



Exterior Noise Assessment

AAPS - Lawton Elementary School

IMEG #24001204.02

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

IMEG #24001204.02
June 4, 2024

A. Introduction

1. IMEG conducted exterior site noise measurements at Lawton 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 from nearby I-94 was the most prevalent noise at 50-58 dBA and was near or exceeded the CHPS standard for exterior noise levels in some instances. CHPS standard will require future design and construction to attenuate exterior noise to below 40 dBA in classroom interiors. This will also require façade noise barrier values to be verified on performance (STC / OITC) with acoustical testing post construction completion.

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 Lawton Elementary School is nestled in a suburban residential area of Ann Arbor with single family homes surrounding the property on four sides, and Lawton Park located to the northwest for recreation and youth club sports.
2. I-94 is within a third of a mile from the school façade and was prominent and the loudest sustained sound source perceived, measuring up to 58 dBA at the building façade on the southwest side of the building. Up to a 10 decibel drop (half as loud) was measured on the opposite side of the building, away from the interstate.

3. The Ann Arbor Municipal Airport (ARB) is 2 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 11 miles and 20 miles away, respectively. The occasional modest flight noise from possible flyovers was perceived and measured on site at up to 60 dBA for low flying small aircraft. This is an occasional, not sustained noise that does not present an acoustical concern for classroom activities. The large distance to the airports, and flight paths of large aircraft oriented away from the school do not indicate typical flight aviation noise to be an issue for classrooms.
4. The nearest railroad track is 1.3 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 on the southwest side of the building were near or surpassed 57 dBA, requiring abatement verification on new construction at project completion, and appropriate acoustical design to the façade of new construction to abate existing noise conditions. ASNI S12.60 recommends STC and OITC metrics for façade abatement.
6. Roof mounted mechanical equipment near the south of the building was visible and produced a noticeable noise at ground level near the building. This in combination with the nearby interstate created the loudest position near the school at 58 dBA.



Figure 1: Roof Mounted Mechanical Equipment



7. The measured sound levels at the school are shown below in Figure 2.

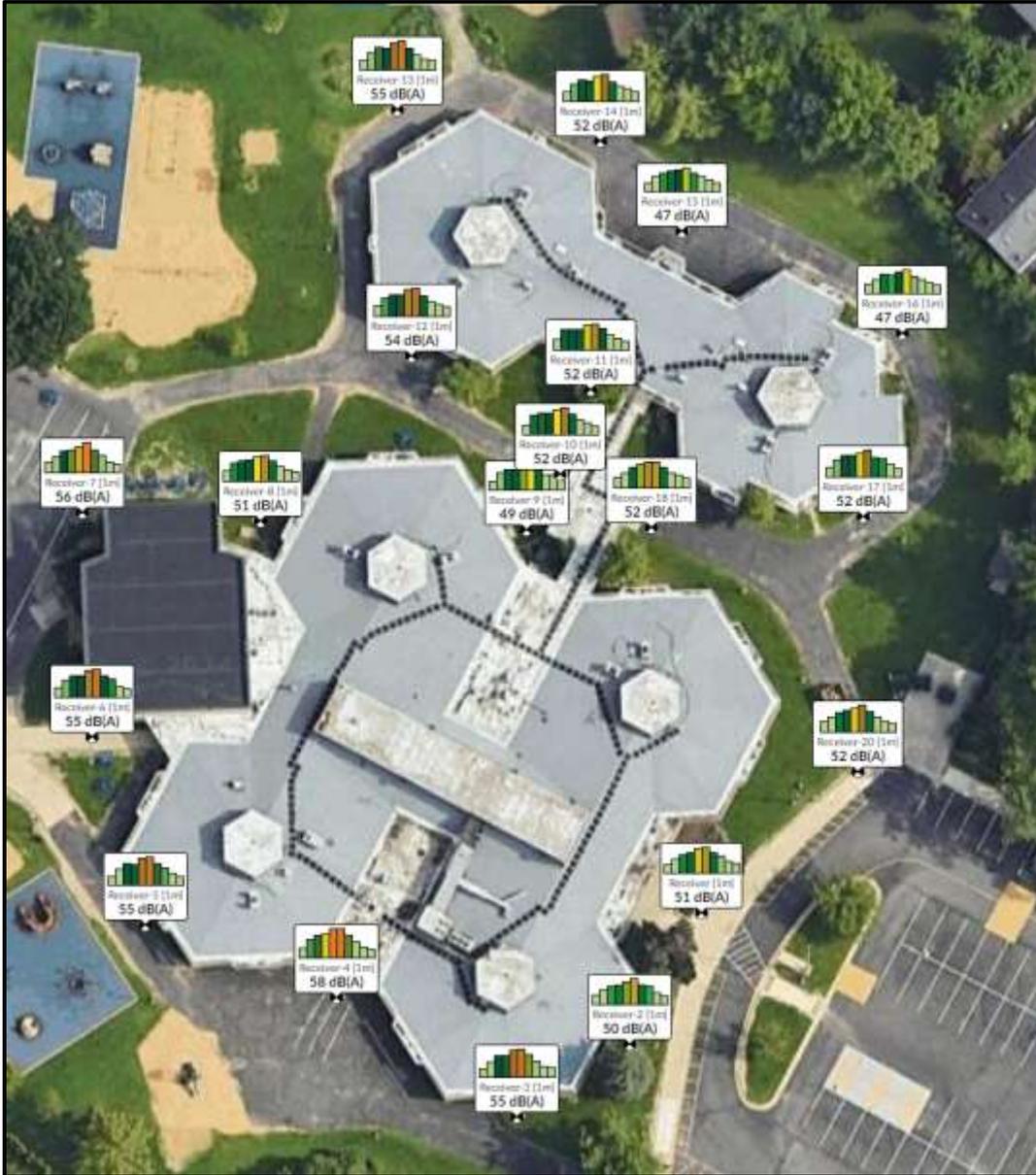


Figure 2: Measured exterior sound levels

E. Conclusions

1. This concludes IMEG's exterior noise assessment.

Prepared by: Frederick Hoham

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