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27 March 2013

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Subject: **Traverse (Trade Zone) Homes, Milpitas, CA – Environmental Noise Study**
CSA Project: 13-0004

Dear Bridgit:

As requested, we have conducted an environmental noise study for the Traverse (Trade Zone) Homes project. The project will consist of 29 buildings, which includes 108 four-story condominium buildings and 98 three-story townhome buildings. The purpose of the study is to determine the noise environment at the site, compare the measured data with applicable standards, and propose mitigation measures as necessary. This report summarizes the results of our study.

PROJECT CRITERIA

State Noise Standards

The California Building Code (Title 24, Chapter 12) requires that the indoor noise level in new multi-family housing (e.g., townhomes) not exceed DNL[1] 45 dB where the exterior noise level is greater than DNL 60 dB.

The CBC also states that if windows must be closed to meet the interior standard, the design must include a ventilation or air-conditioning system to provide a habitable interior environment.

City Noise Guidelines

The City of Milpitas General Plan's interior noise standard is consistent with the state requirement for multi-family housing of DNL 45 dB.

The City of Milpitas considers outdoor noise levels in residential locations below DNL 65 dB "normally acceptable". DNL between 60 and 70 dB are considered "conditionally acceptable", meaning that noise reduction features must be included in the design. Between DNL 70 and 75 dB, the site is considered

[1] Day-Night Average Sound Level (DNL) – A descriptor established by the U.S. Environmental Protection Agency to represent a 24-hour average noise level with a 10 dB penalty applied to noise occurring during the nighttime hours (10 pm to 7 am) to account for the increased sensitivity of people during sleeping hours.

"normally unacceptable" and a detailed analysis of the noise reduction measures must be conducted. We assume that these requirements do not apply to small balconies.

This project also includes a neighborhood park located at the northwest corner of the site. For this type of land use, the City considers a noise level up to DNL 70 dB as "normally acceptable".

NOISE ENVIRONMENT

The project site is in Milpitas near the intersection of Montague Expressway and Trade Zone Boulevard. The site is bordered to the south by Trade Zone Boulevard. To the west is a residential development (called "Contour") that has not yet been built[2]. To the north and east are commercial and industrial properties. The major noise sources at the site are the nearby roadways and the industrial areas to the north.

To quantify the existing noise environment, we conducted long-term noise measurements at the site between 15 and 18 January 2013 (see Figure 1 for measurement locations and measured DNL). The monitors were attached to utility poles at a height of 12 feet above grade.

Based on the above data, we calculated the expected DNL at the various facades and elevations. We do not yet have projected future traffic volumes for the roadways, so we have added 1 dB to the expected DNL to account for future traffic increases[3].

RECOMMENDATIONS

Outdoor Noise

We calculated noise levels of DNL 59 to 74 dB across the site, meaning that parts of it will be "conditionally acceptable" or "normally unacceptable".

The park located at the northwest corner of the project site will be subject to the City's residential outdoor noise level guideline. In this area, the expected noise levels will vary from DNL 65 to 69 dB, which is considered "normally acceptable". Therefore, the City's outdoor noise criterion would be met at this location without any mitigation.

Indoor Noise

To meet the indoor noise criterion of DNL 45 dB, it will be necessary for some of the facades to be sound-rated. We used the March 2013 site plan and architectural drawings to determine the unit sizes and locations. We have assumed that all bedrooms will be carpeted and other spaces will have hard-surfaced flooring.

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2 We have not included any acoustical shielding that would be provided by the neighboring Contour development in our analysis.

3 Caltrans assumes a traffic volume increase of three-percent per year, which corresponds to a 1 dB increase over ten years. In the absence of City data, we have used this same formula for the local roads.

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We calculated the window and exterior door STC[4] ratings needed to meet the project criterion. These are shown on Figure 2. We have only shown STC ratings for one level of the residences, but these ratings are intended to represent all floors.

Typical construction-grade dual-pane thermal windows achieve an STC rating of 28; one-inch assemblies (two 1/4-inch thick panes with a 1/2-inch airspace) typically achieve an STC rating of 32. Where STC ratings above 33 are required, one pane will need to be laminated.

It is important to note that the STC ratings recommended are for full window assemblies (glass and frame) rather than just the glass itself. Tested sound-rated assemblies should be used. If non-tested assemblies were to be used, the STC rating of the glass would likely need to be increased.

The Building Code requires that where windows need to be closed to achieve an indoor DNL of 45 dB, an alternative method of supplying fresh air (e.g., mechanical ventilation) must be provided. This applies to the residences that need sound-rated windows. The rooms that do not have STC ratings shown on Figure 2 do not need alternative ventilation. This issue should be discussed with the project mechanical engineer.

* * *

This concludes our environmental noise study for the Traverse (Trade Zone) Homes project. Should you have any questions, please give us a call.

Sincerely,

CHARLES M. SALTER ASSOCIATES, INC.

Valerie Smith
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VCS/ELB/vcs

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[4] Sound Transmission Class (STC) – A single-figure rating standardized by ASTM and used to rate the sound insulation properties of building partitions. The STC rating is derived from laboratory measurements of a particular building element and as such is representative of the maximum sound insulation. Increasing STC ratings correspond to improved noise isolation.

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TRADE ZONE HOMES
MEASUREMENT LOCATIONS AND MEASURED DNL

FIGURE 1

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VS 03.22.13

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TRADE ZONE HOMES
MINIMUM RECOMMENDED STC RATINGS FOR WINDOWS AND EXTERIOR DOORS

FIGURE 2

CSA # 13-0004

VS 03.27.13

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