



Exterior Noise Assessment

AAPS - Lakewood Elementary School

IMEG #24001204.01

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Exterior Noise Assessment
for
AAPS - Lakewood Elementary School
Ann Arbor, Michigan

IMEG #24001204.01
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A. Introduction

1. IMEG conducted exterior site noise measurements at Lakewood Elementary School, located in suburban Ann Arbor, Michigan, to establish existing site noise levels for future building design and CHPS maximum allowable exterior noise levels.

B. Executive Summary

1. Exterior noise levels around Lakewood Elementary School were measured to be near typical suburban noise levels at 50-55 dBA. Traffic noise from nearby I-94 was present with typical neighborhood sounds of wild squirrels and birds, trees rustling, wind, and the occasional residential noise and traffic being the obvious and noticed sounds near the school.
2. Measured sound levels do not require additional façade noise barrier and elevated abatement (STC or OITC). Future work should include review of noise from new mechanical and emergency generator systems to ensure radiated noise is not excessively loud and exceed CHPS standards.

C. CHPS Standards

1. CHPS EQ P15.0.2 states "In Core Learning Spaces and in spaces designated as [Inter-Classroom Workspaces] and [Special Education Rooms], the total background noise from the combination of building HVAC systems and exterior noise shall not exceed 40 dBA."
2. For Enhanced Acoustical Performance, CHPS EQ C15.1.2 requires HVAC systems and exterior noise to not exceed 35 dBA for enhanced acoustical performance.

D. Acoustical Analysis

1. AAPS Lakewood Elementary School is in a suburban residential neighborhood of Ann Arbor with single family homes surrounding the property to the north and east, and Lakewood Nature Area located to the west and south.

2. I-94 was a quarter of a mile to the east from the school and was prominent and the loudest sustained sound source perceived, measuring 50- 55 dBA at the building façade. Typical suburban ambient sounds were the most near and obvious sounds, including the wild birds and squirrels, wind, tree rustling, and occasional residential noise and traffic.
3. The Ann Arbor Municipal Airport (ARB) is 4 miles southeast of the school. ARB has voluntary Flight and Noise Abatement program with instructions to pilots on reducing noise in the residential areas around the airport. The nearby larger airports, Willow Run Airport (YIP) and Detroit Metropolitan Wayne County Airport (DTW), are 13 miles and 22 miles away, respectively. The occasional modest flight noise from possible flyovers, the large distance to the airports, and flight paths oriented away from the school do not indicate flight aviation noise to be an issue for classrooms.
4. The nearest railroad track is 2 miles away, and not imposing to classroom interiors due to this distance.
5. Exterior noise above 57 dBA requires a verification measurement of the façade that exterior noise is abated to attain maximum interior background noise levels (40 dBA total). Measurements did not meet or exceed 57 dBA, and abatement verification on new construction at project completion is not required.
6. Window air conditioning units were in nearly all rooms throughout the building, as seen in Figure 1. These were not running during the site survey but will increase both the interior and exterior noise levels.



Figure 1: Window Air Conditioning Units



7. Roof mounted mechanical equipment (Figure 2) was visible and expelled a subdued hum in the courtyard area within 30 feet of the equipment.



Figure 2: Roof Mounted Mechanical Equipment

8. The mechanical room on the east side of the building (Figure 3) expelled sound out louvres at 54 dBA that was louder than typical noise, but still below the 57 dBA metric.



Figure 3: Mechanical Room with Louvres



9. The measured sound levels at the school are shown below in Figure 4.



Figure 4: Measured Exterior Sound Levels

E. Conclusions

1. This concludes IMEG's exterior noise assessment.

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