

22 December 2020

Vamadevan Namboodiri

Vidyarambh Pre-School

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**Subject: Vidyarambh Pre-School Expansion, 2931 El Camino Real, Santa Clara, CA – Property Line
HVAC Noise Analysis
Salter Project 20-0556**

Dear Vamadevan:

This letter summarizes the results of our analysis of noise from eight new RTUs on the roof of the new building at the Vidyarambh Pre-School. We have estimated noise levels with the new RTUs operating and compared them to allowable limits in the City of Santa Clara. Comments and recommendations are based on the Cup Set drawings dated 1 February 2020 and our understanding of the project.

Summary

Estimated noise levels from all eight RTUs operating simultaneously are up to 53 dB(A)¹ at the north residential property line and at the east commercial property line, both of which meet the City of Santa Clara Municipal Code sound level limits.

Criteria

Chapter 11.44, Table B11-152 of the City of Santa Clara Municipal Code requires noise from mechanical equipment during daytime hours (7:00 am to 10:00 pm) to be limited to the following at neighboring properties:

Residential – 55 dB(A)

Commercial – 65 dB(A)

¹ A-Weighted Sound Level – The A-weighted sound pressure level, expressed in decibels (dB). Sometimes the unit of sound level is written as dB(A). A weighting is a standard weighting that accounts for the sensitivity of human hearing to the range of audible frequencies. People perceive a 10 dB increase in sound level to be twice as loud.

If the noise contains a steady audible hum or tone, these limits shall be reduced by 5 dB. Limits for nighttime noise (10:00 pm to 7:00 am) are 10 dB and 5 dB less for residential and commercial properties, respectively.

Appendix 8.14 Noise, Table 8.14-1 of the City of Santa Clara General Plan requires noise from new projects at neighboring properties to be limited to the following CNEL² (or DNL):

Residential – 55 dB(A)

Commercial – 65 dB(A)

Noise levels that meet the Municipal Code requirement will also meet the General Plan requirement therefore estimated noise levels will be compared to the Municipal Code requirement.

Description

The single-story new building will be located to the north of (behind) the existing preschool. There will be eight new RTUs, 30-inches high located on the roof of the new building. The design includes a solid mechanical screen on the roof to the east and west of the units (also 30-inches high, from the roof surface). It is our understanding the units will operate only during daytime hours, from 7:00 am until 6:00 pm. We have assumed that the casing radiated and OSA inlet sound power levels for each unit will not exceed 80 dB(A). This is a conservative assumption. Typical rooftop air-conditioning units of the size anticipated for this project have sound power levels that range from approximately 73 to 79 dB(A).

The nearest residential property line is approximately 55-feet to the north of the new building. Receivers standing at grade would be shielded from equipment noise by the existing storage building north of the expansion, but receivers at residential 2nd floor windows would have line-of-sight to the equipment. Noise estimates are for receivers at 2nd floor windows.

The nearest commercial property line is approximately 10-feet to the east of the new building. Receivers standing at grade would be shielded from equipment noise by the rooftop mechanical screen.

Analysis

Estimated noise levels from the new RTUs all operating simultaneously at the nearest residential properties to the north are up to 53 dB(A), which meets the Municipal Code requirement. Estimated noise levels at the east commercial property line are up to 53 dB(A) which also meets the Code requirement.

² CNEL (Community Noise Equivalent Level) and Day-Night Average Sound Level (DNL) – The average day-night level with a penalty applied to noise occurring during the nighttime hours to account for the increased sensitivity of people during sleeping hours. For practical purposes, the CNEL and DNL are usually interchangeable.

The design and construction team should verify that the selected rooftop air-conditioning units have sound power levels that do not exceed 80 dB(A) and that the noise they generate is not excessively tonal.

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Please let us know if you have any questions or comments.

Sincerely,

CHARLES M. SALTER ASSOCIATES, INC.



Philip Sanders, LEED AP
Senior Vice President



Katherine Moore
Consultant