# APPENDIX F

# NOISE AND VIBRATION ASSESSMENT

# *1510 SOUTH DE ANZA BOULEVARD PROJECT NOISE AND VIBRATION ASSESSMENT*

## *San José, California*

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## INTRODUCTION

The project proposes the construction of a hotel at 1510 South De Anza Boulevard in San José, California. The 0.86-acre project site is currently developed with a vacant one-story commercial building. The proposed project would demolish the existing building and construct a four-story, 132-room hotel with 2,693 square feet (sf) of ground-floor retail and two levels of below-grade parking.

This report evaluates the project's potential to result in significant noise and vibration impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into three sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses the results of the ambient noise monitoring survey completed to document existing noise conditions; 2) the General Plan Consistency Section discusses noise and land use compatibility utilizing policies in the City's General Plan; and, 3) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and presents measures, where necessary, to mitigate the impacts of the project on sensitive receptors in the vicinity.

## SETTING

### Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the

variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called $L_{eq}$. The most common averaging period is hourly, but $L_{eq}$ can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or $L_{dn}$) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

**Effects of Noise**

*Sleep and Speech Interference*

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA DNL. Typically, the highest steady traffic noise level during the daytime is about equal to the DNL and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA DNL with open windows and 65-70 dBA DNL if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

*Annoyance*

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes

for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The DNL as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 50 dBA DNL. At a DNL of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the DNL increases to 70 dBA, the percentage of the population highly annoyed increases to about 25 to 30 percent of the population. There is, therefore, an increase of about 2 percent per dBA between a DNL of 60 to 70 dBA. Between a DNL of 70 to 80 dBA, each decibel increase increases by about 3 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the DNL is 60 dBA, approximately 30 to 35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 3 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 4 percent increase in the percentage of the population highly annoyed.

**Fundamentals of Groundborne Vibration**

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table

3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

**TABLE 1 Definition of Acoustical Terms Used in this Report**

| Term | Definition |
|---|---|
| Decibel, dB | A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals. |
| Sound Pressure Level | Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter. |
| Frequency, Hz | The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz. |
| A-Weighted Sound Level, dBA | The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. |
| Equivalent Noise Level, $L_{eq}$ | The average A-weighted noise level during the measurement period. |
| $L_{max}$, $L_{min}$ | The maximum and minimum A-weighted noise level during the measurement period. |
| $L_{01}$, $L_{10}$, $L_{50}$, $L_{90}$ | The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period. |
| Day/Night Noise Level, $L_{dn}$ or DNL | The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am. |
| Community Noise Equivalent Level, CNEL | The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am. |
| Ambient Noise Level | The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location. |
| Intrusive | That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level. |

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

**TABLE 2 Typical Noise Levels in the Environment**

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|---|---|---|
| | 110 dBA | Rock band |
| Jet fly-over at 1,000 feet | | |
| | 100 dBA | |
| Gas lawn mower at 3 feet | | |
| | 90 dBA | |
| Diesel truck at 50 feet at 50 mph | | Food blender at 3 feet |
| | 80 dBA | Garbage disposal at 3 feet |
| Noisy urban area, daytime | | |
| Gas lawn mower, 100 feet | 70 dBA | Vacuum cleaner at 10 feet |
| Commercial area | | Normal speech at 3 feet |
| Heavy traffic at 300 feet | 60 dBA | |
| | | Large business office |
| Quiet urban daytime | 50 dBA | Dishwasher in next room |
| Quiet urban nighttime | 40 dBA | Theater, large conference room |
| Quiet suburban nighttime | | |
| | 30 dBA | Library |
| Quiet rural nighttime | | Bedroom at night, concert hall (background) |
| | 20 dBA | |
| | | Broadcast/recording studio |
| | 10 dBA | |
| | 0 dBA | |

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

**TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels**

| Velocity Level, PPV (in/sec) | Human Reaction | Effect on Buildings |
|---|---|---|
| 0.01 | Barely perceptible | No effect |
| 0.04 | Distinctly perceptible | Vibration unlikely to cause damage of any type to any structure |
| 0.08 | Distinctly perceptible to strongly perceptible | Recommended upper level of the vibration to which ruins and ancient monuments should be subjected |
| 0.1 | Strongly perceptible | Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings |
| 0.25 | Strongly perceptible to severe | Threshold at which there is a risk of damage to historic and some old buildings. |
| 0.3 | Strongly perceptible to severe | Threshold at which there is a risk of damage to older residential structures |
| 0.5 | Severe - Vibrations considered unpleasant | Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures |

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, September 2013.

## Regulatory Background – Noise

The State of California and the City of San José have established regulatory criteria that are applicable in this assessment. The State of California Environmental Quality Act (CEQA) Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

### State of California

***2019 California Building Code, Title 24, Part 2.*** The current version of the California Building Code (CBC) requires interior noise levels attributable to exterior environmental noise sources to be limited to a level not exceeding 45 dBA DNL/CNEL in any habitable room.

***2019 California Building Cal Green Code.*** The State of California established exterior sound transmission control standards for new non-residential buildings, as set forth in the 2010 California Green Building Standards Code (Section 5.507.4.1 and 5.507.4.2). These standards were not altered in the 2019 revisions. Section 5.507 states that either the prescriptive (Section 5.507.4.1) or the performance method (Section 5.507.4.2) shall be used to determine environmental control at indoor areas. The prescriptive method is very conservative and not practical in most cases; however, the performance method can be quantitatively verified using exterior-to-interior calculations. For the purposes of this report, the performance method is utilized to determine consistency with the Cal Green Code. Both of the sections that pertain to this project are as follows:

> **5.507.4.1 Exterior noise transmission, prescriptive method.** Wall and roof-ceiling assemblies exposed to the noise source making up the building or additional envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30

within the 65 dBA CNEL or DNL noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway noise source, as determined by the Noise Element of the General Plan.

**5.507.4.2 Performance method.** For buildings located, as defined by Section 5.507.4.1, wall and roof-ceiling assemblies exposed to the noise source making up the building envelope or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level ($L_{eq(1\text{-}hr)}$) of 50 dBA in occupied areas during any hour of operation.

The performance method, which establishes the acceptable interior noise level, is the method typically used when applying these standards.

***State CEQA Guidelines.*** CEQA contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies;

(b) Generation of excessive groundborne vibration or groundborne noise levels; or

(c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

**City of San José**

***City of San José General Plan.*** The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies with the goal of minimizing the impact of noise on people through noise reduction and suppression techniques, and through appropriate land use policies in the City of San José. The following policies are applicable to the proposed project:

**EC-1.1** Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, state, and City noise standards and guidelines as a part of new development review. Applicable standards and guidelines for land uses in San José include:

Interior Noise Levels

- The City's standard for interior noise levels in residences, hotels, motels, residential care facilities, and hospitals is 45 dBA DNL. Include appropriate site and building design, building construction and noise attenuation techniques in new development to meet this standard. For sites with exterior noise levels of 60 dBA DNL or more, an acoustical

analysis following protocols in the City-adopted California Building Code is required to demonstrate that development projects can meet this standard. The acoustical analysis shall base required noise attenuation techniques on expected Envision General Plan traffic volumes to ensure land use compatibility and General Plan consistency over the life of this plan.

Exterior Noise Levels

- The City's acceptable exterior noise level objective is 60 dBA DNL or less for residential and most institutional land uses (Table EC-1). The acceptable exterior noise level objective is established for the City, except in the environs of the San José International Airport and the Downtown, as described below:

    - For new multi-family residential projects and for the residential component of mixed-use development, use a standard of 60 dBA DNL in usable outdoor activity areas, excluding balconies and residential stoops and porches facing existing roadways. Some common use areas that meet the 60 dBA DNL exterior standard will be available to all residents. Use noise attenuation techniques such as shielding by buildings and structures for outdoor common use areas. On sites subject to aircraft overflights or adjacent to elevated roadways, use noise attenuation techniques to achieve the 60 dBA DNL standard for noise from sources other than aircraft and elevated roadway segments.

**EC-1.2** Minimize the noise impacts of new development on land uses sensitive to increased noise levels (Categories 1, 2, 3 and 6) by limiting noise generation and by requiring use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would:

• Cause the DNL at noise sensitive receptors to increase by five dBA DNL or more where the noise levels would remain "Normally Acceptable"; or

• Cause the DNL at noise sensitive receptors to increase by three dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level.

**EC-1.3** Mitigate noise generation of new nonresidential land uses to 55 dBA DNL at the property line when located adjacent to existing or planned noise-sensitive residential and public/quasi-public land uses.

**EC-1.6** Regulate the effects of operational noise from existing and new industrial and commercial development on adjacent uses through noise standards in the City's Municipal Code.

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 | |

[1]Noise 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.

**EC-1.7** Require construction operations within San José to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

**Santa Clara County**

***Santa Clara County Airport Land Use Commission Comprehensive Land Use Plan.*** The Comprehensive Land Use Plan adopted by the Santa Clara County Airport Land Use Commission contains standards for projects within the vicinity of San José International Airport, which are relevant to this project:

**Policy N-3** Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5 (2022 Aircraft Noise Contours).

**Policy N-4** No residential or transient lodging construction shall be permitted within the 65 dB CNEL contour boundary unless it can be demonstrated that the resulting interior sound levels will be less than 45 dB CNEL and there are no outdoor patios or outdoor activity areas associated with the residential portion of a mixed use residential project or a multi-unit residential project. (Sound wall noise mitigation measures are not effective in reducing noise generated by aircraft flying overhead.)

**Regulatory Background – Vibration**

**City of San José**

***City of San José General Plan.*** The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies to achieve the goal of minimizing vibration impacts on people, residences, and business operations in the City of San José. The following policies are applicable to the proposed project:

**EC-2.3** Require new development to minimize continuous vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, including ruins and ancient monuments or building that are documented to be structurally weakened, a continuous vibration limit of 0.08 in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to a building. A continuous vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction. Equipment or activities typical of generating continuous vibration include but are not limited to: excavation equipment; static compaction equipment; vibratory pile drivers; pile-extraction equipment; and vibratory compaction equipment. Avoid use of impact pile drivers within 125 feet of any buildings, and within 300 feet of historical buildings, or buildings in poor condition. On a project-specific basis, this distance of 300 feet may be reduced where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction. Transient vibration impacts may exceed a vibration limit of 0.08 in/sec PPV only when and where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction.

**Existing Noise Environment**

The project site is located in the southeast corner of the South De Anza Boulevard/Sharon Drive intersection in San José, California. The project site is bound to the north by Sharon Drive, to the east by an existing doctor's office, to the south by existing commercial retail, and to the west by South De Anza Boulevard. Additional commercial uses are located to the north, opposite Sharon Drive, and to the west, opposite South De Anza Boulevard. The Bright Horizons Preschool/Daycare Facility is located to the north, opposite Sharon Drive, and the De Anza Boulevard KinderCare facility is also located opposite South De Anza Boulevard to the west. The nearest residential land uses are located approximately 130 feet east of the site along Sharon Drive.

The existing noise environment at the project site results primarily from vehicular traffic noise from nearby State Route 85 (SR 85) and De Anza Boulevard. Stationary mechanical equipment noise from the adjacent commercial lots and occasional aircraft operations associated with Mineta San José International Airport also affect the noise environment.

A noise monitoring survey was performed in the vicinity of the project site beginning on Tuesday, February 25, 2020 and concluding on Thursday, February 27, 2020. At the time of the monitoring survey, construction activities were occurring on the adjacent property to the east of the project site, along Sharon Drive. Due to the on-going construction in the immediate site vicinity, acquiring reliable noise data at the project site was not feasible. As a result, both the long-term (LT-1) noise measurement and the short-term (ST-1) noise measurements included in the survey were made a block south of the site, along Duckett Way/Hummingbird Place to capture representative ambient conditions without the influence of local construction activities. The measurement locations, with respect to the project site, are shown in Figure 1. The data collected at these measurement locations credibly represent the ambient noise environment at the project site and surrounding receptors.

Long-term noise measurement LT-1 was made southeast of the South De Anza Boulevard/Duckett Way intersection, approximately 100 feet east of the centerline of South De Anza Boulevard. The predominant noise source at LT-1 was South De Anza Boulevard traffic. The daily trend in noise levels at LT-1 is shown in Figures 2 through 4. Hourly average noise levels at this location typically ranged from 62 to 69 dBA $L_{eq}$ during the day and from 51 to 66 dBA $L_{eq}$ at night. Figure 3 shows unusually high noise level events between midnight and 1:00 a.m. on Wednesday, February 26, 2020, which resulted in an hourly average noise level of 72 dBA $L_{eq}$. Since these events were atypical, the noise data during the affected interval was removed from the data set when calculating the day-night average noise level, which was 68 dBA DNL.

Short-term noise measurement ST-1 was made over a 10-minute period, concurrent with the long-term measurement, on Thursday, February 27, 2020, between 7:40 a.m. and 7:50 a.m. ST-1 was made at the end of Duckett Way/Hummingbird Place. Since this receptor was positioned east of the project site, ST-1 would represent the typical existing ambient noise environment of the residences along Duckett Way/Hummingbird Place and Sharon Drive during daytime hours. The primary noise source at ST-1 was South De Anza Boulevard, which generated noise levels ranging from 52 to 57 dBA. Passenger cars traveling along Duckett Way generated noise levels ranging from 55 to 65 dBA. Typical traffic noise levels from SR 85, in the absence of South De Anza Boulevard traffic noise, ranged from 51 to 52 dBA. Crows were also observed during the 10-

minute measurement, with noise levels ranging from 55 to 63 dBA. The 10-minute average noise level measured at ST-1 was 56 dBA $L_{eq(10\text{-}min)}$. The short-term measurement results are summarized in Table 4.

**FIGURE 1 Noise Measurement Locations**


Source: Google Earth 2020.

**TABLE 4 Summary of Short-Term Noise Measurements (dBA)**

| Noise Measurement Location (Date, Time) | $L_{max}$ | $L_{(1)}$ | $L_{(10)}$ | $L_{(50)}$ | $L_{(90)}$ | $L_{eq(10\text{-}min)}$ |
|---|---|---|---|---|---|---|
| ST-1: End of Duckett Way / Hummingbird Place (2/27/2020, 7:40-7:50 a.m.) | 66 | 64 | 59 | 54 | 52 | 56 |

**FIGURE 2 Daily Trend in Noise Levels at LT-1, Tuesday, February 25, 2020**

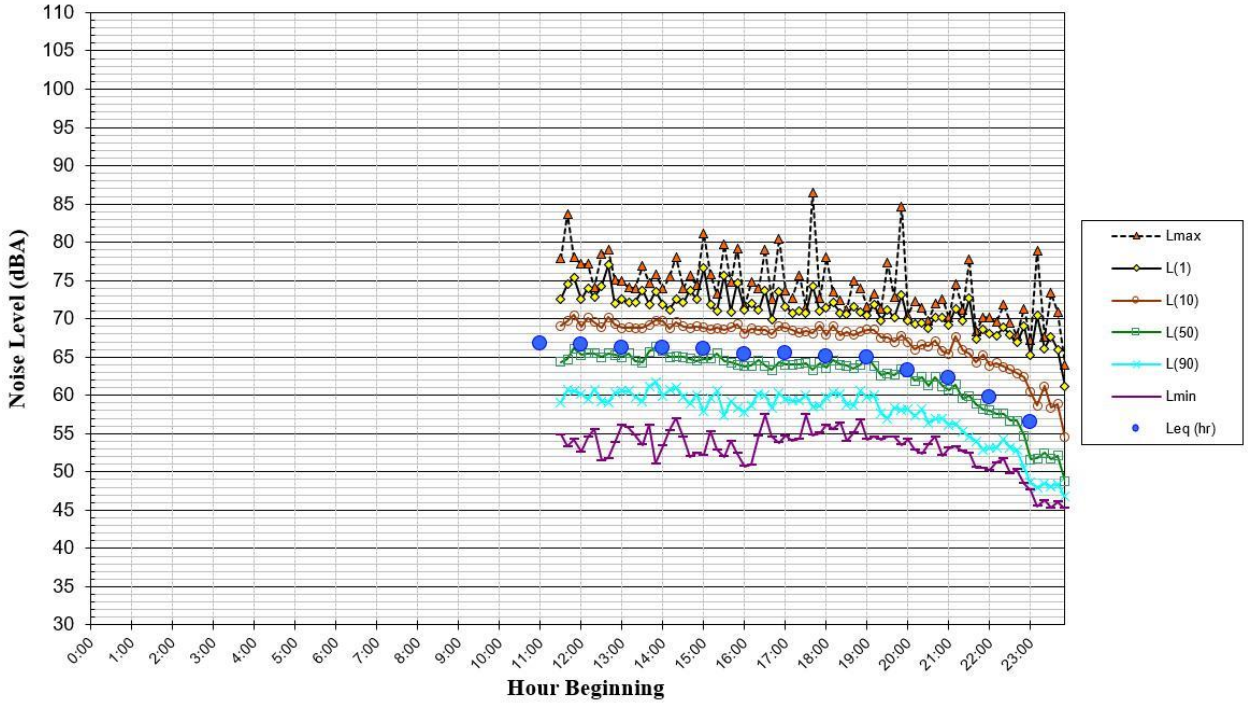



**FIGURE 3 Daily Trend in Noise Levels at LT-1, Wednesday, February 26, 2020**

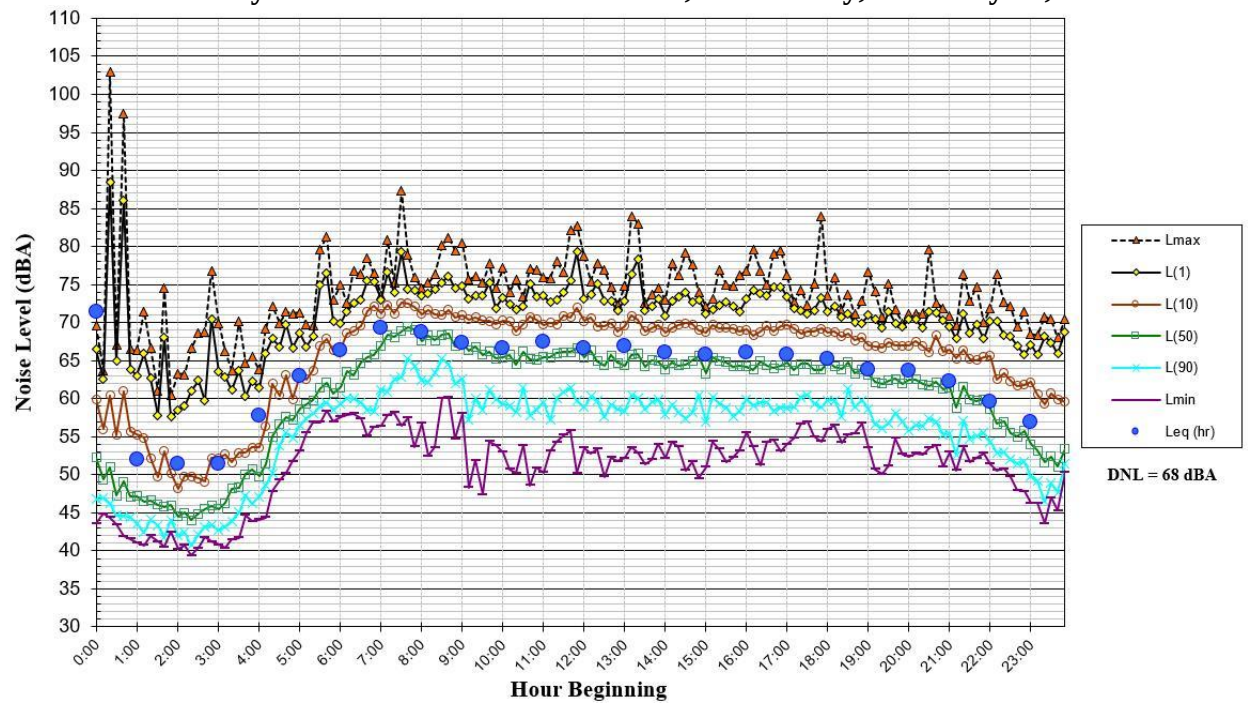
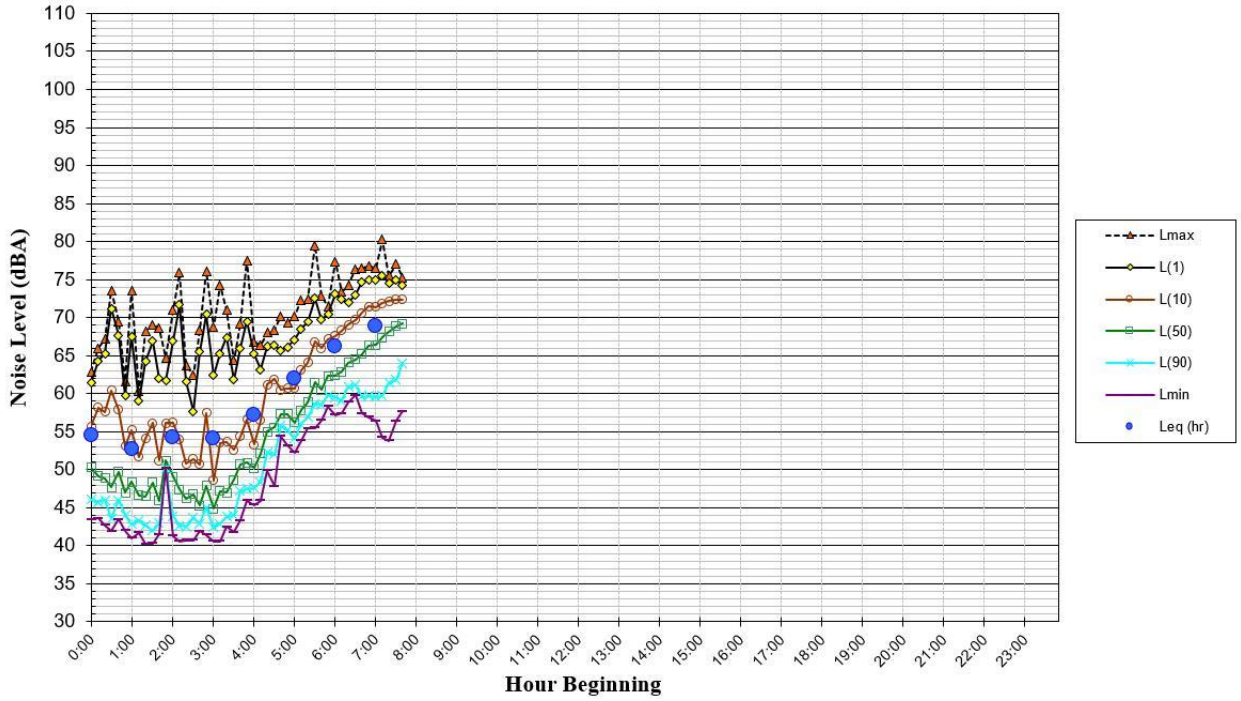


**FIGURE 4 Daily Trend in Noise Levels at LT-1, Thursday, February 27, 2020**




## PLAN CONSISTENCY ANALYSIS

### Noise and Land Use Compatibility

The proposed hotel would consist of four floors of rooms, ground-level commercial retail use, and two floors of below-grade parking. The driveway/loading entrance would be along South De Anza Boulevard, while access to the parking garage would be from Sharon Drive.

The future noise environment at the project site would continue to result primarily from vehicular traffic from nearby SR 85 and South De Anza Boulevard. A traffic study was conducted by *Hexagon Transportation Consultants, Inc.* for the proposed project. This study included peak hour traffic turning movements for the six intersections along South De Anza Boulevard in the vicinity of the project site. The traffic noise increase along South De Anza Boulevard was calculated to be less than 1 dBA DNL under cumulative plus project conditions. While traffic volumes along SR 85 were not included in the traffic study, the California Department of Transportation (Caltrans) has an online database of traffic volumes for major routes in the State of California,[1] which was last updated in 2017. Using these volumes for the segment of SR 85 near the project site, the peak hour traffic would be 9,500 vehicles. Assuming a 1% to 2% increase each year through the year 2040, a conservative 1 dBA DNL increase would be expected in the vicinity of the project site due to traffic volumes along SR 85.

1 https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017/route-82-86

*Future Exterior Noise Environment*

The exterior noise threshold established in the City's General Plan for new hotel projects is 60 dBA DNL at usable outdoor activity areas, excluding private balconies and porches. According to Table EC-1, the exterior noise threshold for common use outdoor areas associated with commercial uses would be 70 dBA DNL to be considered normally acceptable.

Hotel Component

The project site plan identifies a podium outdoor use area on level 2 and a 2,764 sf roof deck associated with the hotel.

The second-floor podium would be surrounded by the building on the northern, southern, and western sides. While this outdoor use area would be shielded from traffic along South De Anza Boulevard and Sharon Drive, there would be some exposure to traffic along SR 85 due to the elevation above the ground of the podium (about 18 feet). There is an existing 8-foot sound wall along the shoulder of SR 85 that would provide partial shielding for the podium. The center of this outdoor use area would be approximately 820 feet from the centerline of the nearest through lane along southbound SR 85. The future exterior noise levels at the level 2 podium would be at or 60 dBA DNL, even at the eastern edge of the outdoor use area.

The roof deck would be located along the northern building façade, with setbacks from the centerline of South De Anza Boulevard ranging from 145 to 195 feet. The center of the roof deck would be set back approximately 170 feet from the centerline of South De Anza Boulevard and approximately 70 feet from the centerline of Sharon Drive. Due to the elevation of the roof deck, it would also be exposed to traffic noise from SR 85, with setbacks of approximately 735 to 800 feet from the centerline of the nearest through lane. Along the northern edge of the roof deck, future exterior noise levels would range from 67 to 68 dBA DNL, while noise levels at the center of roof deck would be up to 63 dBA DNL.

The podium area associated with the hotel component of the proposed project would meet the City's exterior noise requirements for hotel uses. No further mitigation would be required. However, the roof deck would exceed the City's 60 dBA DNL threshold at the center of the outdoor use by up to 3 dBA DNL and at the edges by up to 8 dBA DNL and would be considered to be "conditionally acceptable" with respect to the noise environment. Due to the open nature of this outdoor use area, the City could allow the outdoor use area without additional measures to reduce noise levels since the future exterior noise levels at the center of the roof deck, which is where the majority of the activities would occur, would fall within the conditionally acceptable noise level range. If the City does not allow conditionally acceptable noise levels, further measures would be required to meet the City's normally acceptable threshold.

Commercial Component

The site plan shows an outdoor seating area associated with the commercial tenant along the western boundary of the project site, facing South De Anza Boulevard. The center of the seating area would be set back approximately 65 feet from the centerline of this roadway, and at this distance, the future exterior noise levels would be 71 dBA DNL, which would exceed the City's exterior noise threshold for commercial uses by 1 dBA DNL. Since the exceedance is only 1 dBA

DNL, and the nature of this outdoor seating area would be open to the sidewalk near the entrance to the tenant, installing a sound wall around this outdoor use area to reduce future exterior noise levels would not be recommended. The future exterior noise environment would fall within the conditionally acceptable range of noise levels, which the City of San José could allow on a conditional basis.

*Recommended Measures to Reduce Exterior Noise Levels*

Methods available to reduce exterior noise levels at the roof deck include site planning alternatives (e.g., increased setbacks and using the proposed buildings as noise barriers), the construction of traditional noise barriers, or a combination of the above. For the proposed project, relocating the roof deck to a less sensitive location on the roof would not be practical since the farther from SR 85 it gets, the closer to South De Anza Boulevard it would get. Therefore, the optimal measure for noise reduction would be to construct a sound wall or a specially-designed barrier capable of reducing noise levels by up to 3 dBA at the center of the roof deck.

The height of the proposed sound wall or specially-designed fence would need to break the line-of-sight from the outdoor use areas to the traffic noise sources. To do so, a 5-foot sound wall or specially-designed fence would be required along the perimeter of the northern and eastern edges of the roof deck, as measured from the base elevation of the roof. To optimize noise level reduction, the sound wall shall be continuous from grade to top, with no cracks or gaps. This barrier would consist of a minimum surface density of three lbs/ft.$^2$ A clear barrier would be optimal in order to maintain aesthetic appeal (i.e., ½-inch laminated glass).

The final recommendations shall be confirmed during final design when detailed site plans and grading plans are available. With the implementation of this proposed barrier, the exterior noise environment would be at or below 60 dBA DNL at the roof deck.

*Future Interior Noise Environment*

Hotel Component

The City of San José requires that interior noise levels be maintained at 45 dBA DNL or less in hotel rooms.

Interior noise levels would vary depending upon the design of the buildings (relative window area to wall area) and the selected construction materials and methods. Standard commercial hotel construction provides approximately 20 to 25 dBA of exterior-to-interior noise reduction, assuming windows are closed. For exterior noise environments ranging from 65 to 70 dBA DNL, interior noise levels can typically be maintained below 45 dBA DNL with the incorporation of an adequate forced-air mechanical ventilation system in each hotel room, allowing the windows to be closed. In noise environments of 70 dBA DNL or greater, a combination of forced-air mechanical ventilation and sound-rated construction methods are often necessary to meet the interior noise level limit.

The western façade of the proposed building would have hotel rooms on the first through fourth floors, with setbacks from the centerline of South De Anza Boulevard of approximately 70 feet.

At this setback, the western-facing hotel rooms would be exposed to future exterior noise levels up to 71 dBA DNL.

While the existing commercial building to the south would provide partial shielding for the ground-level rooms, the upper floors would have direct line-of-sight to South De Anza Boulevard. The setbacks of the southern building façade would range from 70 to 250 feet. Rooms located along the southern façade would be exposed to future exterior noise levels ranging from 63 to 71 dBA DNL.

Rooms located along the northern building façade would be exposed to traffic noise along South De Anza Boulevard, Sharon Drive, and SR 85. With setbacks from the centerline of South De Anza Boulevard ranging from 70 to 250 feet and setbacks from the centerline of Sharon Drive being approximately 35 feet, the rooms along this building façade would be exposed to future exterior noise levels ranging from 63 to 71 dBA DNL.

The eastern façade would be mostly shielded from traffic noise along South De Anza Boulevard; however, the rooms located on the upper floors would be exposed to traffic noise along SR 85, in addition to Sharon Drive. The rooms located on the eastern façade of the proposed hotel would be exposed to future exterior noise levels ranging from 61 to 63 dBA DNL.

For the proposed project, the interior noise levels would be up to 51 dBA DNL, which exceeds the City's threshold for interior noise.

Commercial Component

The first floor of the proposed project would include a commercial retail component located in the northwestern corner of the proposed hotel building. The commercial retail use would be exposed to traffic noise from South De Anza Boulevard and Sharon Drive. For this nonresidential use, hourly average noise levels during business hours would be required to meet the 50 dBA $L_{eq(1\text{-}hr)}$ threshold established by the 2019 Cal Green Code. Standard construction materials for commercial uses would provide at least 20 to 25 dBA of noise reduction in interior spaces. The inclusion of adequate forced-air mechanical ventilation systems is normally required so windows may be kept closed at the occupants' discretion.

The nearest building façade would be set back approximately 95 feet from the centerline of South De Anza Boulevard and approximately 35 feet from the centerline of Sharon Drive. Future Hourly average exterior noise levels during hours of operation would range from 63 to 70 $L_{eq(1\text{-}hr)}$.

Assuming a minimum of 20 dBA of exterior-to-interior noise reduction, the future interior noise levels would up to 50 dBA $L_{eq(1\text{-}hr)}$ at the building façade facing South De Anza Boulevard. With standard construction materials, the proposed building interior is expected to meet the daytime operational noise level threshold established in the Cal Green standard.

*Noise Insulation Features to Reduce Future Interior Noise Levels*

The following noise insulation features shall be incorporated into the proposed project to reduce interior noise levels to 45 dBA DNL or less in the hotel rooms:

- Provide a suitable form of forced-air mechanical ventilation, as determined by the local building official, for all hotel rooms, so that windows can be kept closed to control noise.

- Provide sound-rated construction assemblies to reduce interior noise levels to 45 dBA DNL or less. Preliminary calculations indicate that exterior rooms facing South De Anza Boulevard along the western building façade would require windows and doors with a minimum STC[2] rating of 30 to meet the interior noise threshold established by the City.

- A qualified acoustical consultant shall review the final site plan, building elevations, and floor plans prior to construction and recommend building treatments to reduce interior noise levels to 45 dBA DNL or lower. Treatments would include, but are not limited to, sound-rated windows and doors, sound-rated wall and window constructions, acoustical caulking, protected ventilation openings, etc. The specific determination of what noise insulation treatments are necessary shall be conducted on a room-by-room basis during final design of the project. Results of the analysis, including the description of the necessary noise control treatments, shall be submitted to the City, along with the building plans and approved design, prior to issuance of a building permit.

The implementation of these noise insulation features would reduce interior noise levels to 45 dBA DNL or less in the hotel rooms.

## NOISE IMPACTS AND MITIGATION MEASURES

### Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

- A significant noise impact would be identified if the project would generate a substantial temporary or permanent noise level increase over ambient noise levels at existing noise-sensitive receptors surrounding the project site.

    - A significant noise impact would be identified if construction-related noise would temporarily increase ambient noise levels at sensitive receptors. The City of San José considers large or complex projects involving substantial noise-generating activities and lasting more than 12 months significant when within 500 feet of residential land uses or within 200 feet of commercial land uses or offices.

    - A significant permanent noise level increase would occur if project-generated traffic would result in: a) a noise level increase of 5 dBA DNL or greater, with a future noise level of less than 60 dBA DNL, or b) a noise level increase of 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or greater.

[2] **Sound Transmission Class (STC)** A single figure rating designed to give an estimate of the sound insulation properties of a partition. Numerically, STC represents the number of decibels of speech sound reduction from one side of the partition to the other. The STC is intended for use when speech and office noise constitute the principal noise problem.

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the General Plan.

- A significant impact would be identified if the construction of the project would generate excessive vibration levels surrounding receptors. Groundborne vibration levels exceeding 0.2 in/sec PPV would have the potential to result in cosmetic damage to normal buildings.

- A significant noise impact would be identified if the project would expose people residing or working in the project area to excessive aircraft noise levels.

**Impact 1a:** **Construction Noise.** Existing noise-sensitive land uses would be exposed to construction noise levels in excess of the significance thresholds for a period of more than one year. **This is a significant impact**.

Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Policy EC-1.7 of the City's General Plan requires that all construction operations within the City to use best available noise suppression devices and techniques and to limit construction hours near residential uses per the Municipal Code allowable hours, which are between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday when construction occurs within 500 feet of a residential land use. Further, the City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would involve substantial noise-generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For the residences and Bright Horizons Preschool/Daycare Facility located along Sharon Drive and Hummingbird Place/Duckett Way, the ambient noise levels would be represented by ST-1, which was 56 dBA $L_{eq}$ during daytime hours. For the commercial uses located to the north, to the south, and to the west of the project site, as well as the De Anza Boulevard KinderCare Facility, LT-1 would represent the ambient noise environment. During daytime hours, typical ambient noise levels at LT-1 ranged from 62 to 69 dBA $L_{eq}$.

The typical range of maximum instantaneous noise levels for the proposed project, based on the equipment list provided, would be 70 to 90 dBA $L_{max}$ at a distance of 50 feet (see Table 5). Table 6 shows the hourly average noise level ranges, by construction phase for various types of construction projects. Hourly average noise levels generated by construction are about 75 to 89 dBA $L_{eq}$ for hotels, measured at a distance of 50 feet from the center of a busy construction site. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain often result in lower construction noise levels at distant receptors.

Table 7 summarizes the equipment expected to be used during each phase of construction and the duration for each phase. For each phase, the equipment shown in Table 7 was used as input into the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) to predict the combined average noise level. To model worst-case conditions, it was assumed that all equipment per phase would be operating simultaneously. For construction noise, the use of multiple pieces of equipment simultaneously would add together as a collective noise source. While every piece of equipment per phase would likely be scattered throughout the site, the noise-sensitive receptors surrounding the site would be subject to the collective noise source generated by all equipment operating at once. Therefore, to assess construction noise impacts at the receiving property lines of noise-sensitive receptors, the collective worst-case hourly average noise level for each phase was centered at the geometrical center of the site and propagated to the nearest property line of the surrounding land uses. These noise level estimates are also shown in Table 7. These levels do not assume reductions due to intervening buildings or existing barriers.

As shown in Table 7, ambient levels at the surrounding residential and commercial uses would potentially be exceeded by 5 dBA $L_{eq}$ or more at various times throughout construction. Project construction is expected to start at the beginning of 2021 and last for a period of approximately 15 months. Since project construction would last for a period of more than one year and considering that the project site is within 500 feet of existing residences, the construction of the proposed project would cause a significant temporary noise impact.

**TABLE 5 Construction Equipment 50-foot Noise Emission Limits**

| Equipment Category | $L_{max}$ Level (dBA)1,2 | Impact/Continuous |
|---|---|---|
| Arc Welder | 73 | Continuous |
| Auger Drill Rig | 85 | Continuous |
| Backhoe | 80 | Continuous |
| Bar Bender | 80 | Continuous |
| Boring Jack Power Unit | 80 | Continuous |
| Chain Saw | 85 | Continuous |
| Compressor[3] | 70 | Continuous |
| Compressor (other) | 80 | Continuous |
| Concrete Mixer | 85 | Continuous |
| Concrete Pump | 82 | Continuous |
| Concrete Saw | 90 | Continuous |
| Concrete Vibrator | 80 | Continuous |
| Crane | 85 | Continuous |
| Dozer | 85 | Continuous |
| Excavator | 85 | Continuous |
| Front End Loader | 80 | Continuous |
| Generator | 82 | Continuous |
| Generator (25 KVA or less) | 70 | Continuous |
| Gradall | 85 | Continuous |
| Grader | 85 | Continuous |
| Grinder Saw | 85 | Continuous |
| Horizontal Boring Hydro Jack | 80 | Continuous |
| Hydra Break Ram | 90 | Impact |
| Impact Pile Driver | 105 | Impact |

| Equipment Category | $L_{max}$ Level (dBA)1,2 | Impact/Continuous |
|---|---|---|
| Insitu Soil Sampling Rig | 84 | Continuous |
| Jackhammer | 85 | Impact |
| Mounted Impact Hammer (hoe ram) | 90 | Impact |
| Paver | 85 | Continuous |
| Pneumatic Tools | 85 | Continuous |
| Pumps | 77 | Continuous |
| Rock Drill | 85 | Continuous |
| Scraper | 85 | Continuous |
| Slurry Trenching Machine | 82 | Continuous |
| Soil Mix Drill Rig | 80 | Continuous |
| Street Sweeper | 80 | Continuous |
| Tractor | 84 | Continuous |
| Truck (dump, delivery) | 84 | Continuous |
| Vacuum Excavator Truck (vac-truck) | 85 | Continuous |
| Vibratory Compactor | 80 | Continuous |
| Vibratory Pile Driver | 95 | Continuous |
| All other equipment with engines larger than 5 HP | 85 | Continuous |

Notes:

1 Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

2 Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

3 Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

Source: Mitigation of Nighttime Construction Noise, Vibrations and Other Nuisances, National Cooperative Highway Research Program, 1999.

**TABLE 6 Typical Ranges of Construction Noise Levels at 50 Feet, $L_{eq}$ (dBA)**

| | Domestic Housing | | Office Building, Hotel, Hospital, School, Public Works | | Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station | | Public Works Roads & Highways, Sewers, and Trenches | |
|---|---|---|---|---|---|---|---|---|
| | I | II | I | II | I | II | I | II |
| Ground Clearing | 83 | 83 | 84 | 84 | 84 | 83 | 84 | 84 |
| Excavation | 88 | 75 | 89 | 79 | 89 | 71 | 88 | 78 |
| Foundations | 81 | 81 | 78 | 78 | 77 | 77 | 88 | 88 |
| Erection | 81 | 65 | 87 | 75 | 84 | 72 | 79 | 78 |
| Finishing | 88 | 72 | 89 | 75 | 89 | 74 | 84 | 84 |

**I** - All pertinent equipment present at site.
**II** - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

**TABLE 7 Estimated Construction Noise Levels at Nearby Land Uses**

| Phase | Time Duration | Construction Equipment (Quantity) | Calculated Hourly Average $L_{eq}$, dBA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Comm. - East (100ft) | Res. - East (225ft) | Comm. & Bright Horizons - North (150ft) | Comm. - South (95ft) | Res. - Southeast (260ft) | Comm. & KinderCare - West (195ft) |
| Demolition | 20 days | Concrete/Industrial Saw (1)<br>Excavator (3)<br>Rubber-Tired Dozer (2) | 80 | 73 | 77 | 81 | 72 | 75 |
| Site Preparation | 5 days | Rubber-Tired Dozer (3)<br>Tractor/Loader/Backhoe (4) | 82 | 75 | 78 | 82 | 73 | 76 |
| Grading/ Excavation | 10 days | Excavator (1)<br>Grader (1)<br>Rubber-Tired Dozer (1)<br>Tractor/Loader/Backhoe (3) | 81 | 74 | 78 | 82 | 73 | 75 |
| Trenching | 20 days | Tractor/Loader/Backhoe (1)<br>Excavator (1) | 76 | 69 | 72 | 76 | 67 | 70 |
| Building-Exterior | 230 days | Crane (1)<br>Forklift (3)<br>Generator Set (1)<br>Tractor/Loader/Backhoe (3)<br>Welder (1) | 80 | 73 | 77 | 81 | 72 | 74 |
| Building – Interior/ Architectural Coating | 20 days | Air Compressor (1)<br>Aerial Lift (1) | 69 | 62 | 65 | 69 | 60 | 63 |
| Paving | 20 days | Cement and Mortar Mixer (2)<br>Paver (1)<br>Paving Equipment (2)<br>Roller (2)<br>Tractor/Loader/Backhoe (1) | 82 | 75 | 78 | 82 | 73 | 76 |

**Mitigation Measure 1a:**

Reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction material, are necessary to protect the health and safety of persons, promote the general welfare of the community, and maintain the quality of life. The Municipal Code requires that reasonable noise reduction measures be incorporated into the construction plan and implemented during all phases of construction activity. In accordance with Policy EC-1.7, a construction noise logistics plan should be developed for the proposed project.

Construction Noise Logistics Plan: Prior to the issuance of any grading or demolition permits, the project proponent shall submit and implement a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting and notification of construction schedules, equipment to be used, and designation of a noise disturbance coordinator. The noise disturbance coordinator shall respond to neighborhood complaints and shall be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses. The noise logistic plan shall be submitted to the Director of Planning or Director's designee of the Department of Planning, Building and Code Enforcement prior to the issuance of any grading or demolition permits.

As a part of the noise logistic plan and project, construction activities for the proposed project shall include, but is not limited to, the following best management practices:

- In accordance with Policy EC-1.7 of the City's General Plan, utilize the best available noise suppression devices and techniques during construction activities.

- Construction activities shall be limited to the hours between 7:00 AM and 7:00 PM, Monday through Friday, unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence (San José Municipal Code Section 20.100.450).

- Construct temporary noise barriers, where feasible, around the perimeter of the construction site. The temporary noise barrier fences provide noise reduction if the noise barrier interrupts the line-of-sight between the noise source and receiver and if the barrier is constructed in a manner that eliminates any cracks or gaps.

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Unnecessary idling of internal combustion engines shall be strictly prohibited.

- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses.

- Utilize "quiet" air compressors and other stationary noise sources where technology exists.

- Construction staging areas shall be established at locations that would create the greatest distance between the construction-related noise source and noise-sensitive receptors nearest the project site during all project construction.

- A temporary noise control blanket barrier shall be erected, if necessary, along building facades facing construction sites. This mitigation would only be necessary if conflicts occurred which were irresolvable by proper scheduling.

- If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. *(not applicable)*

- Locate material stockpiles, as well as maintenance/equipment staging and parking areas, as far as feasible from residential receptors.

- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.

- The project applicant shall prepare a detailed construction schedule for major noise-generating construction activities. The construction plan shall identify a procedure for coordination with adjacent residential land uses so that construction activities can be scheduled to minimize noise disturbance.

- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to the adjacent land uses and nearby residences.

- Designate a "disturbance coordinator" who shall be responsible for responding to any complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., bad muffler, etc.) and require that reasonable measures be implemented to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

With the implementation of GP Policy EC-1.7, Municipal Code requirements, and the above measures, the temporary construction noise impact would be reduced to a less-than-significant level.

**Impact 1b:** **Permanent Noise Level Increase.** The proposed project would not result in a permanent noise level increase at the existing residential land uses due to project-generated traffic. **This is a less-than-significant impact.**

A significant impact would result if traffic generated by the project would substantially increase noise levels at sensitive receptors in the vicinity. A substantial increase would occur if: a) the noise level increase is 5 dBA DNL or greater, with a future noise level of less than 60 dBA DNL, or b) the noise level increase is 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or

greater. The existing noise environment in the surrounding area would exceed 60 dBA DNL, based on the ambient noise measurements; therefore, a significant impact would occur if project-generated traffic would permanently increase noise levels by 3 dBA DNL. For reference, a 3 dBA DNL noise increase would be expected if the project would double existing traffic volumes along a roadway.

For the proposed project, peak hour turning movements were provided for the six intersections in the project vicinity. Project trips were added to the existing volumes to calculate the existing plus project scenario, and the existing plus project traffic volumes were compared to existing volumes to determine the project's contribution to the permanent noise level increase. Upon comparison of these traffic conditions, a traffic noise increase of 2 dBA DNL or less was estimated for each roadway segment included in the traffic study. Traffic noise increases expected along the roadways serving the site, including De Anza Boulevard, Sharon Drive, and Duckett Way, are summarized in Table 8, below. The project would neither result in a doubling of traffic nor result in a permanent noise increase of 3 dBA DNL or more. This is a less-than-significant impact.

**TABLE 8 Traffic Noise Increase Summary**

| Roadway | Existing PM Peak Hour Volume | Existing PM Peak Hour Volume | Relative Noise Increase, dBA DNL |
|---|---|---|---|
| De Anza Boulevard (Sharon Drive to Duckett Way) | 2,940 | 3,069 | 0 |
| Sharon Drive (East of De Anza Boulevard) | 88 | 131 | 2 |
| Duckett Way (East of De Anza Boulevard) | 222 | 256 | 1 |

Source: Hexagon Transportation Consultants and Illingworth & Rodkin, Inc., February 2020.

**Mitigation Measure 1b: None required.**

**Impact 1c: Noise Levels in Excess of Standards.** The proposed project is not expected to generate noise levels in excess of standards established in the City's General Plan at the nearby sensitive receptors. **This is a less-than-significant impact.**

Under the City's Noise Element, noise levels from building equipment shall not exceed a noise level of 55 dBA DNL at the property line when located adjacent to existing or planned noise-sensitive residential and public/quasi-public land uses. Noise-sensitive receptors surrounding the site would include existing residences to the east of the site along Sharon Drive and to the southeast of the site along Hummingbird Place/Duckett Way.

*Mechanical Equipment*

The proposed hotel would include mechanical equipment, such as heating, ventilation, and air conditioning (HVAC) systems. The site plan shows mechanical rooms on both levels of the underground parking structure, as well as each floor of the hotel; however, the specific location for these HVAC units, which are normally on the roof building, were not shown on the site plan. Information regarding the number, type, size, and noise level data of the mechanical equipment units to be used in the proposed project was not available at the time of this study.

For buildings of this size, HVAC units (i.e., heat pumps) typically generate noise levels ranging from 49 to 53 dBA at approximately 1 meter or 3.28 feet. HVAC units cycle on and off continually, and therefore, multiple units would be running at any given time. Assuming up to eight units operating simultaneously, the combined noise levels would be up to 62 dBA at a distance of 3 feet, and assuming that the eight units cycle on and off throughout the daytime and nighttime hours, the day-night average noise level at a distance of 3 feet would be 68 dBA DNL. Typically, rooftop equipment would have a minimum setback from the edge of the building of about 10 feet. The height of the building and the setbacks of the units from the edge of the building would provide partial shielding for the nearby residences. The roof plan does not show any type of screening or enclosures for mechanical units; therefore, for purposes of assuming worst-case conditions, no shielding effects are considered for this analysis.

The property line of the nearest residence would be approximately 130 feet east of the nearest building façade. At this distance, combined mechanical equipment would be approximately 36 dBA and below 55 dBA DNL at the property line of the nearest residence. All other residences would be further away from the mechanical equipment and would be exposed to lower noise levels. The Bright Horizons Preschool/Daycare Facility is approximately 150 feet from the northern façade of the proposed building. At this distance, combined mechanical equipment would be 34 dBA DNL, which is below 55 dBA DNL. The KinderCare Facility would be farther from the nearest building façade, and the mechanical equipment noise levels would be lower.

In addition to mechanical equipment located on the roof of the building, the ground level of the hotel shows a backup generator room along the southern boundary adjacent to the garage exit ramp. The emergency generator for the proposed hotel would have a capacity of 200 kW, which typically produce noise levels of 89 dBA at 23 feet if a weather enclosure is included or ranging from 75 to 81 dBA at 23 feet if a Level 1 or Level 2 sound enclosure is included. During emergency situations, the noise produced by the operation of generators would be exempt from City noise restrictions; however, generators are typically tested for a period of one to two hours every month. During these testing periods, ambient noise levels would temporarily increase and would be required to meet the 55 dBA DNL threshold at nearby residential land uses. Assuming the emergency generator would run continuously during a two-hour period, the day-night average noise level at 23 feet would be 78 dBA DNL, assuming a weather enclosure, or would range from 64 to 70 dBA DNL with a Level 1 or Level 2 sound enclosure. With the location of the generator room being located on the interior of the building, the proposed building would provide at least 20 dBA of shielding. The nearest residential property line would be the residence to the east, which would be approximately 150 feet from the generator room. At this distance and assuming a conservative 20 dBA reduction, the day-night average noise level would be 42 dBA DNL with a weather enclosure or would range from 28 to 34 dBA DNL with a Level 1 or Level 2 sound enclosure. Therefore, testing the 200kW emergency generator would not be expected to exceed the City's 55 dBA DNL threshold at the nearest residential property line. Both of the childcare facilities would be more than 240 feet from the generator room and would be exposed to generator noise below 55 dBA DNL.

In addition to the General Plan requirements, the Municipal Code states that noise levels generated at the project site would be limited to 60 dBA DNL at nearby commercial properties. While

exceeding these zoning code noise standards would not be considered a significant impact, the exposure of the surrounding land uses to operational noise levels generated by the proposed project are also discussed here in comparison to these zoning code standards. The backup generator room would be located right along the southern boundary of the project site, which is shared with an existing commercial use. At the shared property line, the day-night average noise level would be 92 dBA DNL with a weather enclosure or would range from 78 to 84 dBA DNL with a Level 1 or Level 2 sound enclosure, assuming a conservative 20 dBA reduction due to the building façade. This would exceed the Municipal Code threshold of 60 dBA DNL at the nearest commercial property.

It is expected that mechanical equipment noise for the proposed project would meet the City's applicable General Plan noise limits at the property lines of the nearest residential land uses. While the City's Municipal Code thresholds at receiving commercial properties would potentially be exceeded by testing of the emergency generator, this impact would be considered less-than-significant.

*Truck Deliveries*

The commercial retail and hotel components would require truck deliveries. For uses of this size, it is assumed that one or two truck deliveries would occur per week. Typical deliveries would take approximately 15 minutes or less. For purposes of this study, it is assumed that all deliveries would occur during daytime hours. The site plan shows a loading zone along the western part of the building, just south of the ramp accessing the underground garage. It appears from the site plan that the loading area would be enclosed, which would provide at least 20 dBA of noise reduction.

Based on the size of the proposed hotel and commercial use, smaller delivery and vendor would be expected for the proposed project. These trucks typically generate maximum noise levels of 65 to 70 dBA $L_{max}$ at a distance of 50 feet. The nearest residential property line to the east would be approximately 150 feet from the loading zone along Sharon Drive. Using a 6 dBA per doubling of the distance propagation rate, the noise levels due to deliveries at the nearest residence would be below 45 dBA $L_{max}$, assuming a conservative 20 dBA reduction. Assuming up to two deliveries in a 24-hour period, the worst-case day-night average noise level at the nearest residence would be below 55 dBA DNL. Both of the childcare facilities would be more than 185 feet from the loading area and would be exposed to noise levels below 55 dBA DNL. This would be a less-than-significant impact.

Loading/unloading activities, maintenance activities, and trash pickup should be limited to the hours of 7:00 a.m. and 9:00 p.m. to further reduce disturbance to the neighbors.

**Mitigation Measure 1c: None required.**

**Impact 2:** **Exposure to Excessive Groundborne Vibration.** Commercial buildings adjoining the project site would be exposed to construction-related vibration levels exceeding the City's 0.2 in/sec PPV threshold for non-historical buildings. **This is a significant impact.**

The construction of the project may generate perceptible vibration when heavy equipment or impact tools (e.g. jackhammers, hoe rams) are used. Construction activities would include demolition, site preparation work, foundation work, and new building framing and finishing. While pile driving equipment can cause excessive vibration, it is not expected to be required for the proposed project.

According to Policy EC-2.3 of the City of San Jose General Plan, a vibration limit of 0.08 in/sec PPV shall be used to minimize the potential for cosmetic damage to sensitive historical structures, and a vibration limit of 0.20 in/sec PPV shall be used to minimize damage at buildings of normal conventional construction.

Table 9 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet. Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.), may generate substantial vibration in the immediate vicinity. Jackhammers typically generate vibration levels of 0.035 in/sec PPV, and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Table 9 also summarizes the distances to the 0.08 in/sec PPV threshold for historical buildings and to the 0.2 in/sec PPV threshold for all other buildings.

**TABLE 9 Vibration Source Levels for Construction Equipment**

| Equipment | | PPV at 25 ft. (in/sec) | Minimum Distance to Meet 0.08 in/sec PPV (feet) | Minimum Distance to Meet 0.2 in/sec PPV (feet) |
|---|---|---|---|---|
| Clam shovel drop | | 0.202 | 58 | 26 |
| Hydromill (slurry wall) | in soil | 0.008 | 3 | 1 |
| | in rock | 0.017 | 6 | 2 |
| Vibratory Roller | | 0.210 | 60 | 27 |
| Hoe Ram | | 0.089 | 28 | 12 |
| Large bulldozer | | 0.089 | 28 | 12 |
| Caisson drilling | | 0.089 | 28 | 12 |
| Loaded trucks | | 0.076 | 24 | 10 |
| Jackhammer | | 0.035 | 12 | 5 |
| Small bulldozer | | 0.003 | 1 | <1 |

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018, as modified by Illingworth & Rodkin, Inc., March 2020.

Based on the Historical Resources Inventory for the City of San José,[3] only one historical building is located in the project vicinity: 1566 Duckett Way, which is approximately 195 feet southeast of the project site. At this distance, the nearest building façade would be exposed to vibration levels ranging from 0.0003 to 0.022 in/sec PPV (summarized in Table 10). Construction equipment would not generate vibration levels in excess of the City's 0.08 in/sec PPV vibration threshold.

3 https://www.sanjoseca.gov/home/showdocument?id=24021

Table 10 summarizes the vibration levels at the nearest buildings surrounding the site. While construction noise sources increase based on all equipment in use simultaneously, construction vibration would be dependent on the location of individual pieces of equipment. That is, equipment scattered throughout the site would not generate a collective vibration source level, but a vibratory roller, for instance, operating near the project site boundary would generate the worst-case vibration levels for the receptor sharing that property line. Further, construction vibration impacts are assessed based on damage to buildings on receiving land uses, not receptors at the nearest property lines. Therefore, the distances used to propagate construction vibration levels (as shown in Table 10), which are different than the distances used to propagate construction noise levels (as shown in Table 7), were estimated under the assumption that each piece of equipment from Table 8 was operating along the nearest boundary of the project site, which would represent the worst-case scenario.

The commercial buildings adjoining the project site to the east and to the west are located 10 and 5 feet, respectively, from the project boundary. When the following heavy vibration-generating equipment are used along this shared property line, vibration levels would potentially exceed 0.2 in/sec PPV: clam shovel drop, vibratory roller, hoe ram, large bulldozer, caisson drilling, loaded trucks, and jackhammer.

The nearest residential façade would be 130 feet from the nearest project boundary, and at this distance, vibration levels would be at or below 0.034 in/sec PPV. All other structures surrounding the site would be 120 feet or more from the site, where vibration levels would be below 0.2 in/sec PPV.

The City's threshold of 0.2 in/sec PPV for non-historical buildings would potentially be exceeded at the two nearest commercial buildings to the east of the project site and to the south of the project site when construction activities occur along the shared boundaries.

**TABLE 10 Vibration Source Levels for Construction Equipment**

| Equipment | | PPV (in/sec) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Historical Building SE (195ft) | East Comm. (10ft) | East Res. (130ft) | South Comm. (5ft) | North Comm. & Bright Horizons (120ft) | West Comm. & KinderCare (175ft) |
| Clam shovel drop | | 0.021 | **0.553** | 0.033 | **1.186** | 0.036 | 0.024 |
| Hydromill (slurry wall) | in soil | 0.001 | 0.022 | 0.001 | 0.047 | 0.001 | 0.001 |
| | in rock | 0.002 | 0.047 | 0.003 | 0.100 | 0.003 | 0.002 |
| Vibratory Roller | | 0.022 | **0.575** | 0.034 | **1.233** | 0.037 | 0.025 |
| Hoe Ram | | 0.009 | **0.244** | 0.015 | **0.523** | 0.016 | 0.010 |
| Large bulldozer | | 0.009 | **0.244** | 0.015 | **0.523** | 0.016 | 0.010 |
| Caisson drilling | | 0.009 | **0.244** | 0.015 | **0.523** | 0.016 | 0.010 |
| Loaded trucks | | 0.008 | **0.208** | 0.012 | **0.446** | 0.014 | 0.009 |
| Jackhammer | | 0.004 | 0.096 | 0.006 | **0.206** | 0.006 | 0.004 |
| Small bulldozer | | 0.0003 | 0.008 | 0.0005 | 0.018 | 0.001 | 0.0004 |

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018, as modified by Illingworth & Rodkin, Inc., March 2020.

A study completed by the U.S. Bureau of Mines analyzed the effects of blast-induced vibration on buildings in USBM RI 8507.[4] The findings of this study have been applied to buildings affected by construction-generated vibrations.[5] As reported in USBM RI 8507[4] and reproduced by Dowding,[5] Figure 5 presents the damage probability, in terms of "threshold damage," "minor damage," and "major damage," at varying vibration levels. Threshold damage, which is described as cosmetic damage in this report, would entail hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. Minor damage would include hairline cracking in masonry or the loosening of plaster, and major structural damage would include wide cracking or shifting of foundation or bearing walls. As shown in Figure 5, maximum vibration levels of 1.2 in/sec PPV would result in approximately 20% of threshold damage or cosmetic damage, while no minor or major damage was observed with maximum vibration levels of 1.2 in/sec PPV. At 0.6 in/sec PPV, no minor or major damage would be expected, and there would be a about 8% chance of threshold damage or cosmetic damage.

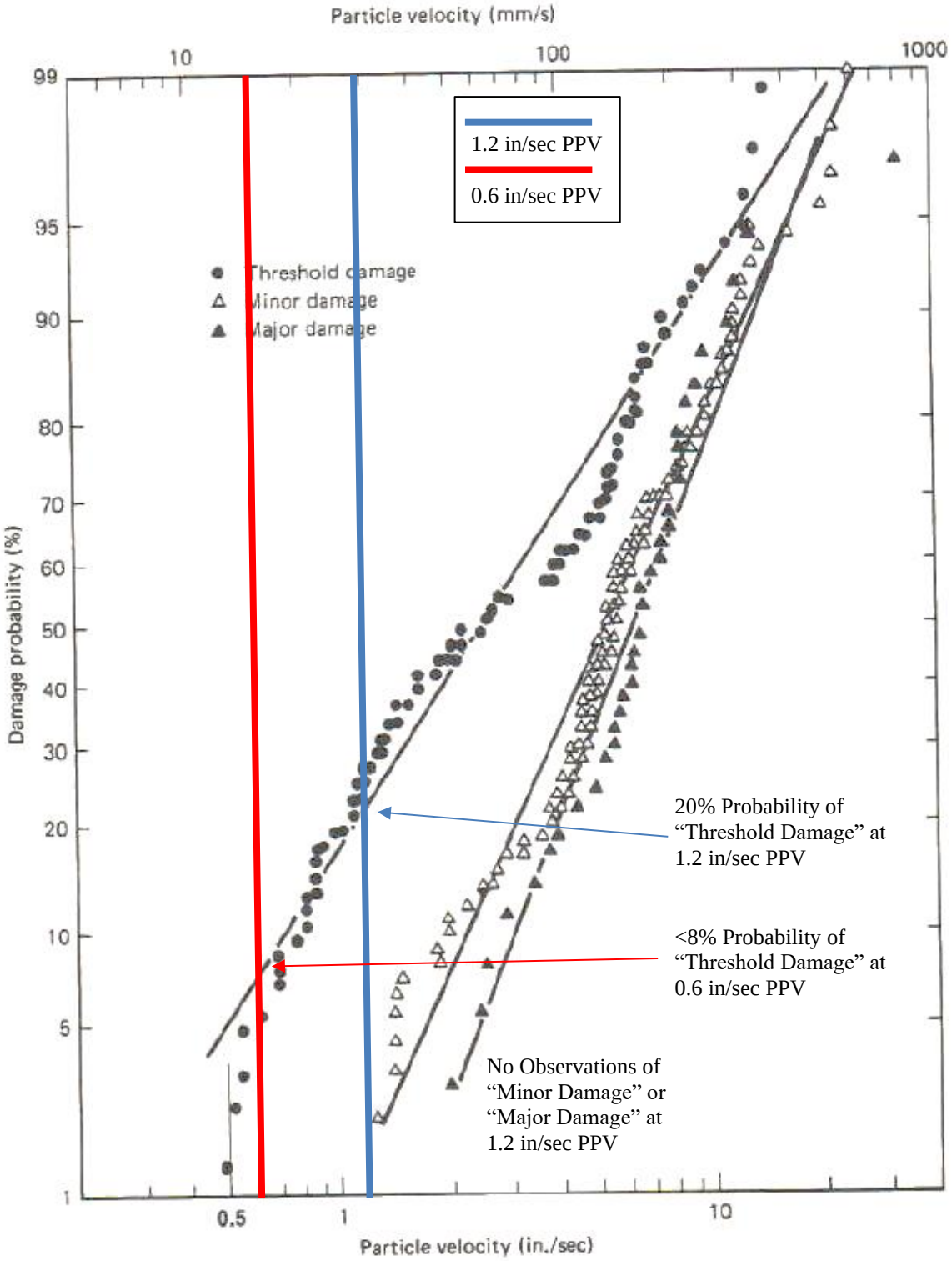
Typical construction equipment, as shown in Table 10, would have the potential to produce vibration levels of 0.2 in/sec PPV or more at the non-historical buildings surrounding the site. While no minor or major damage would occur at these conventional buildings, there is the potential to generate threshold or cosmetic damage at the surrounding buildings. This is a significant impact.

At this location, and in other surrounding areas within 200 feet, vibration levels would potentially be perceptible. By use of administrative controls, such as notifying neighbors of scheduled construction activities and scheduling construction activities with the highest potential to produce perceptible vibration during hours with the least potential to affect nearby businesses, perceptible vibration can be kept to a minimum.

[4] Siskind, D.E., M.S. Stagg, J.W. Kopp, and C.H. Dowding, Structure Response and Damage Produced by Ground Vibration form Surface Mine Blasting, RI 8507, Bureau of Mines Report of Investigations, U.S. Department of the Interior Bureau of Mines, Washington, D.C., 1980.

[5] Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

**FIGURE 5 Probability of Cracking and Fatigue from Repetitive Loading**




Source: Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

**Mitigation Measure 2:**

The project shall implement the following measures, in addition to the best practices specified in Mitigation Measure 1a of this report, to minimize the impacts of groundborne vibration.

Construction Vibration Monitoring, Treatment, and Reporting Plan: The project proponent shall implement a construction vibration monitoring plan to document conditions prior to, during, and after vibration generating construction activities. All plan tasks shall be undertaken under the direction of a licensed Professional Structural Engineer in the State of California and be in accordance with industry-accepted standard methods. The construction vibration monitoring plan shall include, but not be limited to, the following measures:

- The report shall include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations.

- A list of all heavy construction equipment to be used for this project and the anticipated time duration of using the equipment that is known to produce high vibration levels (clam shovel drops, vibratory rollers, hoe rams, large bulldozers, caisson drillings, loaded trucks, jackhammers, etc.) shall be submitted to the Director of Planning or Director's designee of the Department of Planning, Building and Code Enforcement by the contractor. This list shall be used to identify equipment and activities that would potentially generate substantial vibration and to define the level of effort required for continuous vibration monitoring. Phase demolition, earth-moving, and ground impacting operations so as not to occur during the same time period.

- Where possible, use of the heavy vibration-generating construction equipment shall be prohibited within 20 feet of any adjacent building.

- Document conditions at all structures located within 30 feet of construction and at historic structures historical structures located within 300 feet of construction prior to, during, and after vibration-generating construction activities. All plan tasks shall be undertaken under the direction of a licensed Professional Structural Engineer in the State of California and be in accordance with industry-accepted standard methods. Specifically:

    - Vibration limits shall be applied to vibration-sensitive structures located within 30 feet of all construction activities identified as sources of high vibration levels.

    - Performance of a photo survey, elevation survey, and crack monitoring survey for each structure of normal construction within 30 feet of all construction activities identified as sources of high vibration levels. Surveys shall be performed prior to any construction activity, in regular intervals during construction, and after project completion, and shall include internal and external crack monitoring in structures, settlement, and distress, and shall document the condition of foundations, walls and other structural elements in the interior and exterior of said structures.

- Develop a vibration monitoring and construction contingency plan to identify structures where monitoring would be conducted, set up a vibration monitoring schedule, define structure-specific vibration limits, and address the need to conduct photo, elevation, and crack surveys to document before and after construction conditions. Construction contingencies shall be identified for when vibration levels approached the limits.

- At a minimum, vibration monitoring shall be conducted during demolition and excavation activities.

- If vibration levels approach limits, suspend construction and implement contingency measures to either lower vibration levels or secure the affected structures.

- Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted on the construction site.

- Conduct a post-construction survey on structures where either monitoring has indicated high vibration levels or complaints of damage has been made. Make appropriate repairs or compensation where damage has occurred as a result of construction activities.

The implementation of these measures would reduce the impact to a less-than-significant level.

**Impact 3:** **Excessive Aircraft Noise.** The project site is located more than two miles from a public airport or public use airport and would not expose people residing or working in the project area to excessive aircraft noise levels with the implementation of forced-air mechanical ventilation. **This is a less-than-significant impact.**

Norman Y. Mineta San José International Airport is a public-use airport located approximately 6.9 miles northeast of the project site. The project site lies well outside the 60 dBA CNEL 2027 noise contour of the airport, according to the Norman Y. Mineta San José International Airport Master Plan Update Project[6] report published in February 2010 as an addendum to the Environmental Impact Report (see Figure 6). This means that future exterior noise levels due to aircraft from Norman Y. Mineta San José International Airport would not exceed 60 dBA CNEL/DNL. According to Policy EC-1.11 of the City's General Plan, the required safe and compatible threshold for exterior noise levels would be at or below 65 dBA CNEL/DNL for aircrafts. Therefore, the proposed project would be compatible with the City's exterior noise standards for aircraft noise.

The Moffett Federal Airfield, which is a joint civil-military airport, lies approximately 7.4 miles north of the site. The project site falls outside the 60 dBA CNEL noise contour, according to the 2022 Aircraft Noise Contours figure provided in the Comprehensive Land Use Plan for Moffett Federal Airfield.[7] Figure 7 below shows the project site lies outside of the 2022 noise contours

6 City of San José, "Norman Y. Mineta San José International Airport Master Plan Update Project: Eighth Addendum to the Environmental Impact Report," City of San José Public Project File No. PP 10-024, February 10, 2010.

7 Santa Clara County Airport Land Use Commission, "Comprehensive Land Use Plan Santa Clara County: Moffett Federal Airfield," November 2, 2012 and amended November 18, 2016.

figure for the airfield. The proposed project would be compatible with the aircraft noise generated from the nearest airports. This would be a less-than-significant impact.

**Mitigation Measure 3:** **None required.**

**FIGURE 6 2027 CNEL Noise Contours for SJIA Relative to Project Site**

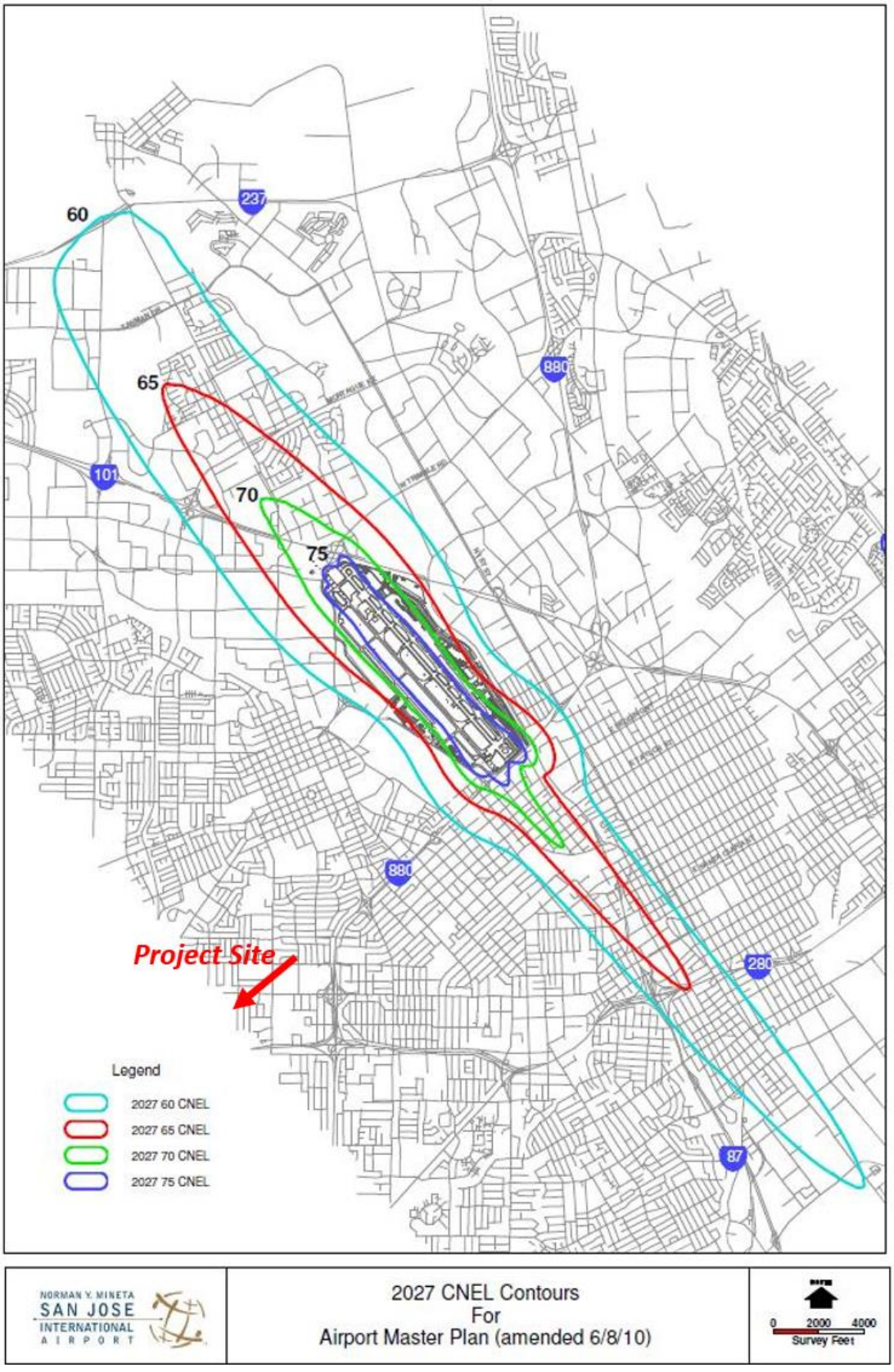
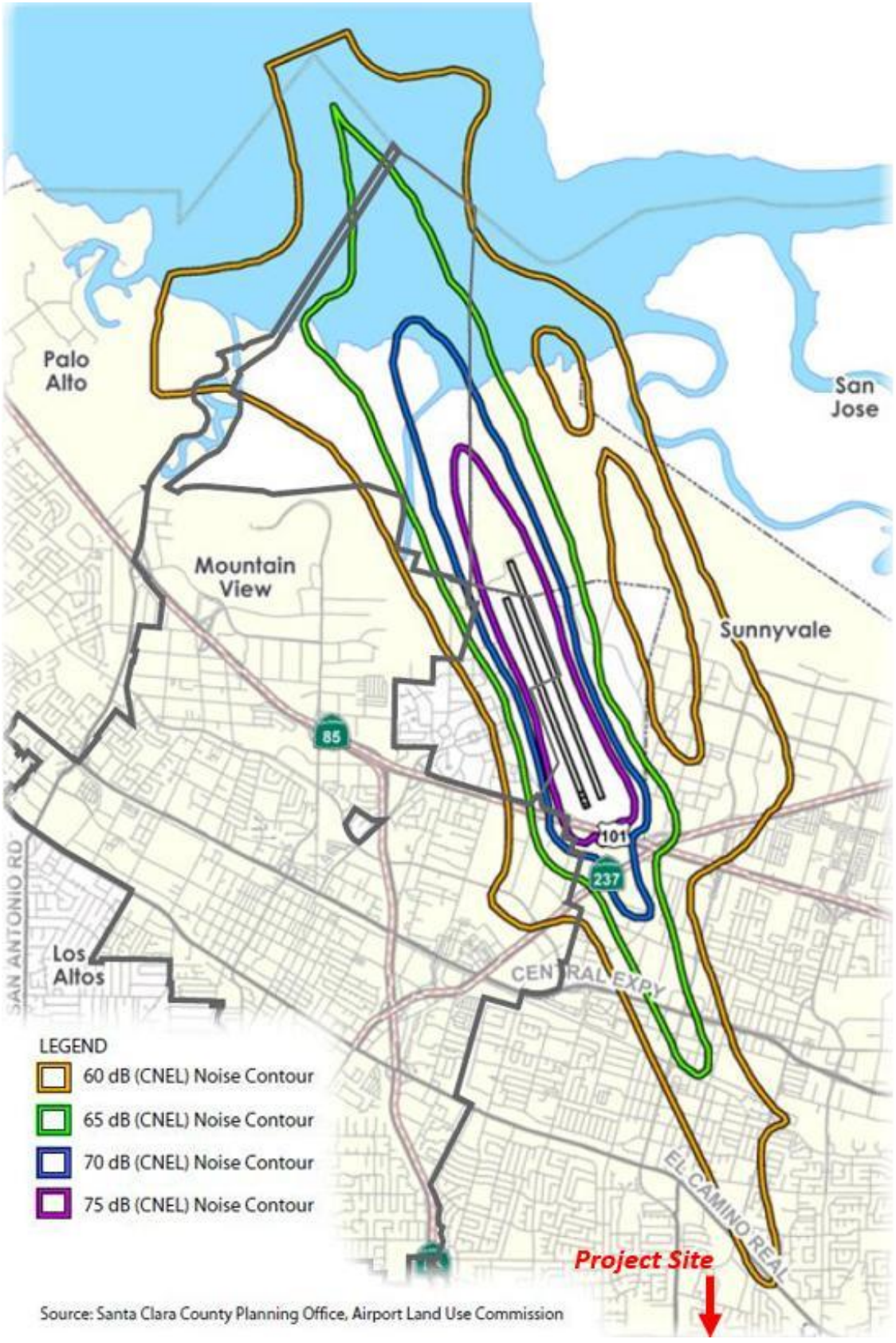


**FIGURE 7 2022 Noise Contours for Moffett Federal Airfield**



**Cumulative Impacts**

Cumulative noise impacts would include either cumulative traffic noise increases under future conditions and temporary construction noise from cumulative construction projects.

A significant cumulative traffic noise increase would occur if two criteria are met: 1) if the cumulative traffic noise level increase was 3 dBA DNL or greater for future levels exceeding 60 dBA DNL or was 5 dBA DNL or greater for future levels at or below 60 dBA DNL; and 2) if the project would make a "cumulatively considerable" contribution to the overall traffic noise increase. A "cumulatively considerable" contribution would be defined as an increase of 1 dBA DNL or more attributable solely to the proposed project.

To determine the cumulative traffic noise impact due to the proposed project, the cumulative (no project) and cumulative plus project traffic conditions were compared to the existing traffic conditions. A traffic noise increase of 2 dBA DNL or less was calculated under both cumulative scenarios (no project and plus project conditions) along every segment included in the traffic report. Since the first condition of the cumulative traffic noise impact would not be met, this would be a less-than-significant impact.

A Care Facility for the Elderly (RCFE), operated by Morningstar Senior Living, is expected to break ground at 1366 South De Anza Boulevard in 2020, and construction is expected to last about 20 to 24 months. The southern boundary of this project site is approximately 580 feet north of the boundary of the proposed hotel at 1510 South De Anza Boulevard. Potentially, the Morningstar Senior Living facility and the proposed hotel project could have an overlapping period of construction or could be constructed consecutively. The residential land uses located to the east along Sharon Drive and to the northeast along Chantel Court would be exposed to construction activity from both of these sites. With the inclusion of Mitigation Measures 1a and 2 in this report and those provided in the Morningstar Senior Living Project environmental review study, noise and vibration impacts due to cumulative construction would be reduced. The relative increase in noise levels resulting from the simultaneous construction of the two projects, as opposed to the construction of a single project only, would be about 3 dBA $L_{eq}$. Such a noise level increase would be perceived as a just noticeable increase in construction noise levels. Considering the size of these projects and the fact that the nearest noise-sensitive receptors are located adjacent to SR 85, a noise level increase of 3 dBA $L_{eq}$ would not constitute a significant cumulative construction noise impact. This would be a less-than-significant impact with the incorporation of mitigation measures identified for each project individually.

No other planned development projects would be located 900 feet or more from the project site and would not share impacted receptors with the proposed project. No cumulative impacts would be expected.