



ARCHITECTS DESIGNERS COLLABORATORS

MEMO

To: Kevin Whalen, Director
South Shore Country Club
274 South Street
Hingham, MA 02043

From: Chris Rotti

Date: July 29, 2022

Job Name: South Shore Country Club – Outdoor Pool Complex

Subject: Pool Acoustics/Noise Generation

Cc: Taylor MacDonald
Project File

This memo is to summarize additional new information relative to the ongoing discussions with the Planning Board regarding noise generation from pool activities, their effect on the surrounding abutters, and the requirements surrounding said noise generation.

As you are aware, acoustical engineer Intertek provided the Club with a report that modeled potential decibel levels from the pool area and projected those decibel levels to the surrounding abutter's properties. As was noted, modeling of anticipated human noise generation is not generally performed industrywide, as it is intermittent and random in nature as opposed to industrial or transportation noises that are typically the focus of such study. Intertek used their best professional judgement to model what they believe to be the worst-case scenario sound levels, and these levels were compared to a 'target' threshold which was determined from 310 CMR 7.00 regarding 'Noise Disturbances'. 310 CMR 7.00 was initially utilized because at the time it was noted that the Town of Hingham, unlike most neighboring municipalities, does not have a specific separate noise ordinance and this seemed to be the most appropriate method to use.

Intertek's report does cite the Town of Hingham By-Law Article 42, Section 6 that deals generally with 'Noise Disturbances'. This Section specifically states that "*facts required to establish a Noise Disturbance shall be identical to those required to establish a disturbance of peace under common law*". It is generally acknowledged that under MA common law three things are required for such a disturbance:

1. The person(s) engaged in conduct which most people would find unreasonably disruptive, such as :
 - a. making loud and disturbing noises
 - b. tumultuous or offensive conduct
 - c. hurling objects in a populated area
 - d. threatening, quarreling, fighting or challenging others to fight

- e. uttering personal insults that are so offensive they are inherently likely to provoke an immediate violent reaction
- 2. The actions were done intentionally and not by accident or mistake
- 3. The actions did in fact annoy or disturb at least one person.

This Section of the Town By-Law is written in such a way as to regulate only the most unreasonable examples of public noise levels, which I think we can agree, do not apply to pools or most outdoor recreational facilities.

Existing Ambient Noise Level:

Because site specific data was not available, the existing ambient noise level of the proposed pool site was originally based upon an estimated base level background ambient noise level of the neighborhood from available national standardized acoustic data.

Subsequently, Intertek was solicited to perform an actual field survey of the existing ambient noise condition, which they performed between Friday, July 15th through Tuesday, July 19th. This was performed to obtain a more accurate representation of the neighborhood average background noise level in order to compare this with 310 CMR 7.00. As a result of their survey, they noted that the ambient background noise level of the proposed site is 38 dBA.

Since this data was collected, it was noted that Section V, Article V-D of the Town of Hingham Zoning By-Law *does* address maximum noise levels abutting residential districts or schools. While this is noted in the By-law as being specific to Industrial Districts, this falls in line with other municipalities that have more stringent guidelines that cover all districts. A summary of those regulations follows as an appendix to this memo.

The following is the cited excerpt from the Zoning By-Law:

Town of Hingham Zoning - Section V, Article V-D : Noise

In an Industrial District, all parties engaged in any industrial activity will provide methods to protect the abutting residential districts from the hazards and nuisances caused by the emission of noises so as to eliminate any such noises which exceed the maximum permitted sound levels defined herein as measured at any point along a district line. Noise shall be measured with an A-scale sound level meter, calibrated in accordance with specifications of the American National Standards Institute (ANSI) or as specified by the Commonwealth of Massachusetts, Department of Environmental Protection, measured over a representative period of time.

TABLE OF MAXIMUM PERMITTED SOUND LEVELS

<i>Sound measured at a lot line abutting a residential district or school</i>	<i>Continuous Slow-Meter Response dB (A) 55</i>
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- 1. *Between the hours of 6:00 P.M. and 9:00 P.M., the permissible sound levels at the boundary of any abutting residential district shall be reduced by five (5) decibels, and between the hours of*



9:00 P.M. and 7:00 A.M. the permissible sound levels at the boundary of any abutting residential district shall be reduced by ten (10) decibels..

2. *The following sources of noise are exempt from noise level regulations:*
 - a. *noises of safety signals, warning devices and emergency pressure-relief valves;*
 - b. *noises emanating from temporary construction and maintenance activities between 7:00 A.M. and 7:00 P.M.; and*
 - c. *transient noises of vehicular traffic.*

As we have noted on a number of occasions, the maximum anticipated (worst case scenario) decibel level projections from pool activities range from a low of 48 dBA to 55 dBA at the abutter's property. It should be noted that these decibel levels do not represent a constant volume of noise, nor do they represent a typical noise level throughout the day. Of greater importance is the fact that the noise standard within the Hingham Zoning By-Law regulates noises that occur at a constant level, 'measured over a representative period of time.' The data provided by Intertek to evaluate future anticipated noise levels falls within the requirements of the Town of Hingham Zoning By-Laws as currently calculated even if the data is misinterpreted to describe a constant level of sound. As such, it does not appear that the proposed project violates the Town of Hingham noise regulations, either in the general way of Article 42, Section 6 Noise Disturbances, or the more specific requirements of Section V, Article V-D : Noise. Within the Town of Hingham, In effect, where dB(A) is regulated at an absolute level, sounds generated during "daytime" hours are unregulated, provided they do not exceed 55 dB(A), which we have shown this project does not.

SURROUNDING COMMUNITY NOISE REGULATIONS:

Municipality	Maximum Allowable Noise Level – Residential Zone in dB(A)		Notes
	Daytime	Night	
Quincy	75	65	
Billerica	60	50	Exceptions: Town owned facilities, vehicles and public works projects. Emergency work or vehicles.
Braintree	60	50	
Bridgewater	65	60	Can be exceeded by 10 dB for 10 minutes in an hour
Weymouth	55	50	
Cohasset	n/a	n/a	No current ordinance
Norwell	n/a	n/a	No current ordinance
Rockland	n/a	n/a	No current ordinance
Hanover	n/a	Specific uses prohibited	Only regulates overnight noises
Randolph	70	50	
Holbrook	70, measured for 10 minutes	50, measured for 10 minutes	Proposed Noise Ordinance
Whitman	n/a	n/a	No current ordinance
Pembroke		Specific uses prohibited	Exception: Unamplified human voice
Marshfield	400' audible threshold radius	400' audible threshold radius	
Duxbury	n/a	n/a	50 dB(A) for ground or roof mounted telecom units or community scale wind facilities

COMPARATIVE EXAMPLES OF NOISE LEVELS

Noise Source	Decibel Level	Decibel Effect
Jet take-off (at 25 meters) Recommended product: Outdoor Noise Barriers	150	Eardrum rupture
Aircraft carrier deck	140	
Military jet aircraft take-off from aircraft carrier with afterburner at 50 ft (130 dB).	130	
Thunderclap, chain saw.	120	Painful. 32 times as loud as 70 dB.
Auto horn at 1 meter. Turbo-fan aircraft at takeoff power at 200 ft (118 dB). Riveting machine (110 dB); live rock music (108 - 114 dB).	110	Average human pain threshold. 16 times as loud as 70 dB.
Jet take-off (at 305 meters), use of outboard motor, power lawn mower, motorcycle, farm tractor, jackhammer, garbage truck. Boeing 707 or DC-8 aircraft at one nautical mile (6080 ft) before landing (106 dB); jet flyover at 1000 feet (103 dB); Bell J-2A helicopter at 100 ft (100 dB).	100	8 times as loud as 70 dB. Serious damage possible in 8 hr exposure.
Boeing 737 or DC-9 aircraft at one nautical mile (6080 ft) before landing (97 dB); power mower (96 dB); motorcycle at 25 ft (90 dB).	90	4 times as loud as 70 dB. Likely damage in 8 hour exposure.
Garbage disposal, dishwasher, average factory, freight train (at 15 meters). Car wash at 20 ft (89 dB); propeller plane flyover at 1000 ft (88 dB); diesel truck 40 mph at 50 ft (84 dB); diesel train at 45 mph at 100 ft (83 dB). Food blender (88 dB); milling machine (85 dB); garbage disposal (80 dB).	80	2 times as loud as 70 dB. Possible damage in 8 hour exposure.

Passenger car at 65 mph at 25 ft (77 dB); freeway at 50 ft from pavement edge 10 a.m. (76 dB). Living room music (76 dB); radio or TV-audio, vacuum cleaner (70 dB).	70	Arbitrary base of comparison. Upper 70s are annoyingly loud to some people.
Conversation in restaurant, office, background music, Air conditioning unit at 100 feet.	60	Half as loud as 70 dB. Fairly quiet.
Quiet suburb, conversation at home. Large electrical transformers at 100 feet.	50	One-fourth as loud as 70 dB.
Library, bird calls (44 dB); lowest limit of urban ambient sound	40	One-eighth as loud as 70 dB.
Quiet rural area.	30	One-sixteenth as loud as 70 dB. Very Quiet.
Whisper, rustling leaves	20	
Breathing	10	Barely audible