

**The Collection**  
**Danville, California**

Environmental Noise Assessment

7 March 2018

*Prepared for:*

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Salter Project Number: 17-0650

## INTRODUCTION

This report summarizes our environmental noise assessment for The Collection project at 2550 Camino Tassajara in Danville, California. The project will consist of 16 two-story single-family detached homes with fenced yards. The site, currently occupied by a nursery, is located across Camino Tassajara from The Rock Church, Stratford School, and Sycamore Valley Park. Following is a summary of our findings:

1. Land Use Compatibility – Estimated future noise levels at the planned setback of the residences range from under CNEL 60 to approximately CNEL 74 dB, which fall into the Town's *normally acceptable* through *normally unacceptable* land-use compatibility categories for residential projects.
2. Exterior-to-Interior Noise – Preliminary estimates suggest that windows and exterior doors with sound insulation ratings of up to STC 37 will be needed to meet the CNEL 45 dB goal indoors, due to exterior sources. Since windows will need to be closed to meet this goal, ventilation systems must not compromise exterior-to-interior sound insulation.
3. Outdoor Use Spaces – Estimates show that noise barriers would reduce traffic noise in backyards along Camino Tassajara and Sherburne Hills Road to approximately CNEL 65 dB and below.

## ACOUSTICAL CRITERIA

### *Town of Danville General Plan*

The Resources and Hazards chapter of the Town of Danville General Plan includes land use compatibility guidelines for environmental noise. Noise levels are characterized in terms of Community Noise Equivalent Level<sup>1</sup> (CNEL). Table 1, below, summarizes these guidelines for single-family residential land use.

Table 1: Summary of Noise and Land Use Compatibility Guidelines for Residential and Commercial Land Use (Figure 8-2)

| Residential              | Community Noise Equivalent Level (CNEL)   |
|--------------------------|---|
| 50 to 60 dB <sup>2</sup> | <i>Normally Acceptable</i> – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.  |
| 55 to 70 dB              | <i>Conditionally Acceptable</i> – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. |
| 70 to 75 dB              | <i>Normally Unacceptable</i> – New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.  |
| 75 to 85 dB              | <i>Clearly Unacceptable</i> – New construction or development should generally not be undertaken.   |

In addition, General Plan Policy 27.09 identifies the following goals for indoor and outdoor environmental noise:

- <sup>1</sup> CNEL (Community Noise Equivalent Level) – A descriptor for a 24-hour A-weighted average noise level. CNEL accounts for the increased acoustical sensitivity of people to noise during the evening and nighttime hours. CNEL penalizes sound levels by 5 dB during the hours from 7 PM to 10 PM and by 10 dB during the hours from 10 PM to 7 AM. For practical purposes, the CNEL and DNL are usually interchangeable.
- <sup>2</sup> 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.

- CNEL 45 dB indoors, due to exterior sources
- CNEL 60 dB in residential yards, however higher standards may be permitted at the discretion of the Town Council if reasonable mitigation has been applied and levels exceed this goal

## NOISE ENVIRONMENT

Environmental noise at the site is dominated by vehicle traffic on Camino Tassajara. To quantify the noise environment, two multi-day monitors continuously measured noise levels at the site between 16 and 18 October 2017. In addition, two 15-minute "spot" measurements were conducted and the data was compared with the corresponding time period of the multi-day monitors to help determine how noise levels vary with location. Table 2, below, summarizes measured noise levels. Figure 1, attached, shows the approximate measurement locations.

Table 2: Noise Measurement Results

| Site | Location   | Date/Time                         | CNEL  |
|------|--|-----------------------------------|-------|
| L1   | Camino Tassajara Monitor<br>Approximately 45' south of roadway centerline                          | 16 to 18 October 2017             | 74 dB |
| L2   | Sherburne Hills Road Monitor<br>Approximately 35' east of roadway centerline                       |                                   | 61 dB |
| S1   | East Spot Measurements (5' above grade)<br>Approximately 310' south of Camino Tassajara centerline | 18 October 2017<br>1:15 - 1:30 pm | 53 dB |

As indicated above, the site is across Camino Tassajara from the Rock Church and Stratford School, and southwest of Sycamore Valley Park. While on site, we observed intermittent noise from children playing, the influence of which is included in our measurement data.

The Mobility chapter of the General Plan contains existing year 2010 and projected year 2030 traffic volumes for roadways in the Town. In summary, average daily traffic volumes for Camino Tassajara are expected to increase by 48 percent in the timeframe of the plan. This corresponds with approximately a 2-decibel increase in environmental noise. Therefore, the analysis and recommendations section below assumes a 2-decibel increase in traffic-related CNEL across the site.

## ANALYSIS AND RECOMMENDATIONS

### *Land Use Compatibility*

Estimated future noise levels at the planned setback of the residences range from below CNEL 60 dB to approximately CNEL 74 dB, which fall into the Town's *normally acceptable* through *normally unacceptable* land-use compatibility categories for residential projects. The project will need to incorporate noise reduction measures into the design to meet the Town's indoor and outdoor noise goals.

### *Exterior-to-Interior Noise*

The exterior building assemblies at some units will need to be sound-rated to reduce transportation noise to the CNEL 45 dB interior noise goal outlined above. Preliminary estimates suggest that windows and

exterior doors may need to have sound insulation ratings up to STC<sup>3</sup> 37 as shown in Figure 2, attached. These preliminary estimates are based on the following assumptions, and will need to be updated prior to construction:

- Preliminary site plan dated 9 October 2017
- Bedrooms will be carpeted, and approximately 12 feet by 10 feet
- Living rooms will be approximately 15 feet by 12 feet
- Window glazing comprises approximately 40-percent of the exterior facade of each room
- Exterior walls will be equivalent to 3-coat stucco over wood sheathing, 2x wood studs with batt insulation in stud cavities, with at least 1 layer of gypsum board on the interior
- Ventilation systems will not compromise exterior to interior sound isolation in residences
- Rooms are assumed to be corner rooms with glazing on both exterior facades, non-corner rooms will have lower STC ratings (up to 3 points)

Sound insulation ratings should be for the complete assembly, including glass and frame, and should be based on laboratory test reports of similar sized samples from an NVLAP accredited lab. For reference, standard construction grade dual-pane windows typically have sound insulation ratings in the range of STC 26 to 28.

Note that dual pane windows with equal glass thicknesses can have resonances that result in a tonal component indoors, which residents may find annoying. To help avoid this, consider using at least one pane of laminated glass in windows and exterior doors along Camino Tassajara.

### ***Outdoor Use Spaces***

Un-shielded traffic noise is approximately CNEL 74 dB at residential yards along Camino Tassajara. We understand that a precast concrete noise barrier is planned for the perimeter of the site along Camino Tassajara and Sherburne Hills Road.<sup>4</sup> Consider the following:

- Estimates show that, for standing receivers, a noise barrier approximately 7 feet tall with respect to the adjacent roadway elevation will reduce traffic noise to approximately CNEL 65 dB in backyards of homes along Camino Tassajara (Lots 1, 11, and 12), and to the Town's CNEL 60 dB goal in the backyards of homes along Sherburne Hills Road (Lots 2 and 3).
- Reducing noise to the Town's CNEL 60 dB goal in backyards along Camino Tassajara would require the noise barrier approximately 12 feet tall, with respect to roadway elevation.
- For reference, for seated receivers, a 6-foot tall noise barrier, with respect to roadway elevation, would reduce estimated traffic noise to approximately CNEL 65 dB in backyards along Camino Tassajara, and to approximately CNEL 60 dB in backyards along Sherburne Hills Road (Lots 2 and 3).

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<sup>3</sup> 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.

<sup>4</sup> The noise barrier should be solid from bottom to top with no cracks or gaps, and should return to the existing noise barrier at the neighboring property along Camino Tassajara, at the south edge of the site.

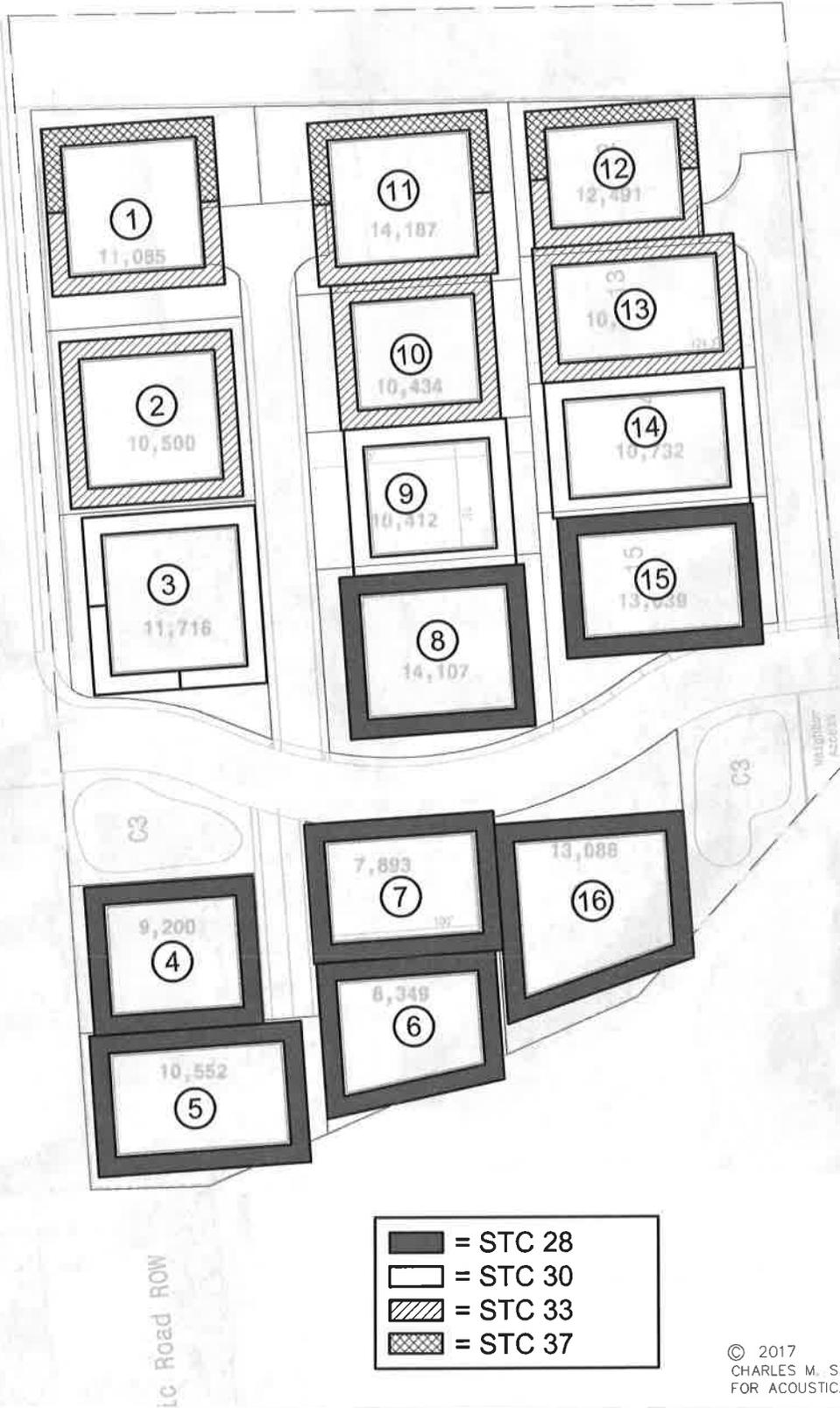


# THE COLLECTION APPROXIMATE NOISE MEASUREMENT LOCATIONS

## FIGURE 1

Salter #  
17-0650

WRS/JMR  
11.09.17



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 FOR ACOUSTICAL DESIGN INFORMATION ONLY

**THE COLLECTION  
 MINIMUM RECOMMENDED STC RATINGS  
 FOR WINDOWS AND EXTERIOR DOORS  
 (LEVELS 1 AND 2)**

**FIGURE 2**

Salter #  
 17-0650

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