
Robbins Schwartz
55 W. Monroe Street, Suite 800
Chicago, IL 60603

June 24, 2020

Attn: Mr. Kenneth Florey

Re: New Trier High School Dust Collector Noise Measurements

Dear Mr. Florey:

On Thursday, June 18, 2020, we returned to the school to conduct observations and additional acoustical testing. The purpose of this testing was to document property line sound levels due to New Trier mechanical equipment following the implementation of mitigation to reduce sound levels.

One of the sources of neighbor complaints is the dust collector located in the loading dock, which has a fan and motor located on top of the housing. The fan has a backward-inclined wheel and is directly driven by the motor, and there is a duct silencer on the discharge or clean air side of the fan.

Previous measurements in 2018, 2019, and January 2020 were performed prior to the completion of noise mitigation. Preliminary measurements in March, 2020 showed compliance in all nine octave bands with temporary mitigation. A new acoustical enclosure was recently (May and June 2020) installed around the fan, motor, and duct silencer, and includes ventilation silencers. The intent of the most recent measurements was to determine compliance with the Illinois code with the permanent enclosure around the dust collector.

Measurements

The measurements were taken on the public sidewalk at the northeast corner of the property line of 124 Woodland Ave. on Thursday, June 18, 2020 starting at about 4:00 p.m. We used a Norsonic 140 integrating sound level meter and real time analyzer to conduct the measurements. The microphone was positioned at about 5 feet above ground level. Conditions were a temperature 87°F, relative humidity 26 to 27%, and calm to light wind speed.

The sound level meter and calibrator carry current laboratory calibration. Field calibration was performed prior to and following the measurements, and there was a 0.2 dB difference in the calibration level.

Background sound level readings were conducted at the beginning of the study, with the meter paused for transient events such as passing vehicles, aircraft overflights, trains, and pedestrians.

All of the following mechanical equipment operates normally during the day and were operated for the sound measurements:

- Dock condensing unit (operates intermittently);
- Rooftop energy recovery units (ERUs) (four total);
- Rooftop exhaust fans (seven total: cafeteria, science lab, arts, general, laser cutter);

Electronic Filing: Received, Clerk's Office 12/09/2021

Robbins Schwartz

June 24, 2020

- Rooftop fume hoods (three total); and
- Dust collector.

Although Illinois requires a measurement duration of one hour, noise from this equipment is steady-state and does not vary with time. Therefore, the measurement period was 10 minutes and the meter was paused for transient events as with the background sound measurements.

Measured sound levels were corrected for background sound levels, per the procedure in the Illinois code, to determine source sound levels. It should be noted that in four octave bands (1000 to 8000 Hz), sound levels with and without the equipment the equipment operating were essentially the same (i.e. within three dB) and were therefore indistinguishable.

The measurements are documented in Table 1 and show that equipment noise was less than the Illinois daytime limit in all nine octave bands.

Conclusion

Sound level measurements were conducted on June 18, 2020 of the school's mechanical equipment, including the dust collector with new mitigation. Property line sound levels complied with the Illinois daytime limits in all frequency bands.

If you have questions concerning this report, please do not hesitate to contact us.

Respectfully submitted,

Shiner Acoustics, LLC

Cameron J. Baillie, P.Eng.
CJB/mm/20
1180514

Table 1. June 18, 2020 Sound Measurements

	Sound Pressure Level, dB re 20 μ Pa									
	Octave Bands									Awt
	31.5	63	125	250	500	1000	2000	4000	8000	
All daytime equipment as measured	60	69	61	51	44	41	35	30	23	50
All equipment off (background sound)	55	57	51	45	41	41	35	28	22	45
All daytime equipment (corrected for background sound)	58	69	61	50	42	ind	ind	ind	ind	48
Illinois daytime limit	72	71	65	57	51	45	39	34	32	55
Exceedance	0	0	0	0	0	0	0	0	0	n/a

Note: 'ind' indicates that equipment noise and background noise were within three dB and were therefore indistinguishable