TALASKE
SOUND THINKING™

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Rick Talaske's planned 1 December 2020 presentation regarding sound matters.

Hello, I am Rick Talaske. I am an acoustician based in the Chicago area. I have a master of science degree in acoustics and I have been a practicing acoustical consultant for 40+ years, working nationally and internationally. For example, my firm provided the acoustic and audio design guidance for the new Mead Center for the Performing Arts at University and Lake on the UW campus. If you have visited Millennium Park in Chicago, note that we were the acoustics and audio designers of the iconic Pritzker Music Pavilion. We have performed noise survey studies on dozens of outdoor facilities, and most represent a much more challenging than Edgewood HS's stadium. Furthermore, over the decades, we have been hired by municipalties to assist them with the development of their local noise ordinances.

Nearly two years ago, we were hired to perform an analysis of the expected noise associated with the Edgewood High School stadium. Details are:

- We performed backgound noise measurements using calibrated Type 1 and 2 sound level meters. Calibration is tracable back to national standards. Windscreens were used as required by your noise ordinance and is our standard practice.
- Measurements for two hours were performed at the three locations noted on Figure 1.
- Ambient noise levels ranged from 50.6 to 63.2 dBA.
- Peak sound levels ranged from 68.5 to 75.8 dBA.
- We performed a very sosphitated assessment of expected levels using SoundPLAN calculation software. SoundPLAN is one of the two leading computer-based noise assessment programs. Our study accounted for:
    a. The terrain and buildings
    b. The configuration of the stadium seating with various capacities of 150, 500, and 1000 attendees.
    c. Pep band
    d. Announcements over audio system
    e. Football players
    f. Ref whistle
    g. Ambient noise

- Using results of these sound events sound level estimates were created and averaged over a one-hour period. It should be noted that community noise exposure is generally addressed over a period of time. For example, noise due to aircraft is generally averaged over 24-hour period using the L_{DN} metric. During our study of Edgewood, we selected a 1-hour period because of the nature of a HS football game.
- Near Edgewood HS, we calculated that sound levels at residences along Woodrow Street and Monroe Street averaged from 55dBA to 60 dBA during a football game. Other more distant residents will experience less noise.
- It is important to understand that these sound levels are not loud. There will be **much** less noise exposure near the stadium than, say, the music venus east of the capital, which is near a residential community.

It is our professional opinion that these predicted sound levels could be described as follows:

- Overall, when averaged over a one-hour period, the outdoor noise exposure during a football game will be commensurate with , and only slightly louder than, the general ambient noise many residents are exposed to on a daily basis.
- The average sound level over a one-hour period will be less than 65 dBA, which we understand is the number referenced within the City of Madison noise ordinance. Some sound events will exceed this figure, but that is true with ambient conditions currently.
- The Noise Ordinance references "stationary" noise source. Technically, the only stationary sources of sound will be the loudspeakers. If we were to critically review the precise wording of the Ordinance, the predicted sound levels would be less. In keeping with the "spirit" of the ordinance, our SoundPLAN modeling effort included all expected sources of noise, as noted earlier.
- 65 dBA noise exposure is a reasonable requirement during daytime conditions. "Daytime" is generally considered between 7:00 am and 10:00 pm.
- Certainly, individual sound events will occur during a football game which will be louder. Even if individual sound events are two to four times louder, the general public will not find the noise to be excessive, disturbing, or an impact to their

health. Furthermore, on a normal day (no activity in the stadium) we measured peak sound levels of 75.8 dBA in the neighborhood.

- Overall, the indoor noise exposure during a football game (with windows closed) will be considerably less, will range from inaudible to barely audible inside homes, and be much lower than indoor noise standards set by HUD.
- If desired, a barrier can be constructed which would offer modest reduction in sound level for residents closest to the stadium.
- The levels are sufficiently low:
  a. They are not deemedto be an excessive noise exposure per OSHA.
  b. Windows will not rattle.
  c. There are no annoying tonal ccomponents to the nature of the sound.
  d. Interior noise levels (with windows closed) are expected to be less than HUD standards of 45 dBA.

There are comments we understand have been circulating. Our opinions are:

- Noise measurements not made with calibrated precision sound level meters and taken without a wind screen should be assumed to be inaccurate. This is especially true with measurements made with iPhones, meters from Radio Shack, or similar uncalibrated equipment.
- The statements regarding undue stress, nightmares, excessive sound levels in their home are, in my opinion, not consistent with our predicted sound levels. The comments would be consistent with much higher sound levels with excessive low-pitched sound. Neither condition is the case here.

Regarding the Wise report:

- We found no mention of wind direction for measurements performed at the Waunakee facility. If the measurement location was downwind of the stadium, levels would be higher than versus neutral conditions.
- We found no mention that Madison has adopted, or intends to adopt, the guidelines offered by the World Health Organization.
- If a noise exposure perspective is used by Wise, the full time period during the day (or at least 8 hours) is applicable. Note that the 20-minute measurement duration

near the Waunakee facility is showing an average of (slightly) under 70 decibels. This means that any long-term average (8 to 24 hours) would be much lower, closer the ambient levels. Furthermore, we understand that the audience was many times larger than reported.

- A peak level of 80 dBA was identified and flagged as something significant. Note that a typical passby of an emergency vehicle with sirens operating can easily be 10 or 20 decibels louder.
- Page 6b identifies levels versus health effects. Note that these are averages "over a year." We would estimate that the average impact over a year with stadium use versus no stadium likely would be a miniscule difference.

Supporting graphics:

Figure 1 – Location of ambient noise level measurements.

The results of the ambient noise measurements are noted Figures 2 and 3. The results indicate L_{eq} values ranging from 50.6 to 63.2, with an average of 56.5 dBA. Peak levels measured ranged from 68.5 to 75.8 dBA, with an average of 72.5 dBA.

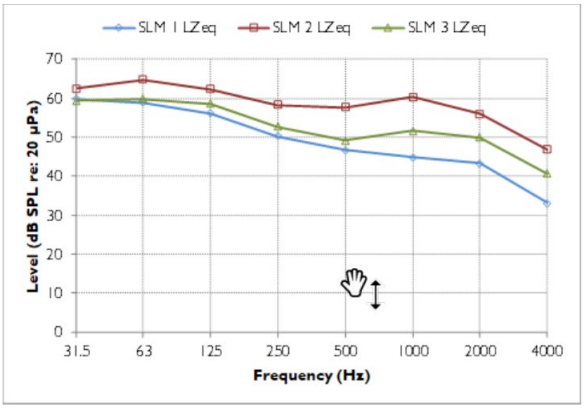

Figure 2 – Summary of average octave band ambient noise level measurements during late afternoon of 6 December 2018, presented as L_{eq} per octave band. The results indicate L_{eq} values ranging from 50.6 to 63.2, with an average of 56.5 dBA.

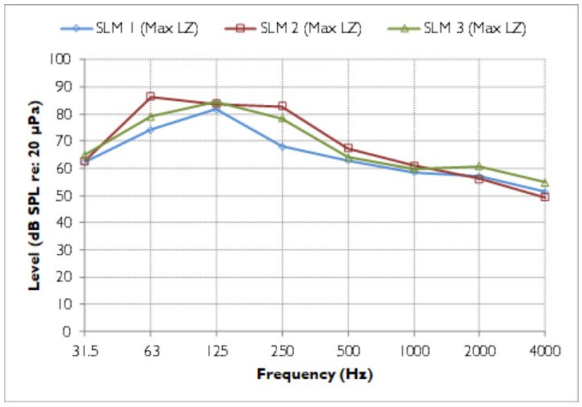

Figure 3 – Summary of maximum measured octave band ambient noise level measurements during late afternoon of 6 December 2018, presented as L_{max} per octave band. Peak levels measured ranged from 68.5 to 75.8 dBA, with an average of 72.5 dBA.

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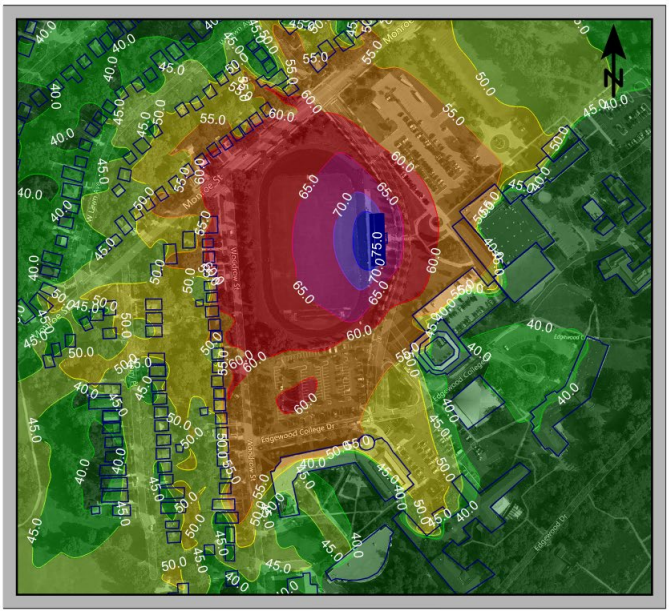
Goodman Athletic Complex
Stands at Full Capacity - No Barrier Wall [Rev. 12/18/2018]
Sum level



Signs and symbols
- Road axis
- Emission line
- Surface
- Central reservation
- Wall
- inside tunnels
- Signal
- Railway axis
- Emission line
- Surface
- Wall
- inside tunnels
- Tunnel opening

Levels LrD in dB(A)
- < 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- >= 80

Prepared For:
Phillip Roeglin
Professional Audio Designs, Inc.

Professional AUDIO DESIGNS inc

Project Owner:
Edgewood High School
Madison, WI

EDGEWOOD HIGH SCHOOL OF THE SACRED HEART

Simulation By: Mike Nicolai / TLC Engineering

Length Scale 1:262
0 125 250 500 750 1000 feet

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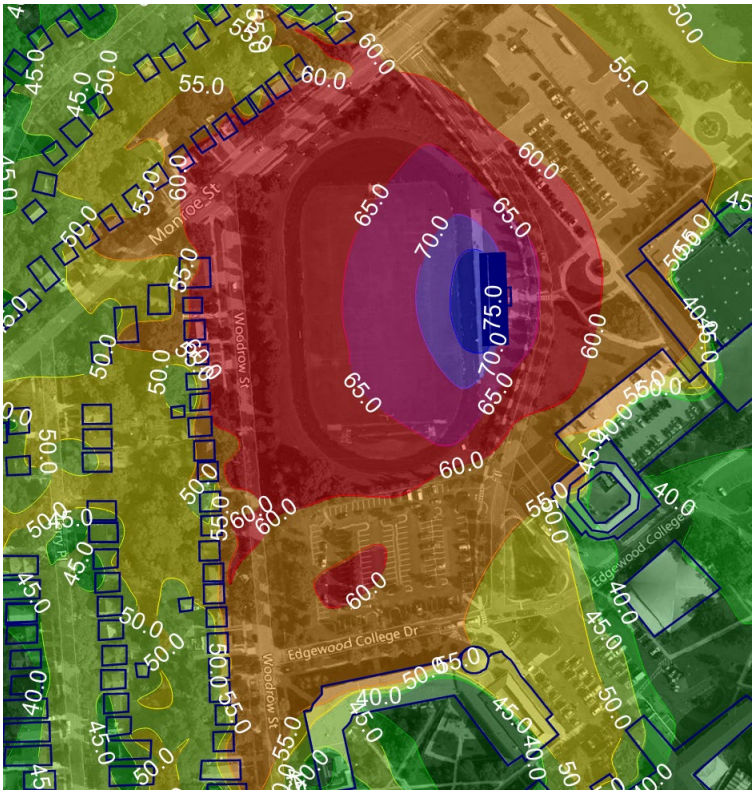

Zoom in of previous SoundPLAN predictions.