

19 July 2023

Marlon Just-Vargas
Education Housing Partners, Inc.
39 Forrest Street, Suite 202
Mill Valley, CA 94941

**Subject: Alum Rock Faculty Housing, San Jose, CA –
Salter Project 23-**

Dear Marlon:

As requested, we have prepared our feasibility noise study for the subject project. The purpose of the study is to determine the compatibility of residential housing at each site by comparing historical noise data with applicable city and state standards and provide preliminary mitigation measures as necessary to meet those compatibility standards. In summary, the project will require sound-rated windows to reduce exterior noise intrusion to meet the State and local noise standards. The full analysis follows.

PROJECT CRITERIA

California Noise Standards – California Building Code (CBC)

The 2016 California Building Code requires that the indoor noise level in residential units of multi-family dwellings not exceed Ldn¹ 45 dBA.

City of San Jose Noise Standards

Under Section 3 Environmental Leadership, the City of San Jose evaluates new projects. Evaluation of projects is based on the type of land use and where the project would be located. Table EC-1: Land Use Compatibility Guidelines for Community Noise in San Jose.

¹ Ldn (Day-Night Average Sound Level) – A descriptor for a 24-hour A-weighted average noise level. Ldn accounts for the increased acoustical sensitivity of people to noise during the nighttime hours. Ldn penalizes sound levels by 10 dB during the hours from 10 PM to 7 AM. For practical purposes, the Ldn and CNEL are usually interchangeable. Ldn is sometimes written as DNL.



Table EC-1: Land Use Compatibility Guidelines for Community Noise in San José

LAND USE CATEGORY	EXTERIOR NOISE EXPOSURE (DNL IN DECIBELS (DBA))					
	55	60	65	70	75	80
1. Residential, Hotels and Motels, Hospitals and Residential Care ¹						
2. Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds						
3. Schools, Libraries, Museums, Meeting Halls, Churches						
4. Office Buildings, Business Commercial, and Professional Offices						
5. Sports Arena, Outdoor Spectator Sports						
6. Public and Quasi-Public Auditoriums, Concert Halls, Amphitheaters						

¹Noise mitigation to reduce interior noise levels pursuant to Policy EC-1.1 is required.

Normally Acceptable:



- Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable:



- Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.

Unacceptable:



- New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

NOISE ENVIRONMENT

The project proposes to locate the housing complex west of the centerline of Interstate 680. The nearest building façade would be 250 feet from the centerline of the freeway. The remaining two buildings would be perpendicular and setback from the freeway. The nearest building would provide partial shielding for these two buildings.

To estimate the noise level at the project site, we used traffic volumes, truck percentages, and speed to estimate the average Ldn on the site. At 250 feet from the freeway, the nearest buildings would be exposed to noise levels up to Ldn 79 dB. The remaining two buildings drop off from the freeway from 370 feet to 560 feet and would be exposed to levels between Ldn 72 dB to Ldn 75 dB. See the following figure for graphical layout. Red indicates the highest exposure of noise decreasing to orange, yellow, and finally green. Most of this project falls within the “conditionally acceptable” category. Specified land use may be permitted after a detailed analysis of the noise reduction requirements and needed noise insulation features [are] included in the design. The remaining



portion of the project falls within the “unacceptable” category, where construction is discouraged due to elevated noise levels.



RECOMMENDATIONS

General

With mitigation, the project should comply with all applicable noise standards. We calculated the preliminary window and exterior door STC² ratings needed to meet the criteria using the housing study drawings. Our calculations include the following preliminary assumptions:

- Bedrooms have carpet.
- All other rooms will have hard-surfaced flooring.
- Ceilings are 9-feet high.
- Window areas comprise 40% of the exterior facade.
- The exterior facade is assumed to be a traditional 3-coat stucco system achieving minimum STC 45
- Where indicated, an upgraded exterior wall assembly is needed (see below)

² STC (Sound Transmission Class) – A single-number rating defined in ASTM E90 that quantifies the airborne sound insulating performance of a partition under laboratory conditions. Increasing STC ratings correspond to improved airborne sound insulation.

The recommended STC ratings are for full window assemblies (glass and frame) rather than just the glass itself. Tested sound-rated assemblies should be used. For reference, typical one-inch glazing assemblies (two 1/4-inch-thick panes with a 1/2-inch airspace) can achieve an STC rating of 28 depending on the window type and manufacturer. Where STC ratings above 33 are required, at least one pane will need to be laminated.

Residential Indoor

To meet the State indoor Ldn 45 dB criterion, it will be necessary for windows in all facades to be sound-rated. These preliminary measures also meet the City of San Jose noise goals. See the table below and the preceding site map for the approximate STC ratings for windows:

Facade	STC Rating
East Facades Facing I-680	STC 42 to 43
North Façade Perpendicular to I-680	STC 36 to 37
South Façade Perpendicular to I-680	STC 36 to 37
West Facades Away from I-680	STC 32 to 33

Where windows need to be closed to achieve an indoor Ldn of 45 dB, an alternative method of supplying fresh air (e.g., mechanical ventilation) should be considered.

Residential Outdoor Noise

Common outdoor space receives significant shielding from freeway noise from the residential building nearest the freeway. The anticipated noise level in this area should not exceed Ldn 65 dB. This noise level would be considered “normally” acceptable and no further additional mitigation would be necessary.

Conclusion

Our preliminary findings indicate the protect should be compatible with the CBC and San Jose guidelines. This study is not intended to be used as a detailed analysis for product selection or construction methods. A full acoustical study, which includes measurements and computer modeling is required to accurately determine the specific sound transmission class ratings and construction assemblies to comply with the Land Use Compatibility Guidelines for Community Noise in San Jose.

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This concludes our preliminary noise study for the Alum Rock Faculty Housing. Should you have any questions, please give us a call.

Sincerely,

CHARLES M. SALTER ASSOCIATES, INC.



Eric A Yee
Vice President

