

The following are summary comments from an extensive report prepared for the Merion Community Coalition, dated August 2, 2008.

1. Conversation from a person standing on the existing Episcopal Academy baseball field's home plate can be easily heard on the porch of a near neighbor on North Latches Lane. The reason for this audibility is a) the close proximity of the field to the neighbors and b) the configuration of stone buildings at the periphery of the playing field, which configuration allows multiple reflections of noise produced on the field to produce an "echo chamber" effect.
2. A calibrated noise source was placed at the location midway between the current Carriage House and Garage, and the decibel level of that noise at points on neighbors' property was measured. At several locations, the noise was measured as 16 decibels less than what it was at 6 feet from the source.
3. The significance of only a 16 dB reduction is that Lower Marion Township noise ordinances will be violated if crowd noise at the proposed grandstands exceeds $57 + 16 = 73$ dB in the frequency band between 600 and 1200 Hz.
4. Crowd noise is likely to exceed 73 dB frequently during a game, especially as a crowd cheers, claps, or vocalizes in response to events on the field. Typical sports crowds of several hundred cheering fans can exceed 100 dB in this frequency band, and so it is nearly certain that the proposed facility will result in the imposition of noise levels well above the legal noise ordinance limits.
5. The background noise of the quiet residential neighborhood surrounding the proposed baseball facility is in the range of 43-46 dB (A-weighted). Noise from games that reach the neighbors above this level will be intelligible to them.
6. Lowering the elevation of the playing field by four feet will increase the propagation of noise from City Line Avenue (Route 1) across the existing lawn by reducing the acoustic absorption due to grazing incidence, and by reducing the acoustic barrier effect of the hill that protects N. Latches neighbors from noise produced on the proposed softball field. A lowering of the baseball field will produce a step elevation change along its perimeter that will produce additional reflections of crowd and PA system noise within the athletics field area.
7. Removing the Carriage House and stone garage will also remove their noise-shielding effect on homes along Raynham Road. These properties are quite close to the grandstands, and currently the presence of the buildings provides 8-10 decibels of noise isolation that would be lacking if demolished.
8. Although directional loudspeakers can be used in the PA system design to reduce direct sound from loudspeakers to property owners, reflections of

sound from grandstands, nearby buildings (e.g. Pool Building, Wetherill House), and audience members themselves will scatter as if the sounds were produced in the stands. For audibility over crowd chatter, an announcer's voice would have to be at least 79-85 dB at the ears of the audience, as specified in the sound system design report (dated July 11, 2008) by Metropolitan Acoustics, LLC. Thus it is nearly certain that neighbors will be able to hear the announcements during games, and will find the information distracting to the extent that the announcements are intelligible to them.

9. Rows of bushes or trees have negligible mitigating effect on noise, and should be considered only as visual, not acoustic, barriers. Noise barriers depend upon the mass per square foot of barrier surface and upon barrier height. Acoustically absorptive materials can be applied to wall surfaces, such as existing buildings (e.g. Pool Building, Gym, Wetherill House) to reduce reflections but such materials are unsightly and prone to degradation by sun, rain, and wind.
10. Noise ordinances are designed to protect the rights of homeowners to use their homes and properties, including their yards and porches, for purposes such as conversations with visitors and neighbors. In every municipality in which I have worked, this protection has extended to noise produced by human voices, dogs barking, non-electric noisemakers, and musical instruments. To have noise ordinances that apply only to mechanically or electronically produced sounds would fail to protect the public.

With reasonable engineering certainty, the proposed baseball facility will violate the 57 dB noise ordinance for sporadic daytime noise in Lower Merion Township, as specified by section 105-4. Moreover, it is likely that neighbors will find the sporadic eruptions of crowd noise and frequently audible PA announcements intrusive on their right of enjoyment of their homes and property.

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Qualifications

Harvard College A.B. in Applied Mechanics/Acoustics 1982
Yale University MS 1996 and PhD 1989 in Mechanical Engineering (Acoustics)
1990 Winner of Acoustical Society of America's only graduate fellowship (Hunt)
1992 Presidential Faculty Fellow of the National Science Foundation
1996 tenured at Swarthmore College
2001 elected Fellow of the Acoustical Society of America
Qualified as expert witness in acoustics: New Haven, CT, 1986
and Norristown, PA, 1996