



Cross-Spectrum Acoustics Inc.

Massachusetts

Utah

California

October 3, 2025

Dr. Michael Klemens
Chair, Planning & Zoning Commission
Town of Salisbury
P.O. Box 548
27 Main Street
Salisbury, CT 06068

Project Reference: J2025-1540 – Wake Robin Inn Noise Study / Noise Assessment Summary

Dear Dr. Klemens:

This letter summarizes the major acoustical issues identified during the peer review process of the proposed expansion of the Wake Robin Inn (“Inn”) along Sharon Road in Salisbury, Connecticut. Detailed findings can be found in prior peer review documents^{1,2,3,4}.

Noise sources

The initial Wake Robin Inn application in 2024 did not include a detailed assessment of noise from the proposed project. In response to this application, Brooks Acoustics Corporation (BAC) identified a number of noise sources that could disrupt the community. These sources included:

- Guests arriving and leaving events
- Car door slams
- Car horns
- Car engine starting
- Traffic
- Deliveries
- Trash pickup
- Human activities (noise from guests at the pool, parking lots and other outdoor recreational activities)
- Outdoor and indoor amplified music
- Mechanical equipment

¹ “J2025-1540 – Peer review of Wake Robin Inn Noise Study,” Letter from Herbert Singleton Jr, Cross-Spectrum Acoustics Inc to Dr. Michael Klemens, Town of Salisbury CT, August 1, 2025

² “: J2025-1540 – Wake Robin Inn Noise Study Response to Public Comment,” Letter from Herbert Singleton Jr, Cross-Spectrum Acoustics Inc to Dr. Michael Klemens, Town of Salisbury CT, August 15, 2025

³ “J2025-1540 – Wake Robin Inn Noise Study / Response to Commissioner Cockerline Questions,” Letter from Herbert Singleton Jr, Cross-Spectrum Acoustics Inc to Dr. Michael Klemens, Town of Salisbury CT, September 4, 2025

⁴ “J2025-1540 – Wake Robin Inn Noise Study / Response to Commissioner Cockerline September 5 Questions,” Letter from Herbert Singleton Jr, Cross-Spectrum Acoustics Inc to Dr. Michael Klemens, Town of Salisbury CT, September 8, 2025

In addition to these listed sources, noise from construction activities was also identified as a concern.

The applicant retained Cavanaugh Tocci (CTA) to conduct a detailed noise assessment⁵ for the 2025 application. CTA modeled the above sources using an industry standard acoustical modeling package based on the international standard for predicting noise levels. The reference noise levels for automobile horns, door slams and engine start, as well as delivery and trash pickup-related sound levels were measured at the Wake Robin Inn property for use in the computer model. Sound levels from indoor music were predicted using a reference source from the CTA library and incorporated noise reduction from the building facade. As part of the noise study, CTA conducted long-term existing noise measurements at multiple locations representing homes abutting the Wake Robin Inn property. The measurements were conducted during the late winter season when noise ambient noise levels are generally lowest.

The initial CTA report did not address construction noise.

Noise Level Limits

The applicable noise limits for Wake Robin consists of the following:

- State of Connecticut Noise Regulation (22a-69-1 to 22a69-7.4)
- Salisbury Zoning Regulations Section 803.2

The State of Connecticut Noise Regulation limits noise based on the land use of the source and the receiver. For the Wake Robin Inn project, the source and receiver land uses are residential ("Class A"). The corresponding sound limits are 55 dBA during the daytime and 45 dBA during the nighttime. The state regulations allow for source noise levels to exceed the limits by prescribed amounts for limited durations each hour. The state regulations also provide noise limits for impulse sounds as well as adjustments to account for discrete tones. The state regulation specifically exempts noise from construction, moving automobiles, and unamplified voices.

Section 803.2 of the Town of Salisbury Zoning Regulations states:

"The use shall not create a nuisance to neighboring properties, whether by noise, air, or water pollution; offensive odors, dust, smoke, vibrations, lighting, or other effects."

This nuisance clause limits the noise emission from a project but does not provide a quantifiable/numerical value for this limit. Therefore, the nuisance clause requires interpretation to determine a numerical value that can be used for a technical noise assessment.

The CTA analysis used the State noise regulation as a nuisance criterion for all sound sources except music. For music, CTA developed a "Design Goal" of 32 dBA based on the lowest existing

⁵ "Wake Robin Inn, Salisbury, CT Sound Analysis," Letter from Gregory C. Tocci, Cavanaugh Tocci, to Steven Cohen and Jonathan Marrale, Aradev LLC, April 29, 2025

nighttime equivalent noise level⁶ (“ L_{eq} ,” which can be considered the lowest hourly “average” noise level), along with an adjustment to account for the bothersome tonal characteristics of music. This limit is significantly lower than the State nighttime limit of 40 dBA (45 dBA nighttime residential limit with a 5 dB penalty for tonality).

I disagreed with the use of an L_{eq} -based limit for music annoyance and proposed a limit based on an increase over the existing the background noise level⁷, “ L_{90} ” – the applicable limit was $L_{90} + 5$ dB. L_{90} reflects the noise levels during the quietest parts of a measurement period and is a conservative estimate of background noise since it is biased to the quietest portions of the measurement period. This limit was selected because it has successfully been used in multiple community noise studies where annoyance from music was a concern. CTA agreed to use this limit (“Revised Design Goal”).

BAC recommended a criterion based on absolute audibility, based in part on language used in the CSA peer review document. BAC quantified⁸ this limit as L_{90} minus 5 decibels.

In response to concerns about low frequency from the Planning and Zoning commission, CTA proposed a limit of L_{90} dBC + 5 dB for music events. I agree with this limit as it is more conservative than other examples of municipal limits based on C-weighted levels. However, I caution against using this limit without more research to ensure this limit is compatible with Planning and Zoning objectives.

Noise assessment

The initial CTA assessment utilized a software based on the international ISO 9613 noise modeling standard to predict future noise levels generated by the 2025 proposed project. The CTA assessment evaluated noise levels from the following sources:

- Car ignition
- Car door closing
- Car horn
- Trash pickup
- Pool activity
- HVAC/mechanical equipment
- Emergency Generator
- Interior event space music.

These sources roughly correspond with the sources identified by BAC in 2024. The exception is that human activity in parking lots and delivery activity were not directly assessed. However, car door slams and car horns were evaluated in parking lots and those levels are louder than human activity. Similarly, trash pickup activity can function as a proxy for delivery truck activity.

⁶ L_{eq} is the level of steady sound that has the same energy as a fluctuating sound measured over the same time period. L_{eq} is indicative of the average sound level during the measurement period.

⁷ The 90th percentile sound level, L_{90} , is the sound level that is exceeded 90% of the time during the measurement period. L_{90} is the metric commonly associated with the background noise and is used by Connecticut DEEP to determine background noise levels.

⁸ “Wake Robin Inn – Brooks Acoustics Corp (BAC) Response to Commission Questions,” Letter from Bennett M. Brooks, Brooks Acoustics Corporation to Chairman Klemens and other Commission Members, Town of Salisbury, September 8, 2025

The non-music sources were compared to the Connecticut state limits to determine future noise and nuisance violations. I concur with this approach. I spot-checked the calculations using simple methods rather than the ISO 9613 algorithms used by CTA. My results were higher than reported by CTA results but still below the state limits.

The music sources assumed an interior level of 95 dBA and incorporated the sound reduction of the façade. The original CTA assessment predicted noise levels below the original Design Goal. CTA subsequently conducted an analysis to compare predicted noise levels to the Revised Design Goal and concluded that indoor event music would meet that limit as well. I concur with this finding. Note that the noise levels from indoor music would also meet the audibility limit of $L_{90} - 5$ dB suggested by BAC⁸ at abutting homes.

Peer Review Conclusions

My peer review of the CTA assessment can be summarized as follows:

- In my professional opinion, the CTA review was conducted in accordance with best practices.
- The CTA assessment, including ambient measurements, was generally conservative and biased toward protecting the community.
- I agree with the calculation methods and results of the April 29 study.
- I do not agree with the use of an L_{eq} -based limit to assess nuisance from noise and that nuisance should be evaluated using an approach based on the existing background (" L_{90} ") sound level.
- Although I agree that noise emissions from the project will meet state limits, it is likely that noise from events, particularly music, will be audible at abutting properties on occasion.

In response to my August 1 peer review and responses to community and commissioner questions, the applicant revised and clarified the application as documented in subsequent filings^{9,10}. My peer review of these documents is as follows:

- Noise from music was re-evaluated using an ambient $L_{90} + 5$ dB limit and found to meet that limit. I concur with the analysis and finding.
- Applicant has agreed to time-of-day and day-of-week restrictions on construction activity and will provide advance notice to the community for any required blasting and heavy construction activity. CTA also recommended the contractor establish a noise complaint hotline (although this is not a commitment). This is reasonable.
- Noise from music was re-evaluated using a C-weighted ambient $L_{90(C)} + 5$ dBC limit and found to meet that limit. I concur with the analysis and finding.

⁹ "Response to Cross-Spectrum Acoustics Letter dated August 1, 2025 re: PZC Application #2025-0287: Wake Robin Inn Redevelopment," Letter from Greg Tocci, Cavanaugh Tocci, to Dr. Michael Klemens, Town of Salisbury, August 6, 2025

¹⁰ "Application #2025-0287 - Wake Robin Inn Response to Cross Spectrum Acoustics Letter 9/4/25," Letter from Greg Tocci, Cavanaugh Tocci, to Abby Conroy and Miles Todar, Town of Salisbury, September 5, 2025

BAC submitted a number of documents^{8,11} in response to the applicant submittals and the CSA peer review. Although not asked to respond directly to these documents, I provide some comments below:

- BAC suggests that the appropriate limit for the project is “that it is not audible to the neighbors,” based in part to a statement in my August 1 peer review that an appropriate limit be “based on audibility.” The statement in my peer review did not suggest that absolute audibility should be the threshold and I disagree with this limit as in my opinion it is unreasonably strict. While it may be within the Planning and Zoning Commission’s purview to establish such a limit, it would have the effect of establishing a precedent that would prohibit any development of the property. Absolute audibility is a threshold that is used for locations such as national parks where the objective is to experience natural sounds only, and any development of the land is prohibited.
- BAC has commented that construction noise would not meet a nuisance limit. In terms of the object State of Connecticut sound levels and the $L_{90} + 5$ dB limit used by CTA, this is correct. Again, I disagree with this interpretation as it would create a precedent that prohibits all construction in residential zones. It is not unreasonable to set limits on construction noise, but construction is generally provided greater latitude as construction activity (particularly demolition) is inherently noisy.
- BAC commented that noise from parking lot activity was not sufficiently addressed and provided a noise analysis that assumed multiple vehicles accelerating in the parking lot. I disagree with the assumptions in this analysis, but I do believe it is reasonable to require a barrier or berm around the northernmost parking area given its proximity to homes on Sharon Road.

The topic of C-weighting analysis was brought up in the context of low-frequency (“bass”) sound from music events. As discussed above, CTA did assess noise levels from music using a C-weighting-based limit. However, I would strongly recommend against basing a decision on this analysis without a determination that the precedent set by this project is compatible with present and future town planning.

Suggested conditions of approval:

Operations:

- Wake Robin Inn will notify customers of noise limit requirements and require acknowledgement of these requirements.
- Wake Robin Inn will post signs around property to encourage guests to respect noise limits.
- Wake Robin Inn will conduct a simulation using live musicians or DJ music in the event space after construction but prior to occupancy to validate CTA assessment.
- Wake Robin Inn will require bands and DJ to use a “house” sound system with sound level limiter or monitoring to limit interior sound levels.
- Wake Robin Inn will publish the schedule of events to a website or other public forum.

¹¹ “Wake Robin Inn – Brooks Acoustics Corp (BAC) comments on Aradev Application (2025-0287),” Letter from Bennett M. Brooks, Brooks Acoustics Corporation to Chairman Klemens and other Commission Members, Town of Salisbury, August 25, 2025

- Wake Robin Inn will either cease music or limit interior music to 85 dBA after 11:00pm on weekends and 10:00pm on weekdays.
- Wake Robin Inn will have a telephone or internet hotline for noise complaints.
- Any outdoor audio playback systems will be implemented by experienced sound system designer and be designed to minimize sound leakage outside of the property.
- Trash pickup and deliveries will be scheduled between 7:00am and 7:00pm.

Construction:

- Planning and Zoning Commission will set construction time-of-day and day-of-week restrictions.
- Contractor will prepare noise and vibration control plans prior to major outdoor construction phasing (e.g., demolition, clearing, blasting, grading).
- Contractor equipment should use broadband backup alarms rather than tonal alarms.
- Contractor will notify community prior to blasting and impact demolition activities.

If you have any questions or comments, please feel free to call me at (413) 315-5770 ext. 701, or email hsingleton@csacoustics.com.

Sincerely,



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President, Cross-Spectrum Acoustics, Inc.