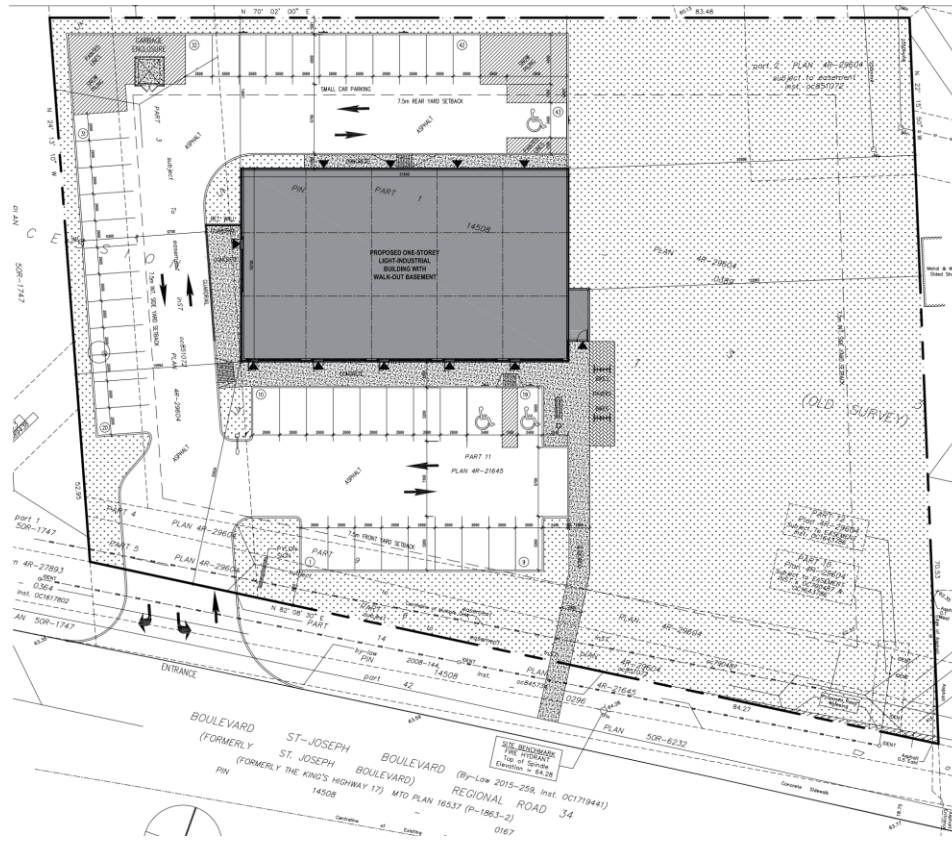


## ADDENDUM –Layout Changes and Impact on Noise 23/08/2018

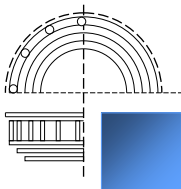
The layout of this development has been modified from two 2-storey buildings to a single 1-storey building since the original study was completed. The purpose of this addendum is to evaluate the traffic and environmental noise impacts of the modifications to the development. Figure 1 below shows the updated site plan.



**Figure 1 – Updated Site Plan for 3735 St. Joseph Boulevard**

The traffic noise levels on this property were calculated in the original 2014 study and the results still apply. The worst case scenario calculated in the original study was a calculated 70.6 dB at the plane of window on the south façade of the building. An exterior building component analysis will thus be required for the south façade of the building. The noise impact on the north side of the building was calculated to be 54.3 dB, which is below 55 dB and does not require an exterior building component evaluation as per the city of Ottawa ENCG.

Other than the layout, the exterior wall composition has also been modified. Table 1 below shows the original planned exterior wall composition for 3735, the currently planned wall composition and the equivalent CMHC wall type.



<b>Original Ext. Wall Composition</b>	<b>Current Ext. Wall Composition</b>	<b>Equivalent CMHC Wall (EW2)</b>
Stone or Veneer 25mm air space 50mm rigid insulation R-10 Air-moisture barrier 12mm OSB sheathing 152mm metal studs @ 400mm o/c R-20 batt insulation Vapour barrier 12mm Type X gypsum board	-EIFS exterior cladding -Air barrier -OSB wall sheathing -Batt insulation in cavities -150 mm studs -13 mm gypsum board	-Exterior wood, metal or fiber sheathing -Rigid Insulation -39x89 mm Studs -50 mm Fiber Glass Insulation -Vapour Barrier -13 mm gypsum board

**Table 1 – Wall composition comparison**

It should be noted that the use of wood or metal siding over continuous rigid insulation is also being considered. This wall composition would not affect sound isolation significantly compared to the EIFS cladding and both wall compositions would be roughly equivalent to CMHC EW2. Using the new layout, the south façade now consists of 3 components rather than 2 originally:

- 1) Glazing
- 2) Exterior Wall
- 3) Doors

This new element modifies equation 3 from the original report to the following:

$$\text{Required AIF} = 71 (\text{Outside } L_{eq}) - 45 (\text{Required Indoor } L_{eq}) + 10 \log 10 (3) + 2 = 33$$

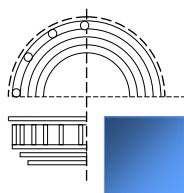
Thus the minimum required AIF with the new layout is 33. In order to complete the building component analysis, it is necessary to calculate the window, wall and door as a ratio of floor area. Table 2 presents the dimensions and ratios of these elements.

<b>Floor Area (m<sup>2</sup>)</b>	<b>582.75</b>
<b>Window Area (m<sup>2</sup>)</b> <b>(ratio to floor area)</b>	67 (12%)
<b>Wall Area (m<sup>2</sup>)</b> <b>(ratio to floor area)</b>	115.25 (20%)
<b>Door Area (m<sup>2</sup>)</b> <b>(ratio to floor area)</b>	12 (2%)

**Table 2 – Areas of Exterior Building Components and Floor Area**

### **Exterior Wall Analysis**

Using the above calculated wall to floor ratio of 20% and table 6.3 of CMHC “Road and Rail Noise: Effects on Housing”, we conclude that the AIF value of the exterior wall composition is 40, which is above the minimum requirement of AIF 33 and is therefore acceptable.



Because the exterior wall composition does not exceed the required AIF requirement by more than 10, the number of components cannot be reduced in our analysis and as such the glazing and door components will need to achieve a minimum AIF requirement of 33.

### Exterior Glazing Analysis

Table 3 below shows the recommended window composition to obtain AIF 33 using table 6.2 of CMHC “Road and Rail Noise: Effects on Housing” and a 13% window to floor ratio.

Minimum Required Window Composition		Window area to floor area	AIF of minimum recommended window composition	AIF Requirement
Glass Thickness	Interplane Spacing			
3 mm & 3 mm	13 mm	13%	33	33

**Table 3** – Glazing Recommendations for 3735 St. Joseph Boulevard

### Exterior Door Analysis

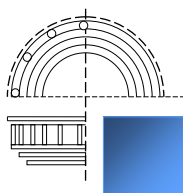
Using a 4% door area to floor area ratio and 6.4 of CMHC “Road and Rail Noise: Effects on Housing”, we conclude that the minimum door requirement is a glass-fiber reinforced plastic door with foam or glass-fiber insulated core with a minimum thickness of 45 mm. Alternatively the following door types can also be used:

- Solid core wood door – minimum thickness of 35 mm
- Steel door with foam or glass-fiber insulated core – minimum thickness of 45 mm

### Mechanical Unit Considerations

The RTUs from the previous site application have been removed in favor of an interior furnace. This means that the building no longer has any equipment susceptible to bother nearby properties.

Based on the previous study, up to three 7.5 ton units, two 6 ton units, two 5 ton units and twelve 4 ton units can be installed on the roof top with no need for noise mitigation should the developer choose to pursue this option. Should this option be pursued, the sound power levels of the units must not exceed those listed in table 3.1.2 of the original report.





## Summary

We have evaluated the noise impact of the 2018 site plan modifications to 3735 St. Joseph Boulevard based on a previous study from 2014. We have found that the exterior wall compositions being considered are both adequate to mitigate traffic noise at this location. We have also found the minimum requirements for window compositions and doors. These requirements are summarized in table 4 below.

Exterior Wall	Windows	Doors
<ul style="list-style-type: none"> <li>-EIFS exterior cladding</li> <li>-Air barrier</li> <li>-OSB wall sheathing</li> <li>-Batt insulation in cavities</li> <li>-150 mm studs</li> <li>-13 mm gypsum board</li> </ul> <p>Alternatively, EIFS cladding can be replaced with wood or metal siding with a layer of continuous rigid insulation.</p>	<p>Double pane 3 mm glass with 13 mm airspace</p>	<p>Glass-fiber reinforced plastic door with foam or glass-fiber insulated core, minimum 45 mm</p> <p>Alternatives include:</p> <p>Solid core wood door, minimum 35 mm</p> <p>Steel door with foam or glass-fiber insulated core, minimum 45 mm</p>

**Table 4 – Summary of required exterior wall composition elements**

While the current plans do not include rooftop mechanical equipment, opting instead for an interior furnace, the previous report shows that rooftop units are acceptable with no noise mitigation measures given they respect the sound power data provided in table 3.1.2 of the original report and do not exceed the numbers provided in table 3.1.1 of the original report.

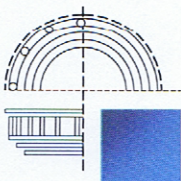
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