April 28, 2022

Christine Phillips, AICP, RA
BCRA
2106 Pacific Ave, Suite 300
Tacoma, WA 98402

Re: Environmental Noise Assessment
The Kessler Center Portables, Puyallup School District

Christine:

This is a report of a predicted noise survey performed in the immediate vicinity of the proposed portable classroom for the Kessler Center, planned for the Puyallup School District. The site is located at 1501 39th Ave SW, Puyallup, WA. This evaluation is completed with the purpose of evaluating environment noise exposure to the proposed building at the site to the south of the existing structures at the Puyallup School District Support Campus. Noise at the site is associated with auto traffic along SR-512 and 39th Ave SW.

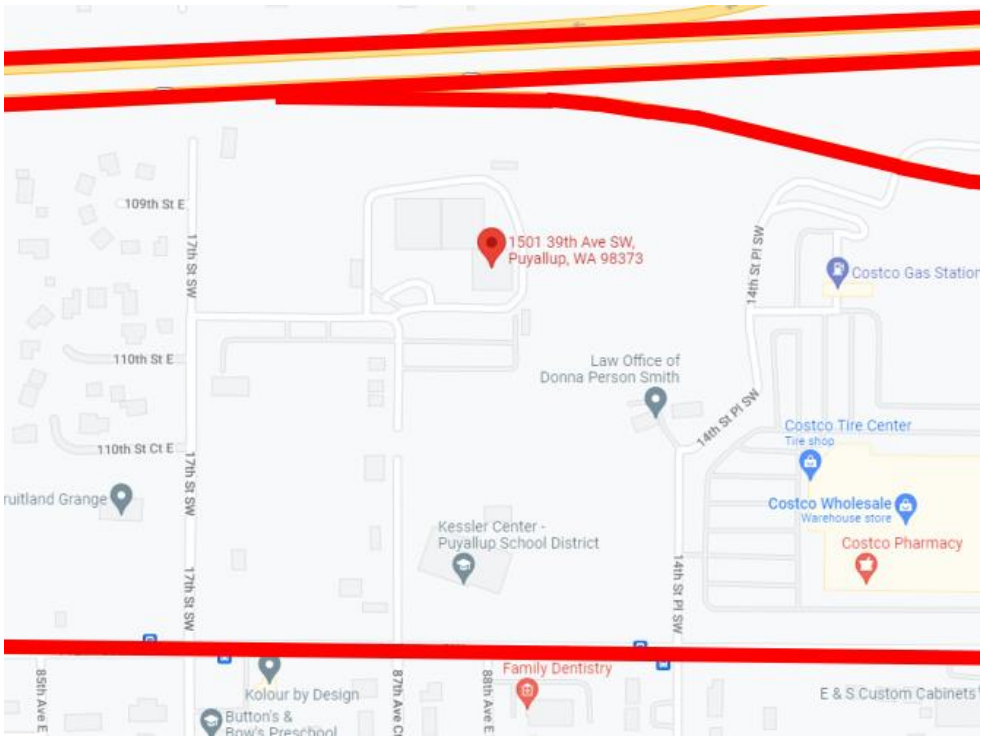


Figure 1. Site Location

The purpose of this report is to document the extent and impact of environmental noise due to traffic in the immediate vicinity of the school building. The immediate surrounding properties to the school building are commercial properties to the east and west and residential properties to the south. This report contains data on the existing and predicted noise environments, impact criteria, an evaluation of the data as they relate to the criteria, and recommendations for improvement if appropriate. The evaluation has been conducted to document the impact of environmental noise to planned building to be located on the site.

The existing noise environment at the proposed site is primarily the result of auto traffic on SR-512 and 39th Ave SW. It is a site bounded on the north by SR-512 with residential beyond, to the east by commercial properties, to the south by 39th Ave SW with single family residential beyond, and to the west by commercial properties. Measurements were made using a Svantek 971 Environmental Noise Monitor for a typical day's traffic near the façade of the proposed portable classroom. The equipment conforms to American National Standards Institute (ANSI) requirements for Type 1 instruments. The equipment was within the current calibration period.

Our review was completed in accordance with WAC 246-366-110 Site Approval for educational facilities as required by the Health and Safety Guide for K-12 Schools in Washington. Based on these requirements, noise from any source at a school site shall not exceed an hourly average (Leq) of 55 dB(A) or a maximum (Lmax) of 75 dB(A) during the time school is in session. Exceeding these levels is allowable provided a plan for sound reduction is included in the construction proposal and that the Health Officer approves the plan.

Noise Measurement Descriptors

Sound is measured as sound levels in units of decibels, dB. Environmental noise is typically measured as an A-weighted sound level in units of decibels, symbolized as dB(A). The A-weighting is a frequency-specific weighting that corresponds approximately to the sensitivity of human hearing at the various frequencies, particularly the greater sensitivity at mid and high frequencies.

Sound levels vary significantly depending on location and activities. People normally experience sound levels between about 30 and 90 dB(A), depending on their activity. For example, a nearby noisy vehicle, radio or power tool may produce 90 dB(A); normal conversation is about 55 to 65 dB(A); and a bedroom or quiet office is about 30 to 40 dB(A).

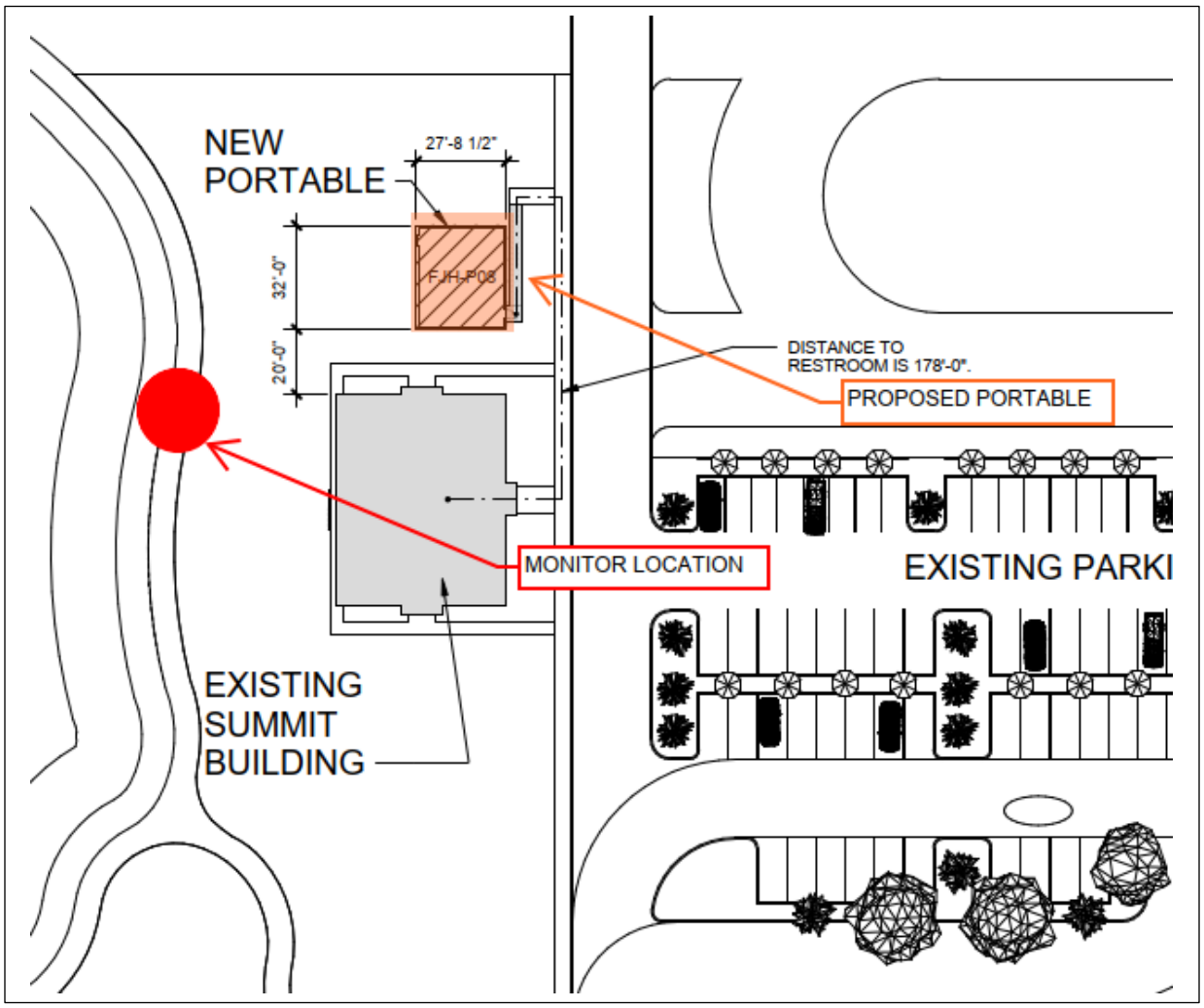
Loudness is judged by an average listener to double for each 10-dBA increase in sound level. For example, 60 dB(A) is judged to be twice as loud as 50 dB(A) and four times as loud as 40 dB(A).

When measuring noise that is fluctuating over time, such as traffic noise, it is common practice to use a descriptor called equivalent A-weighted sound level, Leq. The Leq is that constant sound level in dB(A) which contains the same amount of sound energy over a given time period as the measured fluctuating noise. The Leq is often determined for one-hour time periods.

Other descriptors used in this report is the Lmax. The Lmax is the highest instantaneous sound level for a given sound event or time period.

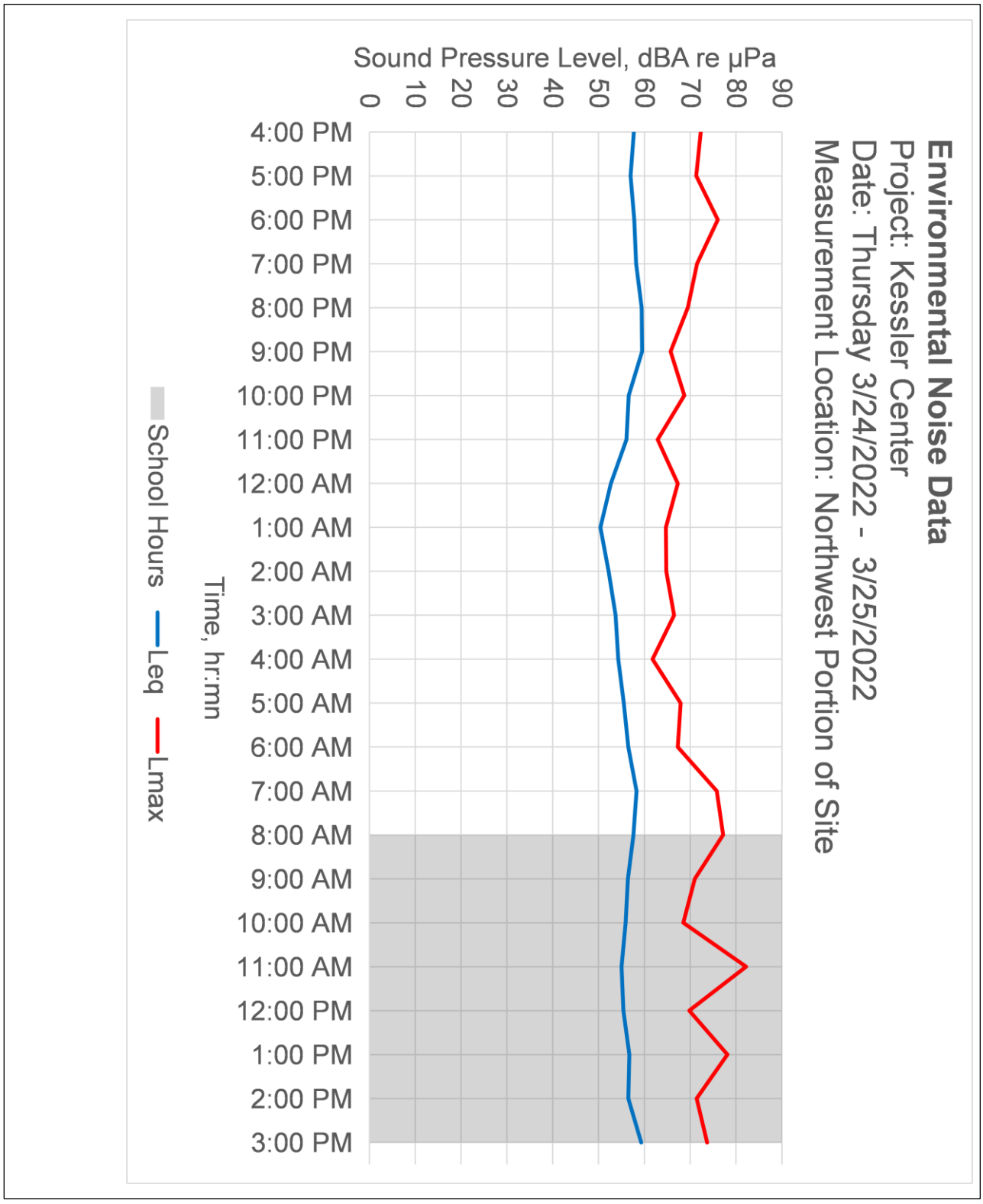
Noise Measurement Results

Continuous noise measurements were conducted at the project site to determine existing noise levels. The measurements began at 4:00 pm on March 24, 2022 and ended at 4:00 pm, March 25, 2022. Our monitoring was completed at the northwestern portion of the site, consistent with the noise exposure to the proposed portable classroom location for the Kessler Center. The following figure presents the locations of the measurement and the proposed building.



The long-term measurements were presented as hourly Leq and as hourly Lmax values, reported as A-weighted decibels (dB(A)). The average hourly measurements are presented in the following graph.

As shown in these figures, the hourly Leq ranged from 55 to 59 dB(A) between 8:00 a.m. and 5:00 p.m. and hourly Lmax ranged from 69 to 82 dB(A) between 8:00 a.m. and 4:00 p.m.



Based on these noise levels, mitigation to the building envelope design to achieve full compliance with the requirements of Washington Administrative Code will be necessary.

ANSI S12.60 – D2.3.2 *"Selecting sites for learning facilities,"* provides guidance for environments that have average hourly noise levels between 55 dB and 60 dB in Table 3 shown below:

Table 3 — OINIC Rating for Relocatable Classroom

A-weighted Outdoor Noise Level	OINIC Rating for Relocatable Classroom
≤ 55	20 dB
>55 dB and ≤ 60 dB	25 dB
>60 dB and ≤ 65 dB	30 dB

There is one planned portable located on the site exposed to the exterior traffic noise from Hwy 512. Based on the noise at the site, the building envelope should be constructed to achieve an OITC 25 to 30 for the north, east, and west sides of the portable.

The exterior façade consists of three sides without any windows, and one side with windows. The current site plan has the windows on the east façade.

The following assembly is the currently proposed assembly for the construction of the portable:

Exterior Walls: OITC 28
- 5/8" T1-11 plywood siding
- 1 layer of 5/8" exterior gypsum with treated core
- 2 x 6 studs
- 6- inch batt insulation
- 1 layer of 1/2" GWB on 1/2" continuous foam board

This sufficiently reduce noise through the north and west façades into the portable classroom.

The standard windows located on the east side are as follows:

(3) Horizontal Slider Windows: OITC 22
- 1/8" Glass
- 1/2" Airspace
- 1/8" Glass

The current assembly provides a composite OITC of 26 dB which is the standard assembly provided by the manufacturer of the portable. We recommend increasing the performance of the window assemblies on the east side to reduce noise through the east façade.

We recommend increasing the window performance on the east side as follows:

(3) Horizontal Slider Windows: OITC 28
1/4" Glass
1/2" Airspace
1/4" Glass

The east façade with the recommended improved windows provides a composite OITC of 28 dB which will sufficiently reduce noise into the portable and will meet all requirements of WAC for noise control to the classroom.

Primary and Secondary School Regulations

Ambient noise from any source at a proposed site for a new school should not exceed an hourly average of 55 dB(A) (hourly-Leq). Above these levels mitigation measures to achieve 45 dB(A) within instructional interior spaces must be provided by the building envelope. Interior noise levels will not exceed the limits establish by WAC during the time of day the school is in session.

Summary

This report has presented our findings regarding environmental noise at the proposed portable for the Kessler Center. Our findings are based on weekday sound level measurements during school hours and were considered normal for the site and activities of the community. Measurements at the site indicate noise from traffic in the immediate area with the proposed mitigation will not exceed the limits established by WAC Code.

Should you have question regarding our evaluation and recommendations please feel free to contact our office.

Sincerely,
SSA Acoustics, LLP

Steven Hedback
Acoustical Consultant

William Stewart, INCE
Senior Consultant