.00	-12.98	-2.34	0.00	-12.68	0.00	44.55
-47	58	0.00	72.55	0.00	-12.98	-2.34	0.00	0.00	-0.07	57.16*
-47	58	0.00	72.55	0.00	-12.98	-2.34	0.00	0.00	0.00	57.23

* Bright Zone !

Segment Leq : 44.55 dBA

↟

Results segment # 3: Preston St (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	13.50	71.50

ROAD (0.00 + 40.73 + 0.00) = 40.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	83	0.00	60.88	0.00	-2.22	-0.35	0.00	0.00	-17.58	40.73

Segment Leq : 40.73 dBA

↟

Results segment # 4: GladstoneAve (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	21.50	20.05	78.05

ROAD (0.00 + 38.07 + 0.00) = 38.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-17	16	0.06	58.12	0.00	-9.17	-7.37	0.00	-3.50	0.00	38.07
-17	16	0.00	58.12	0.00	-8.65	-7.37	0.00	0.00	-4.99	37.10*
-17	16	0.06	58.12	0.00	-9.17	-7.37	0.00	0.00	0.00	41.57

* Bright Zone !

Segment Leq : 38.07 dBA

Total Leq All Segments: 48.60 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 56.55

(NIGHT): 48.62

↑
↑

APPENDIX 3

DRAWINGS

Yolanda Tang

From:
Sent: August 8, 2023 2:19 PM
To: Stephanie Boisvenue; Yolanda Tang
Subject: RE: 224 Preston

Hi Yolanda, we have no mechanical design at the moment as it's too early to start this. I do have a preliminary wall design for the exterior wall, as per below

NON-COMBUSTIBLE 1 HR. FRR LOAD BEARING STEEL WALL ASSEMBLY @ BRICK
AS PER UL U425
FRR: CONSTRUCTION :CLADDING
1HR: NON-COMBUSTIBLE :NONCOMBUSTIBLE
- 3 5/8"x2 1/4"x7 5/8" STONE VENEER, 7/8"X7"X0.03" GALVANIZED METAL TIES
@ 16" HORIZONTAL AND 24" VERTICAL WEEP HOLES @ 2'-7" c/w BASE AND
THROUGH WALL FLASHING AS REQ'D.
- 1" AIR SPACE
- 2" NONCOMBUSTIBLE R10 SEMI-RIGID INSULATION
- PEEL AND STICK WEATHER BARRIER AS PER OBC 9.25.3. (VAPOUR PERMEABLE)
- 5/8" DENSGLASS GOLD BOARD (CCMC 12064 R.) , TAPE JOINTS AS PER MANUFACTURER'S SPECS.
- 3 5/8" 20GA METAL STUDS @ 24" o/c MAX.
- 3 1/2" (Min. R13) NON-COMBUSTIBLE FIBREGLASS W/ A MASS NOT LESS THAN 1.0 kg/m2
OR MINERAL WOOL MATERIAL BEARING UL CLASSIFICATION MARKING
- 6 mil POLYETHYLENE VAPOUR BARRIER CONFORM TO CGSB 51.34 TYP.
- 5/8" TYPE "X" GYPSUM BOARD TAPED AND SANDED
- PAINT FINISH

Thank you

From: Yolanda Tang <YTang@patersongroup.ca>
Sent: Tuesday, August 8, 2023 11:19 AM
To: simpson@fotenn.com
Cc:
<SBoisvenue@patersongroup.ca>
Subject: RE: 224 Preston

Hi Jillian,

Paterson is currently working on the comments received related to the environmental noise study.

We would like to ask if you have the exterior wall and typical wall construction details available. We can do the building materials review to see whether the STC rating requirement is satisfied if the wall details is provided.

We would also like to ask if the mechanical equipment is known. We can complete the stationary noise study if the detail of mechanical equipment is provided.

Thank you, Jillian.

Best regards,
Yolanda

PATERSON GROUP
SOLUTION ORIENTED ENGINEERING

YOLANDA TANG, M.A.Sc.
JUNIOR PROJECT MANAGER

DIRECT: (613) 800-0148

9 AURIGA DRIVE
OTTAWA ON K2E 7T9

patersongroup.ca

From:
Sent: Friday, August 4, 2023 1:17 PM
To: Zoran@archnova <zoran@archnova.ca>; James Lennox <jl@jbla.ca>; Matthew.Zammit@exp.com; Ismail Taki <ismail.taki@exp.com>; Alam Ansari <alam.ansari@exp.com>; Yasser Ammouri <Yasser.Ammouri@exp.com>; Yolanda Tang <YTang@patersongroup.ca>; Stephanie Boisvenue <SBoisvenue@patersongroup.ca>
Subject: FW: 224 Preston

Hi Team, attached are the first set of comments from the city to 224 Preston, please review and make all the necessary changes. Redline has already made all the site plan and elevation changes dealing with the planning and architectural aspects of the city comments.

Thank you

From: Red Line Architecture Info <info@redlinearchitecture.ca>
Sent: Thursday, August 3, 2023 3:35 PM
To:
Subject: 224 Preston