Outlook

Application #2025-0287/Wake Robin LLC & Ms Serena Granberry (ARADEV LLC)/104 & 106 Sharon Road & 53 Wells Hill Road/ Special Permit for Hotel, Rdevelopment of the Wake Robin Inn (Section 213.5)/ Map 47/ Lot 2 and 2-1/

From wcruger@gmail.com <wcruger@gmail.com>

Date Tue 9/9/2025 2:39 PM

To Land Use <landuse@salisburyct.us>

Cc Bennett Brooks <bbrooks@brooksacoustics.com>; Perley H. Grimes <pgrimes@cramer-anderson.com>; Angela Cruger <angelacruger@gmail.com>

1 attachment (353 KB)

BAC PJ2024-1440-L07 - Wake Robin Inn Special Permit Eval - Aradev-Tocci significant sound errors 20250908-2.pdf;

We have attached a report from Bennett Brooks of Brooks Acoustics Corporation
The Report notes an error in the CTA report dated September 2, 2025

Please ensure that this report is uploaded to the website

Thank you

Sent from my iPad

BAC
Brooks Acoustics Corporation
35 Talcottville Road Suite 31 Vernon, CT 06066 860.559.4685

Town of Salisbury
Planning and Zoning Commission
Attn: Dr. Michael Klemens
27 Main Street
Salisbury, CT 06068

8 September 2025
PJ024-1440-L07

Subject: Wake Robin Inn – Aradev / Tocci material errors and flaws in their noise analysis

Dear Chairman Klemens and other Commission Members:

This letter raises serious concerns and identifies significant material errors in the Aradev Special Permit Application, and subsequent documents, with regard to acoustical analysis and noise issues.

1- Major flaw in Aradev / Tocci Event Space noise analysis

Sound power problem

Aradev and Mr. Tocci used the wrong metric in their analysis of the Event Barn music noise levels.

In short, Mr. Tocci used a sound power level of 95 dBA (PWL) for the sound inside the Event space, rather than an industry standard sound pressure level (which is what we hear) of 95 dBA (SPL).

This results in their **sound projection calculations** which represent the music noise levels that reach the neighbors as being at least **11 dBA too low**. This provides a false representation of the noise impacts of the events on the neighbors.

This is a very significant error. Unfortunately, it is only one in a series of errors committed by Mr. Tocci, as is shown here.

The basis for this statement starts with the April 29, 2025 report by Mr. Tocci included in the 2nd Aradev Application (see Ref. 1).

Mr. Tocci in his April 29 report stated, "*Music sound within the event space has been assumed to be 95 dBA.*"

Most experts in the field of building acoustics would agree that 95 dBA sound pressure level (SPL) is typical for an event which features a dance music party, such as a wedding.

However, Mr. Tocci used the metric of 95 dBA sound power level (PWL) for the event space music, as noted in his letter of September 2, 2025 (Ref. 2). He did not describe the sound in the event space using the metric of sound pressure level (SPL), which was misleading.

Classical texts on the physics of sound, known as acoustics, make a *clear distinction* between sound power, which is the power of the sound that is radiated, and sound pressure which is the resulting vibration in the air that we hear.

A helpful analogy is that sound power is like the heating capacity of a furnace in the basement, and sound pressure is like the temperature that we feel (Ref. 3). This is one of the first things that a student of acoustics learns.

This relationship, for a sound radiated in all directions (like music inside a large room) can be expressed by the following equation:

Sound Power Level (PWL) - 11 dB = Sound Pressure Level (SPL).

So, according to the Tocci data, the acoustic pressure that we would actually hear inside the event space would be:

Sound Power Level (PWL) of 95 dBA *minus* 11 dB *which equals* **84 dBA** Sound Pressure Level (SPL).

Note that the Tocci value of 84 dBA for the event music is ***much lower*** than the typical 95 dBA level.

What Mr. Tocci did here was the equivalent (analogous) of using an 8 watt light bulb to illuminate the room, instead of a standard 100 watt light bulb. In lighting terms this is very dim. In musical terms, this is the "dinner music" that is played early in the evening of an event, rather than the full blown "dance party music" that is played in the later hours.

So, the event space noise was ***"low-balled"***. This flaw was not presented fairly by Aradev (Mr. Tocci) to the Planning and Zoning Commission, nor was it caught or mentioned by Mr. Singleton.

A sound level, meaning sound pressure level, of 95 dBA is a typical dance music sound level, for a live band or a DJ inside an entertainment venue. This is agreed upon by expert testing over many years (see Brooks Letter of September 8, 2025, PJ2024-1440-L06, Ref. 4).

Note that this 95 dBA sound level *may easily go higher* in the exuberant later hours of the event party.

So, in order to input the correct sound power level into his sound projection program, Mr. Tocci should have used a sound power level (PWL) of:

95 dBA (SPL) + 11 dB = 106 dBA PWL

In other words, if sound pressure levels analogous to the 100 watt bulb were properly used for the source levels analysis, then the projected sound would be 11 dB higher at the neighbor property lines.

Using Mr. Tocci's own sound projection analysis this correction would result in noise levels that exceed their own, relaxed criteria of a 32 dBA limit at 1 property line location (Position R5 = 35 dBA).

As will be shown following, if typical near peak (L01) party music sound levels of 98 dBA SPL such as presented in the BAC letter of Sep 8 (Ref. 4), were used for the source levels analysis, then Mr. Tocci should have used a power level of 109 dBA PWL in his analysis, that is 14 dBA higher than what they showed in the Application.

The resulting projected noise would then be 14 dB higher at the neighbor property lines. Using Mr. Tocci's sound projection analysis this would exceed their own, relaxed criteria of 32 dBA limit at 2 property line locations (Position R4 = 34 dBA and Position R5 = 38 dBA).

Even this corrected analysis which shows non-compliance with Aradev's own (flawed) criterion limit is unrealistic. The music could *certainly be louder*. Also, it assumes a tight building with all of the sound blocking features in place. This will not be the case. Doors and windows will open leaking noise out, ventilation systems will not be properly treated so they will leak noise, and sound-block features will not be correctly installed.

Cavanaugh - Tocci Criteria problem

Another important factor to consider is that the “Cavanaugh-Tocci Criteria” uses the metric of near peak music levels (L01) minus the neighborhood ambient baseline levels (L90). This is expressed using the value of L01 – L90 to assess the intrusion and annoyance level for entertainment noise (Ref. 6). The following table is an excerpt from that Reference.

$L_{01} - L_{90}$ (dBA)*	Expected Community Response
Less than 5	Rarely audible, minimal community reaction
5 to 15	Sometimes audible, moderate response
Greater than 15	Generally audible, severe response

*The L_{01} is for the concert sound and the L_{90} is for ambient without concert activity

Table 4. Typical Recommended Criteria for Evaluating Outdoor Concert Sound (Audibility Criterion)

Note that in the definition of the criteria shown above which Aradev uses for this project, the metric of the baseline sound L90 + 5 was determined to be the objective limit for the L01 near peak music from the event space.

It should be understood that, as shown above, reaching a level of L90 + 5 or in this case 32 dBA, would make the near peak music (L01) in exceedance of their own criteria, and would cause by their estimation a "sometimes audible, moderate response" from the community.

It should also be noted that these community response criteria were developed for outdoor music venues which host *occasional* concerts, not frequently occurring events, such as weekly weddings. More frequent events will cause more vigorous negative community response.

Surprisingly, nowhere in the Aradev application, or in any other documents produced for this application does Aradev or Mr. Tocci refer to the near peak or L01 value for the music sound source in the event space.

However, it would appear that Mr. Tocci chose to use AVERAGE sound level data for the Aradev project and not the L01 near peak sound data for their analysis.

The BAC data shown in Reference 4 are properly the L01 full spectrum music sound data for a dance party entertainment venue, measured to be 98 dBA. The Aradev application apparently used average sound data of 84 dBA (dinner music).

Taking into account this error in using 84 dBA average "dinner music" sound pressure level (SPL) combined with the difference to the BAC measured L01 "dance party music" sound level of 98 dBA SPL, the Aradev event source sound levels are too low by:

98 dBA L01 (party) – 84 dBA average (dinner) = 14 dBA

As mentioned above, they should have used 95 dBA + 14 = 109 dBA sound power level (PWL) as the source level in their analysis.

Therefore, Mr. Tocci's calculated sound levels at the neighbor locations are ***14 dBA too low.***

That would make the Aradev project **in exceedance and non-compliant with their own sound level criteria** of 32 dBA at several neighbor locations.

Furthermore, the "tent event" sound levels that Aradev showed in their presentation on August 19, 2025 (Ref. 5), presumably using the same analysis, were up to 69 dBA. Using the correct analysis these levels would be 14 dBA higher, up to **83 dBA (!)** and **exceed the CT Noise Regulation limits** at all adjacent neighbor locations.

All of these errors in the noise analysis give rise for concern about the validity of this application.

1- Initial error in use of the Leq (average) metric for ambient sound instead of the correct L90 (baseline) metric
2- Counter-logical use of ambient sound +5 modifier with L90 to account for tonality, rather than the -5 modifier as was used with Leq
3- Low-ball use of music 95 dBA sound power level rather than industry standard 95 dBA sound pressure level
4- Inconsistent use of average music sound level rather than L01 near peak music level per their own criteria

The totality of these errors should be considered by the PZC in their deliberations concerning this application.

2- Major flaw in not addressing the parking traffic noise issue

Neither the Applicant (Aradev and Mr. Tocci), nor the Town Reviewer (Mr. Singleton) have seriously addressed the issue of noise from the vehicles in the parking lots.

It is noted that essentially nothing has changed from the 2024 Application for this project with regard to the proposed parking lot operation. The lots are to be located in the same places very near the neighbor homes. Much of the vehicle moving is to be done by valet employees, who will be in a hurry to satisfy event guests after the event closes and they wish to leave at around 11 pm to 12 midnight.

Therefore, the traffic noise generated in the parking lot would be the same as that which we calculated for the first application – please see the BAC letter of December 5, 2024, (Ref. 7).

The details of the BAC traffic noise calculations and analysis are repeated below:

Acoustical Engineering Design Calculations

The effect of a *noise barrier wall* on property line near the NW parking lot was calculated. Note that in order to be an effective sound barrier, the wall would need to be solid and heavy – masonry or fabricated wall (at least 5 pounds per face square foot) along the entire property line near parking lots/residences.

Calculations were conducted using vehicle noise data at a distance of 50 feet. These data are provided by the United States (US) DOT (Department of Transportation) FHWA (Federal Highway Administration) Traffic Noise Modeler (TNM) Technical Manual.

According to the US FHWA TNM Manual (Fig. 8): An *average automobile* traveling between 0 and 30 MPH at full throttle produces (emits) **68 dBA @ 50 feet**. "Full Throttle" is TNM terminology for a vehicle accelerating from a stop or a vehicle on an upgrade.

Note that the Connecticut State Noise Regulations (Sec. 14-80a) limit the maximum allowed noise emissions for automobiles to **74 dBA @ 50 ft**.

For 10 cars at same time, add 10 dBA to the above levels. (+ 10 dBA)

Sound level calculation results for **autos operating in parking lots near residences** are shown in the Table below.

Automobiles operating in Parking Lots Per US DOT FWHA TNM (Average automobiles)	**NO BARRIER WALL** 50 ft distance	**8 foot high Sound Barrier Wall** 50 ft distance	**12 foot high Sound Barrier Wall** 50 ft distance	**CT State Regs Sound level limits**	**Passes CT Regs? Compatible with neighborhood?**
Single automobile - TNM	**68 dBA**	55 dBA (quiet voice)	51 dBA	55 dBA daytime 45 dBA nighttime	***NO***
10 autos – TNM	78 dBA	**65 dBA** (normal voice)	**61 dBA**	55/45 dBA	***NO***
Single automobile – CT max	**74 dBA**	61 dBA	57 dBA	55/45 dBA	***NO***
10 autos – CT max	**84 dBA** (lawnmower)	**71 dBA** (vacuum cleaner)	**66 dBA**	55/45 dBA	***NO***

Note that the 8 foot high sound barrier wall can provide modest noise attenuation in this case, but it is not enough reduction and will not pass the requirements of the CT State Noise Regulations.

Note also that there are *diminishing improvements* with a higher wall (12 feet) compared to the zoning regulation wall maximum of 8 ft. Building the wall higher at 12 feet yields only about 4 dBA improvement (reduction of noise) which is barely noticeable, compared with the 8 foot high wall.

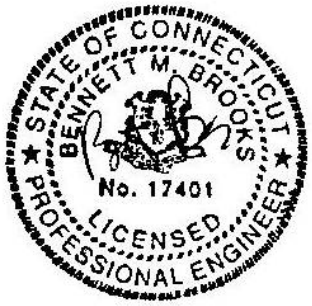
Even with the 8 foot wall, or the 12 foot wall, the sound of cars in the parking lot ***greatly exceeds*** the CT State Noise Regulation sound limits by over 20 dB during nighttime hours.

It is important to note that these traffic noise results **were not addressed or presented by Aradev**, even though they were clearly aware of these issues from the first application and had ample opportunity to do so.

Thank you for your careful consideration of these matters.

Very truly yours,
BROOKS ACOUSTICS CORPORATION

Bennett M. Brooks, PE, FASA, INCE
President



Reference 1: Aradev Application (2025-0278)

Reference 2: Cavanaugh Tocci Letter to Aradev LLC, Response to Comments, September 2, 2025

Reference 3: Beranek LL & Ver IL (eds), *Noise and Vibration Control Engineering: Principles and Applications*. John Wiley & Sons, Inc, Hoboken NJ, (2006).

Reference 4: Brooks Acoustics Project Letter, Wake Robin Inn – Brooks Acoustics Corp (BAC) Response to Commission Questions, PJ2024-1440-L06, September 8, 2025.

Reference 5: Aradev presentation to the August 19, 2025 PZC Public Hearing

Reference 6: Cavanaugh, W. & Mr. Tocci, G., Criteria for community acceptance of outdoor concert sound … a progress report of continuing research. Proceedings of InterNoise 2002. Dearborn, MI. August 19-21, 2002.

Reference 7: Brooks Acoustics Project Letter, Responses to Questions from the Planning and Zoning Commission – Acoustics, PJ2024-1440-L02, December 5, 2024.