2022-03-21

Glenn Reinders, Principal
Reinders+Law
64 Ontario Street North
Milton, Ontario, Canada L9T 2T1
glennr@reinders.ca / www.reinders.ca
' (905) 457-1618 ext 1302
7 (905) 457-8852

Reinders+Law – 2375 St. Laurent Boulevard
Noise Impact Study

Dear Glenn,

We are pleased to present the following noise impact study in regard to a newly proposed place of worship to be located 2375 St. Laurent Boulevard in Ottawa, Ontario. The City of Ottawa has requested a noise impact study be completed and included as part of the Site Plan Application (SPA) for this project. The SPA details the construction of a 1500 m^2 church located directly off St. Laurent Boulevard. As per City of Ottawa requirements, surface transportation noise onto the new building must be considered, as must environmental noise from the building's 8 rooftop mechanical units to the surrounding area.

Regarding the surface transportation noise portion of this report, St. Laurent Boulevard, located approximately 34 m from the north façade of the building, is the only traffic source that is to be considered. All other sources of surface transportation noise, such as additional arterial roads, or principal rail lines, are beyond the setback distances established in the City of Ottawa Environmental Noise Control Guidelines (ENCG) and Schedule F of the City of Ottawa Official Plan. Furthermore, the location of the proposed building is outside the airport influence zone, therefore, an analysis of aircraft noise is not required.

The environmental noise analysis considers all 8 rooftop units planned for the development and predicts the noise impact onto the nearby light industrial points of reception.

We provide a general description of the project in **Section 2.0.**, our surface transportation noise analysis is presented in **Sections 3.0** and **4.0** and the environmental noise analysis is presented in **Section 5.0**.

1.0 Introduction

State of the Art Acoustik Inc. has been commissioned to complete a noise impact study, as requested by the City of Ottawa, for the Site Plan Application detailing the construction of a new place of worship to be constructed at 2375 St. Laurent Boulevard in Ottawa, Ontario. The ensuing report follows the 2016 City of Ottawa ENCG, which are compliant with the Ministry of Environment, Conservation, and Park's (MECP) NPC-300.

In **Section 2.0**, the site plan of the building is shown, along with angles, and distances from the relevant source of traffic noise to the PORs.

In **Sections 3.0** and **4.0**, the noise impact from St. Laurent Boulevard onto the proposed building is quantified.

In **Section 5.0** the environmental noise impact from the building's 8 mechanical rooftop units to the surrounding area is assessed.

2.0 Site Plan Evaluation

2.1 Project Description

The proposed development consists of a single storey place of worship, with a gross area of approximately 1500m^2. The building is to be located at 2375 St. Laurent Boulevard in Ottawa, Ontario. The area surrounding the development consists primarily of light industrial buildings. Noise from St. Laurent is the only relevant source of traffic noise for this location. All other traffic noise sources, be they surficial or aerial, are beyond the setback distances outlined in **Section 2.2.1** of the City of Ottawa's ENCG and Official Plan.

2.2 Site Plan Review

Figure 2.1 shows the site plan of the proposed building, whose north façade is located approximately 34m from St-Laurent Boulevard.

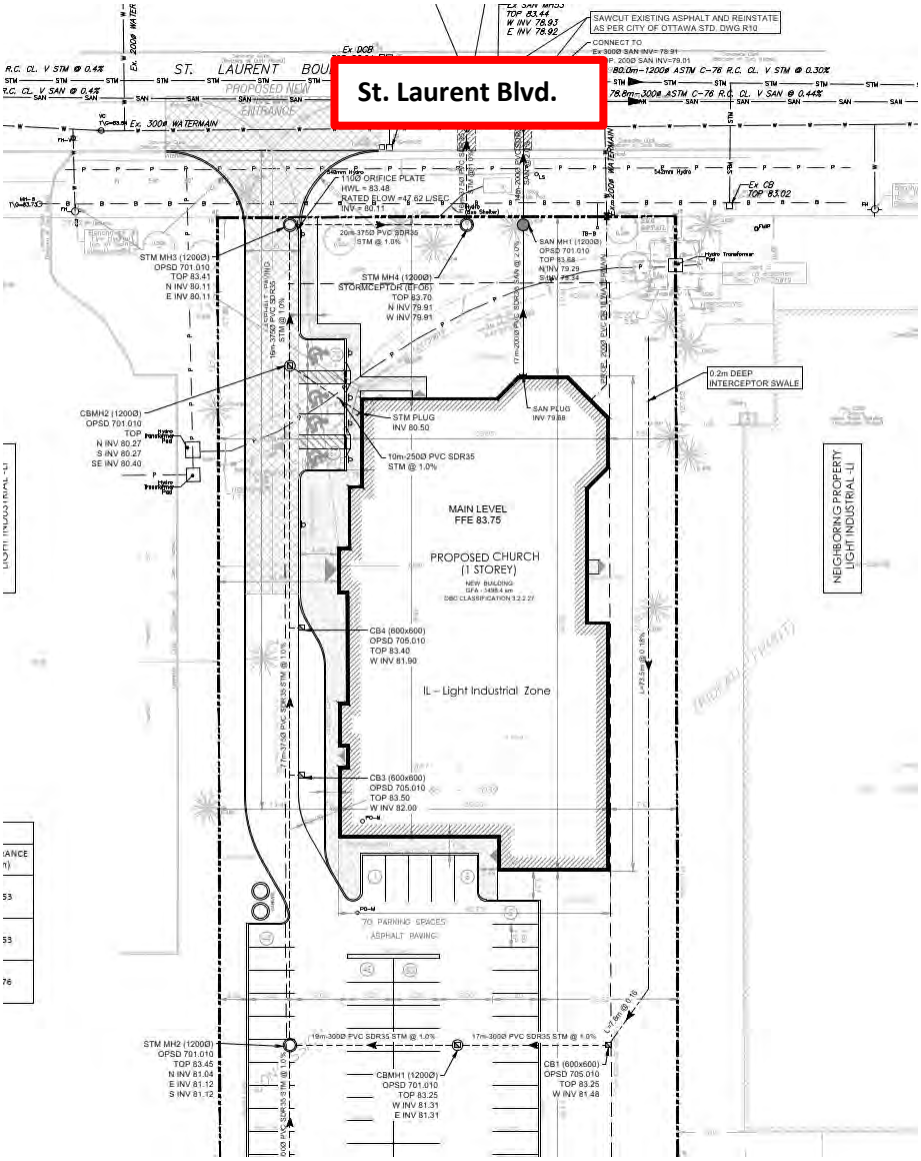


Figure 2.1 – Site plan of 2375 St. Laurent Boulevard.

3.0 Surface Transportation Noise Impact

The following sections describe our analysis of the surface traffic noise impact on the proposed structure at 2375 St. Laurent Boulevard from all relevant sources.

3.1 Procedure to Assess Relevant Traffic Noise Sources

In general, sources of traffic noise may include city roads, major highways, railways, transitway corridors, and air traffic. However, as the noise impact from traffic sources to structures depends on the distance of the structure to the source, not all potential sources of traffic noise are significant.

The City of Ottawa ENCG states that surface transportation noise control studies are to be prepared when the indoor area of the structure under consideration is within the following setback distances from potential road, highway, and railway noise sources:

- 100 m from an arterial road, a major collector, light rail corridor, or bus rapid transitway
- 250 m from an existing or proposed highway
- 300 m from a proposed or existing rail corridor or secondary main railway line
- 500 m from a 400-series provincial highway or principle main railway line

According to the City of Ottawa's Schedule F, St. Laurent Boulevard is the only road that satisfies the above criteria. Furthermore, because the location of the proposed structure is outside the airport influence zone established by the City of Ottawa, an analysis of air traffic noise is not required at this location.

3.2 Classification and Parameters of Relevant Traffic Noise Sources

St. Laurent Boulevard, near the proposed development, is considered a 2-Lane Urban Collector. **Table 3.1** below summarizes the roadway parameters to be used for traffic noise analyses, as stipulated by the City of Ottawa ENCG. These values have been reproduced from **Table B1** on page 75 of the City of Ottawa ENCG, titled, “Appendix B: Table of Traffic and Road Parameters To Be Used For Sound Level Predictions”.

Roadway	Implied Roadway Class	Annual Average Daily Traffic (AADT) [Vehicles/Day]	Posted Speed [km/h]	Day/Night Split [%]	Medium Trucks [%]	Heavy Trucks [%]
St. Laurent Blvd.	2 Lane Urban Collector	8,000.00	50 km/h	92/8	7	5

Table 3.1 – Summary of Major Roadway Noise Sources and Parameters.

3.3 Sound Level Limits for Outdoor Living Areas

Since 2375 St. Laurent Boulevard does not include any outdoor living areas, an analysis of the noise impact on outdoor living areas is not required.

3.4 Sound Levels Limits for Relevant Traffic Noise Sources

Table 3.2 below summarizes the maximum permissible road noise levels for indoor areas. The values in **Table 3.2** have been taken from **Table 2.2b** of the ENCG.

Time	Sound Level Limits (L_{eq} in dBA) For Class 1, 2, & 3 Areas
All day	**45** for Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.

Table 3.2 – Criteria for indoor area road noise levels.

3.5 Software Used for Roadway Noise Analysis

In order to calculate the impact of traffic noise on the proposed structure, we utilize the Ministry of Environment's STAMSON modeling software, version 5.04. This program allows one to input the variables listed in **Table 3.1**, such as traffic volume, vehicle types, posted speed limits, barrier locations, and topography, to determine the environmental noise impact at specific PORs.

3.6 Points of Reception

To determine the worst-case noise impact on the façade of the building, we have the classroom / Sanctuary nearest St. Laurent Blvd., at the plane of window. This POR is located at a height of 1.5m. The position of our point of reception are shown in **Figure 3.1** using a blue cross. **Table 3.3** below summarizes the POR height and distance.

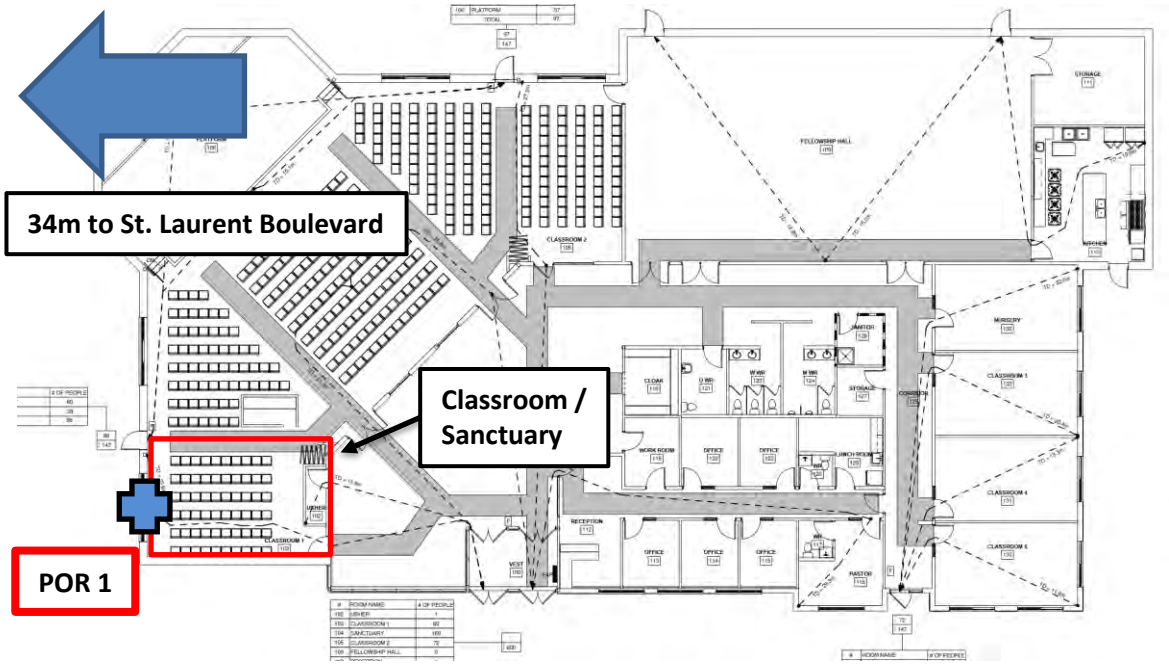


Figure 3.1 – Ground floor plan view showing POR 1.

Receiver	Height [m]	Distance from Closest Source [m]	Left angle to source segment from POR	Right angle to source segment from POR
POR1	1.5	34	-90°	90°

Table 3.3 – Table of POR heights, distances, and angles from noise source.

3.7 STAMSON Parameters

The parameters used in STAMSON to assess the noise impact at POR 1 are shown below in **Table 3.4**:

Parameter	Values Used
Noise Source:	**St. Laurent Boulevard.**
Time Period	16h/8h
Topography	Flat/gentle slope no barrier
Rows of Houses	0
Density of First Row %	0
Intermediate Surface	Reflective
Receiver Height (m)	1.5
Source Receiver Distance (m)	34

Table 3.4 – Parameters used in STAMSON model at POR 1.

3.8 Resulting Surface Transportation Noise Levels

Table 3.5 below summarizes the predicted sound pressure levels at the PORs from the results of the STAMSON environmental noise software calculation (full calculation details are included in **Appendix A**).

	POR 1 (dBA)	
	Day	**Night**
St. Laurent Blvd.	60.5	N/A
Total	**60.5**	**N/A**

Table 3.5 – Predicted Road Noise at POR 1

3.9 Building Component Assessment (AIF Analysis)

According to the NPC-300, **Section C7**, when noise levels could exceed 65 dBA at the Plane of Window (POW) of a living area or sleeping quarters, the exterior cladding system of the building envelope must be acoustically designed to ensure the indoor noise criteria is achieved. The City of Ottawa recognizes the Acoustic Insulation Factor (AIF) method as an appropriate analysis technique. Because the noise levels at the exterior PORs do not exceed 65 dBA, a detailed analysis of the building components of the development is not required.

4.0 Acoustical Warning Clauses

Due to the sound pressure level exceeding 55 dBA at the point of reception, the City of Ottawa requires an acoustical warning clause for the project. The only applicable warning clause is Type C, taken from Section C8.1 of NPC-300

Type C Warning Clause:

This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air condition 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 City and the Ministry of Environment.

5.0 Environmental Noise Impact

The following sections describe our analysis of the environmental noise impact expected from the eight mechanical rooftop units to the surrounding area.

5.1 Equipment Site Plan & Operation Hours

The sources considered in this assessment of the stationary noise to nearby structures include six rooftop cooling units for the main building (F.1 through F.6) and two rooftop units for the kitchen (K.EF and F.MUA). In accordance with the predictable worst-case operating scenario, all exterior mechanical elements are assumed to be in constant operation, under a full load. **Figure 5.1** below shows the latest plans in order to identify the locations of the sound generating equipment. The sound power levels of these units are provided in **Table 5.1**.

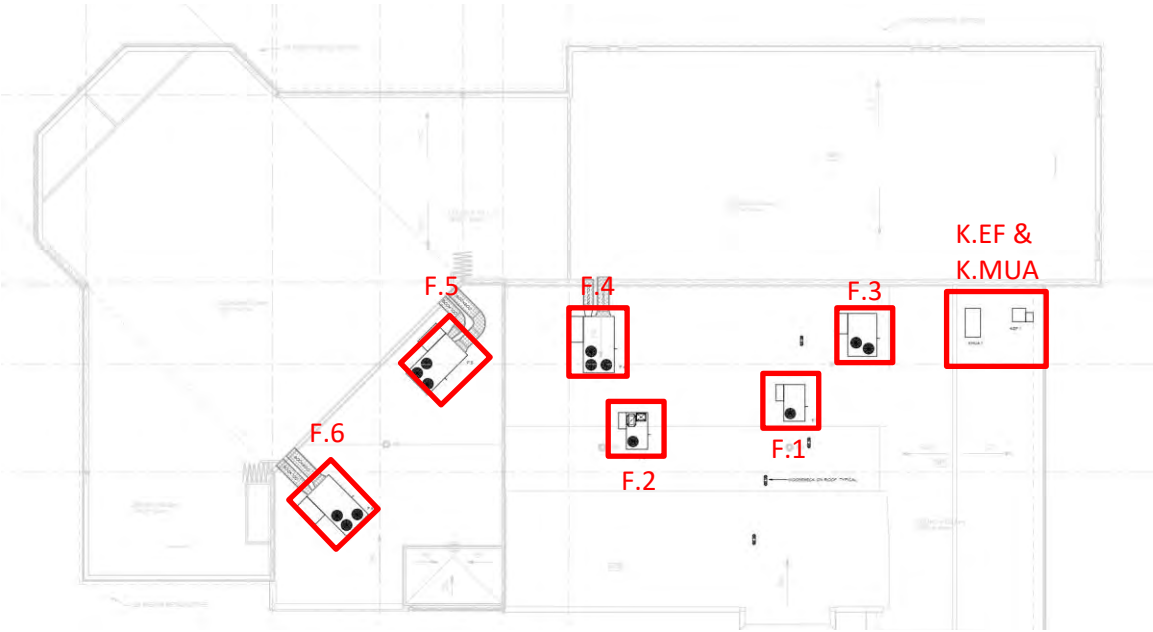


Figure 5.1 – 2375 St-Laurent rooftop plan, showing current equipment layout.

5.2 Applicable By-Laws

The City of Ottawa Noise Bylaw has the same limit as the MECP NPC-300 for daytime permissible Sound Pressure Level (SPL) at a noise sensitive location in a Class 1 area of 50 dBA. The Bylaw is to be used in conjunction with the ENCG, which are based on the MECP NPC-300 Noise Control Guidelines. Due to the nearby receptors being light industrial use, the nighttime limits do not apply in this case.

Therefore, when analyzing equipment for environmental noise studies, all non-emergency equipment in operation must meet the ENCG limit of 50 dBA. There is no emergency equipment planned for this project, there an analysis of generator noise is not required.

For our analysis, points of reception are chosen based on the principle of the predictable worst-case scenario for noise impact.

5.3 Noise Sources

This report evaluates eight noise sources, as detailed in **Section 5.1**. **Table 5.1** lists the sound data used in our evaluation. All data was provided in Sound Power Level from the manufacturer. This data may be found in the **Appendix**.

	Frequency [Hz]								Total [dBA]
Noise Source	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	
F.1 (Rooftop Cooling Unit)	78	78	74	73	71	66	62	57	76
F.2 (Rooftop Cooling Unit)	88	83	76	74	71	67	64	60	77
F.3 (Rooftop Cooling Unit)	90	83	81	79	77	73	70	67	82
F.4 (Rooftop Cooling Unit)	89	86	83	81	79	74	70	65	83
F.5 (Rooftop Cooling Unit)	89	86	83	81	79	74	70	65	83
F.6 (Rooftop Cooling Unit)	89	86	83	81	79	74	70	65	83
K.MUA (Rooftop Make-up Air Unit)	73	68	63	70	57	53	53	60	69
K.EF (Rooftop Exhaust Fan)	79	78	77	69	64	63	58	54	73

Table 5.1 – Octave band sound power levels of noise sources.

5.4 Points of Reception for Environmental Noise

Noise sensitive buildings adjacent to the property include multiple light residential buildings on all sides. **Figure 5.2** and **Table 5.2** indicate the locations and heights of the 4 PORs used to evaluate the local impact of the noise generating equipment. Each POR represents a nearby building, where the noise impact is calculated along their respective facades. The calculated noise at each POR represents the loudest position on the building façade.

We also evaluated sound pressure levels at properties beyond those shown, but the impact was negligible.

Receiver	Height [m]	Address
POR 1	4.5	2385 St. Laurent
POR 2	4.5	2405 St. Laurent
POR 3	4.5	2380 St. Laurent
POR 4	4.5	2355 St. Laurent

Table 5.2 – Environmental points of reception.

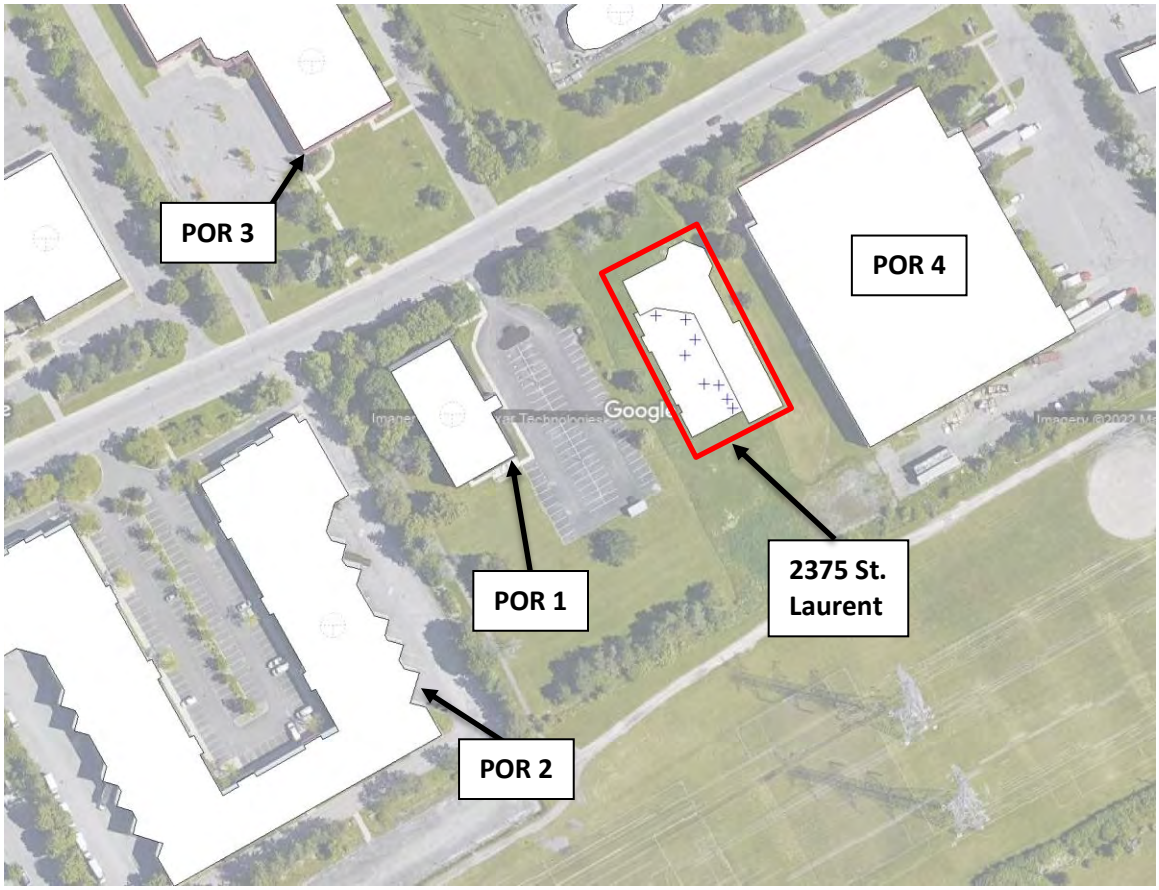


Figure 5.2 – Locations and heights of points of reception PORs.

5.5 Methodology Used in Noise Impact Calculation

The environmental noise analysis was completed using an environmental noise modeling software called CadnaA, which references ISO 9613. CadnaA predicts environmental noise through calculations based on a 3D model which uses geometrical, landscape, and topography data, combined with details of the proposed construction, and the noise source power levels.

We created a 3D rendering of the neighbourhood around the site, placed the noise sources in the model at the appropriate locations, and then and applied the sound power levels described in **Table 5.1**.

In addition to the modelling process described above, the following table lists the parameters used in the CadnaA model:

Parameter	Value/Condition
Temperature (°C)	10
Relative Humidity (%)	70
All Buildings, Roads and Land Fully Reflective	Absorption Coefficient Alpha = 0
Maximum Order of Reflection	2
No Sub. of Neg. Ground Att.	ON
No Neg. Path Difference	ON

Table 5.3 – Parameters used in CadnaA modeling.

5.6 Results & Noise Control Measures and Recommendations

Figure 5.3 shows the noise prediction grid generated by CadnaA at a height of 6 m for daytime operations, that is, with all noise generating equipment running at full capacity. To meet the daytime target of 50 dBA, there should be no red at the PORs in the figure. The predicted noise levels at the PORs are also provided in **Table 5.4**.

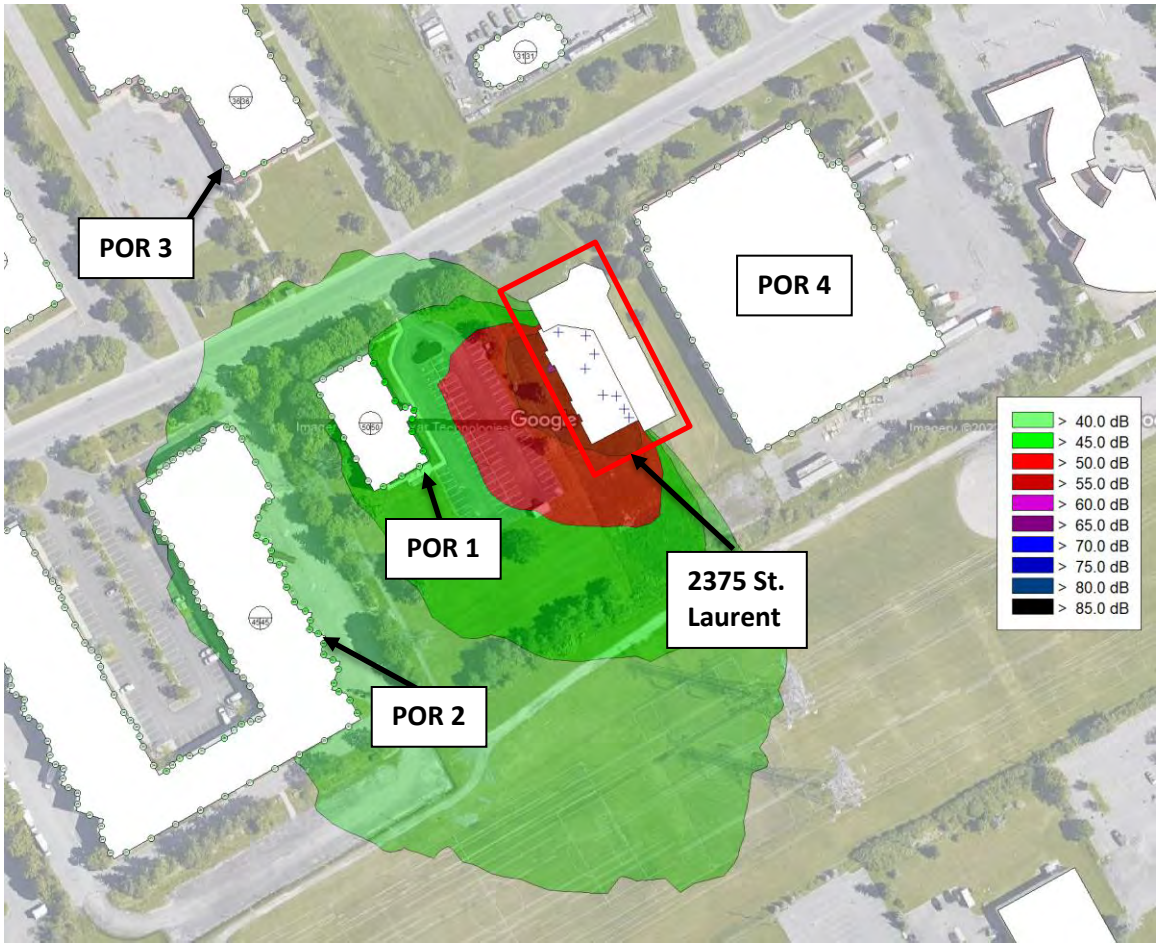


Figure 5.3 – Locations and heights of points of reception (PORs). Legend provided in dBA SPL.

Note: The sound pressure level given for each POR is calculated at the worst-case plane of window on the respective building.

Receiver	Height [m]	Address	Predicted Sound Pressure Level
POR 1	4.5	2385 St. Laurent	50
POR 2	4.5	2405 St. Laurent	45
POR 3	4.5	2380 St. Laurent	36
POR 4	4.5	2355 St. Laurent	30

Table 5.4 – Predicted sound pressure levels at each POR.

Given the predicted sound pressure levels shown in **Table 5.4**, and the current mechanical plans, no sound mitigation measures are required for the rooftop mechanical equipment.

6.0 Conclusion

We have analyzed the traffic noise impact of nearby road sources onto the newly proposed development to be located at 2375 St. Laurent Boulevard. A detailed building component analysis was not required as noise levels from nearby road noise sources were not greater than 65 dBA at the Plane of Window (POW) at the worst-case Point of Reception (POR). However, the predicted noise levels require that the following warning clause be added to the notice(s) on title and must be included in the Development Agreement(s) and in the Agreement(s) or Offer(s) of Purchase and Sale:

Type C Warning Clause:

This building has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air condition 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 City and the Ministry of Environment.

We also reviewed the environmental noise impact from the proposed rooftop equipment to nearby points of reception and found the generated noise to be within the applicable 50 dBA noise limit at each point of reception.

If you have any questions or concerns regarding this report, please do not hesitate to contact us.

Sincerely,

Alexandre Fortier, B.Sc.,
Principal

Approved By:

Donald Buchan, P.Eng
Principal
Buchan Lawton Parent Ltd.

Appendix A

STAMSON Calculations

Sound Data for Rooftop Equipment

PENNBARRY

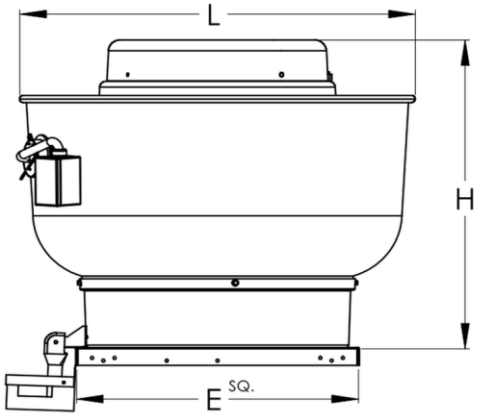
Tag:
Project: St Jude Church
Office: O'Dell Associates Inc. **Preparer:** Cam Fewer
Version: 2014.0.509 **Date:** 11-05-2021

FX10B

Roof Mounted Upblast Spun Aluminum Exhaust Fan

Quantity: 1
Special: None

Dimensions



Unit Size	Wheel Width	E	H
10	0 - None	24.75	28.75

L	Weight
35	96

Standard Construction Features

- Two (2) patented wheel designs
- Unique internal bracing design transfers weight directly to curb; no spun parts supply structural support
- Welded curb cap available as either galvanized or aluminum
- Popular direct drive sizes use multi-speed motors for maximum flexibility
- Direct drive (Open/TE) motors include overload protection as standard

Fatrap option

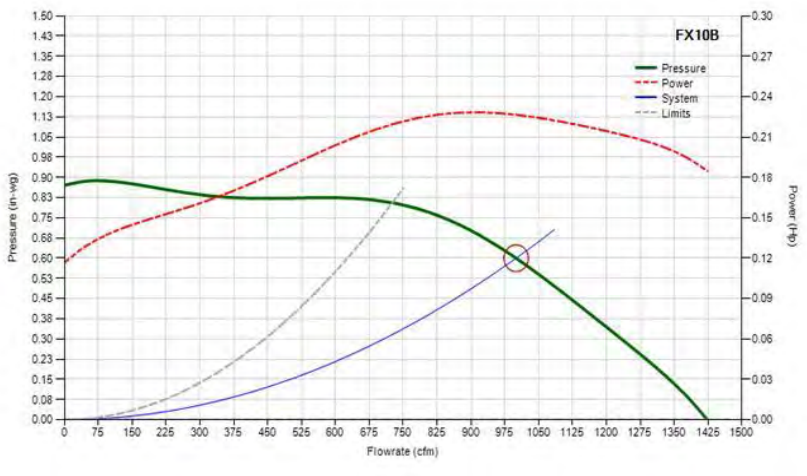
- UL762 Listed to 400º F. – highest in the industry (direct correlation to superior forced motor cooling design)
- UL762 for Direct Drive (selected models), providing widest performance range in industry
- Drain directed into innovative grease separator box, now an industry standard,
- pre-wired weatherproof junction box

Accessories

Application: E - Exhaust
Drive Type: B - Belt
Efficiency: P - Premium
Construction Accessories: H - Hinged Sub-Base (AL Base)
Guard/Screen: 0 - None
Special Application: 2 - Restaurant Exhaust UL762
Drive Kit Option: A - Adjustable Drive Kit
Wood Nailer: W - Wooden Nailer

(continued)

Performance



Operating Point	
Volume (CFM)	1000
Static Pressure (in. wg)	0.6
Fan RPM	1196
Horse Power (BHP)	0.295
Elevation (ft)	0
Temperature (°F)	70
Drive Loss (%)	30

Motor Information	
Motor HP	0.33 - 1/3 HP
Volt/Ph/Hz	115V/1PH/60HZ
Enclosure	3 - ODP w/Overload
NEC FLA*	7.2
Weight+ (lbs)	C/F

* NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary depending on motor manufacturer.
+ Motor weight may vary depending on supplier

SOUND POWER

OCTAVE POWER CENTER FREQUENCY (hz)							
63	125	250	500	1000	2000	4000	8000
79	78	77	69	64	63	58	54

LWA	Dba	Sones
73	61.5	11.7

LwA - Weighted sound power, based on ANSI S1.4, dBA - Weighted sound pressure, based on 11.5 dB attenuation per Octave band at 5 ft. Sones - calculated using AMCA 301 at 5 ft.

VX-12-C

Unit Performance

Design Conditions

Elevation (ft)	Summer		Winter DB (F)	Supply (CFM)	Outdoor Air (CFM)	Exhaust Air (CFM)
	DB (F)	WB (F)				
568	88.1	74.4	-5.0	950	950	-

Unit Specifications

Qty	Weight (lb)	Cooling Type	Heating Type	Unit Installation	Unit ETL Listing	Furnace ETL Listing
1	706 (+/- 5%)	None	Indirect Gas	Outdoor	UL\cUL 1995	ANSI Z83.8 / CSA 2.6

Configuration

Outdoor Air		Exhaust Air	
Intake	Discharge	Intake	Discharge
End	Bottom	None	-

Heating Specifications

Type	Gas Type	Input (MBH)	Output (MBH)	Temperature Rise		Turndown	Performance	
				Min (F)	Max (F)		EAT (F)	LAT (F)
Indirect Gas	Natural	100.0	80.0	5.0	78.0	16:1	-5.0	73.0

Air Performance

Type	Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	FRPM	Fan		
					Qty	Type	Drive-Type
Supply	950	0.5	0.706	1129	1	Plenum	Direct

Motor Specifications

Motor	Qty	Operating Power (hp)	Size (hp)	Enclosure	Efficiency	RPM
Supply	1	0.16	1/2	ODP	SE	1765

Electrical Specifications

Power Supply	Rating (V/C/P)	MCA (A)	MOP (A)	Fan Power (W/CFM)*
Unit	208/60/3	3.6	15.0	0.128

*Fan Power (W/CFM) = (Supply BHP + Exhaust BHP) / Supply CFM

Construction Features And Accessories

Unit	
Unit Installation - Outdoor	Std
Unit Construction - Double Wall	Std
Insulation - 2 inch 2.4# R13 foam	Std
Corrosion Resistant Fasteners	Std
Hinged Access	Std
Factory Wired Non-Fused Disconnect Switch	X
Direct Drive Plenum Blower & Motor Assemblies	X
Factory Wired VFDs	Std
Unit Finish - Permatector, Concrete Gray (RAL 7023)	X
Stainless Steel Condensate Drain Pan and Connection	
Condensate Drain Trap	
Controls	
Unit Controls - Full Control	Std
Internally Mounted Control Center with 24 VAC control transformer(s)	Std
BMS Protocol - None	
BMS Monitoring Points	
Supply Fan Control - Constant Volume-Adj. Setpoint	X
Exhaust Fan Control	
Exhaust Fan Only Power	
Energy Wheel Rotation Sensor	
Web-Based User Interface	Std
Outd/Rec. Air Damper Ctrl - 100% OA-No Recirculation	X
Economizer Control	
Furnace Control - 16:1 Modulating	X
Control Accessories	
Remote Display - w/10 ft cord	X
Dirty Filter Sensor(s) - Supply	X
Airflow Monitor	
Room Thermostat	
Phase/Brownout Protection	X
Economizer Fault Detection Diagnostics	

Accessories	
Recirc Air Damper	
Outdoor Air Damper - Low Leakage	X
Return Air Damper	
Roof Curb - GKD - 39.62/77.91-G14	X
Supply Air Filters - 2" Merv 8, 1-12x24x2, 1-24x24x2	Std
Service Outlet	
Piping Vestibule	
Vapor Tight Lights	
Condensate Overflow Switch	
Spare Filters	
Exhaust Discharge Gravity Backdraft Damper	
ElectroFin Coil Coating	
Motor Shaft Grounding	
UV Lights	
Bipolar Ionization	
Smoke Detector(s)	
Barometric Relief Damper	
Power Venting	Std
Warranty Options	
Unit Warranty - 1 Yr (Standard)	Std
Furnace HX Warranty - 25 Yrs	Std

Standard Option	Std
Not Included	
Included	X

Notes
Outdoor Air Damper supplied is low leakage, motorized VCD-23 (leakage rate of 3 CFM / ft^2 @ 1 in. wg), Class 1A

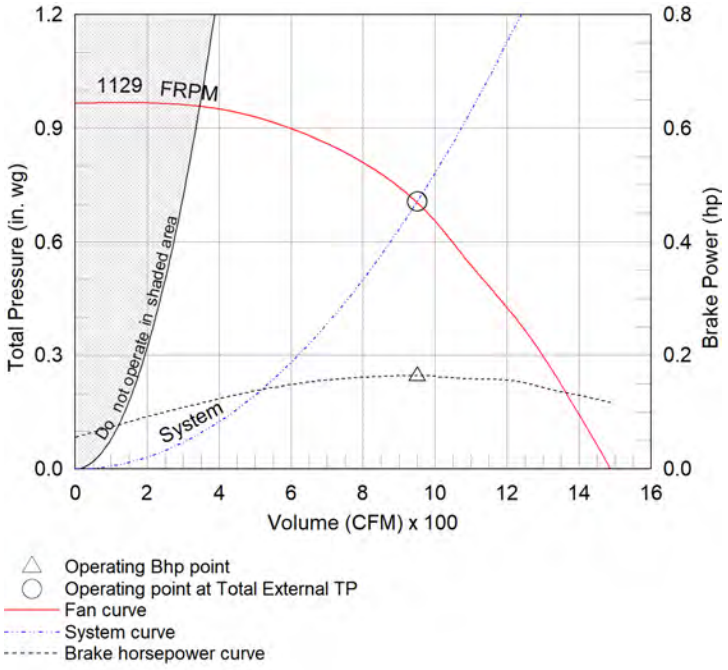
Supply Fan Charts And Performance

Supply Fan Performance									
Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor		Fan		
					Qty	Size (hp)	Qty	Type	Drive-Type
950	0.5	0.706	1129	0.16	1	1/2	1	Plenum	Direct

Pressure Drop (in. wg)						
Weatherhood	Filter	Damper	Cooling	Heating	External	Total
0.02	0.071	-	-	0.118	0.5	0.706

Sound Performance in Accordance with AMCA										
Sound Power by Octave Band								Lwa	dBA	Sones
62.5	125	250	500	1000	2000	4000	8000			
73	68	63	70	57	53	53	60	69	57	9

Supply Fan



Capacity ratings (cont)

SOUND RATINGS TABLE

	48HC UNIT	COOLING STAGES	OUTDOOR SOUND (dB) AT 60 HZ								
			A-WEIGHTED	63	125	250	500	1000	2000	4000	8000
F.1	A04	1	76	78.2	78.0	74.2	73.3	70.6	66.0	62.4	56.9
	A05	1	78	84.7	83.6	77.1	74.6	72.3	68.3	64.7	60.9
F.2	A06	1	77	87.5	82.5	76.1	73.6	71.3	67.1	64.1	60.0
F.3	A07	1	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
	D07	2	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
	D08	2	82	90.6	84.3	80.2	79.3	77.1	72.2	67.4	63.7
	D09	2	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
	D11	2	87	85.9	87.9	85.6	84.4	82.8	78.5	74.9	72.5
	D12	2	87	85.9	87.9	85.6	84.4	82.8	78.5	74.9	72.5
F.4, F.5 & F.6	D14	2	83	89.3	86.0	82.9	80.7	78.5	73.6	69.6	64.5

LEGEND

dB — Decibel

NOTES:

1. Outdoor sound data is measured in accordance with AHRI.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of “average” human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI.

STAMSON 5.0 NORMAL REPORT Date: 18-03-2022 15:57:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Time Period: 24 hours
Description:

Road data, segment # 1: St Laurent

Car traffic volume : 6477 veh/TimePeriod
Medium truck volume : 515 veh/TimePeriod
Heavy truck volume : 368 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: St Laurent

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 34.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: St Laurent

Source height = 1.50 m

ROAD (0.00 + 60.43 + 0.00) = 60.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.99	0.00	-3.55	0.00	0.00	0.00	0.00	60.43

Segment Leq : 60.43 dBA

Total Leq All Segments: 60.43 dBA

TOTAL Leq FROM ALL SOURCES: 60.43