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MEMORANDUM

DATE:	2024-07-24	RWDI REFERENCE #: 2401464
TO:	Robert Johnston Senior Civil Engineer, Co - Elevate	EMAIL: rjohnston@co-elevate.ca
FROM:	Khalid Hussein Project Manager, RWDI Gillian Redman Senior Noise Engineer, RWDI	Email: Khalid.Hussein@rwdi.com Email: Gillian.Redman@rwdi.com
RE:	Environmental Noise Design Review Jefferson Elora Corporation Elora, Ontario	

Dear Mr. Johnston,

RWDI AIR Inc. (RWDI) was retained by Co-Elevate to complete a noise assessment of the Jefferson Elora Corporation (JEC) facility located in Elora, Ontario. This design review considers the potential impact from a plant expansion on environmental noise emissions. The JEC facility operates under an environmental compliance approval (ECA) that limits the noise emitted by the facility. This review considers the effect on the sitewide environmental noise compliance with the addition of the expansion.

BACKGROUND

Based on RWDI's understanding, JEC will be expanding their operations to add two new presses: a 1500 T press, and a 3000 T press. To accommodate the additional equipment the existing JEC building will be expanded. In addition to the indoor presses, new HVAC equipment will be added to the roof of the expansion.

The facility currently operates under an Environmental Compliance Approval (ECA) with Limited Operational Flexibility (ECA 2894-A6UQA9). The new equipment associated with the expansion will ultimately be included within this ECA and is evaluated cumulatively with the existing equipment on site and assessed against the applicable sound level limits.

APPLICABLE SOUND LEVEL LIMITS

The applicable sound level limits are prescribed in the Ontario Ministry of the Environment, Conservation and Parks (MECP) document titled "Environmental Noise Guideline - Stationary and Transportation Sources - Approval and Planning (NPC-300)", dated August 2013. The surrounding acoustical environment is dominated by sounds of human activity and traffic with low evening and night background sound level defined by natural environment and infrequent human activity (Class 2). For this assessment, the daytime (07:00h to 23:00h) sound level limit at plane of window is 50 dBA, while the nighttime (23:00h to 07:00h) limit is 45 dBA. Outdoor points of reception are only assessed for daytime and evening periods. The daytime (07:00h to 19:00h) sound level limit at the outdoor point of reception is 50 dBA, while the evening (19:00h to 23:00h) limit is 45 dBA.



ANALYSIS AND MODELLING

The facility expansion will be adding the following potential sources of sound:

- Ten (10) Exhaust Fans
- Two (2) Stamping Presses
- Five (5) HVAC Units
- One (1) Gas Fired makeup Air Unit

Through a review of manufacturer's sound data, it was confirmed that the exhaust fans are insignificant sources of noise and were not included in the modelling. Similarly, data provided for the makeup air unit also indicated this unit would be an insignificant source of noise.

Sound from the stamping presses is expected to be similar to the existing stamping presses at the facility. A review of available drawings indicated that wall construction of the expansion will be similar to other exterior walls of the building, ensuring that sound reduction through the wall will be sufficient. If wall construction is significantly different, a review should be conducted to ensure the new construction will provide the reductions required.

Manufacturer's sound data for the HVAC units was provided. It was confirmed by JEC staff that the HVAC units will be fitted with barriers to reduce sound to the north and east. Measured sound data from existing units of the same make and model which incorporate these barriers were used to model sound from the units.

All sources are conservatively assumed to operate continuously for at least 1-hour during daytime, evening, and nighttime.

A summary of the significant sound sources included in the analysis are listed in **Table 1**, along with the modelled sound power levels. The locations of the sources in the expansion (outlined in orange) are shown in **Figure 1**, with labels of the sources associated with the expansion in red.

Table 1: Noise Modelling Inputs

Source ID		Source Description	Sound Power Level (dBA)
Expansion Sources	HVAC_49 to 53	HVAC (with Barrier)	92
	imp_StampRoof17	Impulsive Roof Noise	73
	imp_StampRoof18	Impulsive Roof Noise	73
	Imp_wall_ne	Impulsive Wall Breakout (north-east)	96
	imp_SRP2 and 3	Scrap Bin Impulsive one of two (new location with expansion)	130



Figure 1: Sound Source

NOISE RECEPTORS

Sound from the facility with the inclusion of the expansion was evaluated at surrounding noise sensitive receptors. The locations of the receptors are shown in **Figure 2**.



Figure 2: Noise Sensitive Receptors



RESULTS & RECOMMENDATIONS

The predicted site wide sound levels at the surrounding sensitive receptors are predicted to meet the applicable sound level limits for both continuous and impulsive sound. Predicted sound levels for continuous sources are summarized below in **Table 2**. Impulsive sources were found to be similar to those previously predicted and below the applicable sound level limits.

Table 2: Predicted Sound Levels at Receptors

Location	Receptor	Time Period	Overall SPL (dBA)	Sound Limit (dBA)	Compliance (Y/N)
N01	Facade	Daytime & Evening	44	50	Y
		Nighttime	36	45	Y
	Outdoor	Daytime	41	50	Y
		Evening	37	45	Y
N02	Facade	Daytime & Evening	46	50	Y
		Nighttime	42	45	Y
N03	Facade	Daytime & Evening	45	50	Y
		Nighttime	41	45	Y
	Outdoor	Daytime	46	50	Y
		Evening	41	45	Y
N04	Facade	Daytime & Evening	48	50	Y
		Nighttime	44	45	Y
	Outdoor	Daytime	49	50	Y
		Evening	45	45	Y
N05	Facade	Daytime & Evening	47	50	Y
		Nighttime	43	45	Y
	Outdoor	Daytime	48	50	Y
		Evening	45	45	Y
N06	Facade	Daytime & Evening	44	50	Y
		Nighttime	41	45	Y
	Outdoor	Daytime	45	50	Y
		Evening	42	45	Y
N07	Facade	Daytime & Evening	43	50	Y
		Nighttime	40	45	Y
	Outdoor	Daytime	42	50	Y



Location	Receptor	Time Period	Overall SPL (dBA)	Sound Limit (dBA)	Compliance (Y/N)
		Evening	39	45	Y
N08	Facade	Daytime & Evening	48	50	Y
		Nighttime	45	45	Y
	Outdoor	Daytime	46	50	Y
		Evening	43	45	Y

A review of the necessity for the inclusion of barriers with the new HVAC units indicated that they are required to achieve compliance at the surrounding noise sensitive receptors. Restricting the nighttime operations (11pm to 7am) to 30 minutes per hour does reduce sound levels at the receptors but does not achieve compliance without the inclusion of the barriers. If further expansion is planned at the facility, restricting nighttime operation of these units could help provide additional headroom for new equipment at the facility.

CLOSING

The expansion is expected to meet the sitewide environmental noise requirements of the JEC facility. We trust that the enclosed meets the current project requirements. RWDI is available for a conference call should you have any questions.

Yours truly,

RWDI