Appendix F

Noise Assessment

FAIRFIELD INN & SUITES
1669 MONTEREY ROAD
NOISE AND VIBRATION ASSESSMENT

San José, California

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INTRODUCTION

The project proposes the construction of a new hotel at 1669 Monterey Road in San José, California. The project site is currently developed with an existing motel that will be demolished as part of the proposed project. The new hotel would be five stories tall, with a maximum height of 50 feet, and would contain 120 guestrooms and 100 outdoor parking spaces.

This report evaluates the project's potential to result in significant 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 ambient noise conditions in the project vicinity; 2) the Plan Consistency Analysis 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 mitigation measures, where necessary, to mitigate project impacts to a less-than-significant level.

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 p.m. to 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. to 7:00 a.m.) 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 to 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 to 62 dBA DNL with open windows and 65 to 70 dBA DNL if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials, while 65 to 70 dBA is a typical value for a primary/major arterial. Levels of 75 to 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.

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.

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 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, April 2020.

Regulatory Background – Noise

This section describes the relevant guidelines, policies, and standards established by State Agencies, Santa Clara County, and the City of San José. The State 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.

Federal Government

Federal Transit Administration. The Federal Transit Administration (FTA) has identified construction noise thresholds in the *Transit Noise and Vibration Impact Assessment Manual*,[1] which limit daytime construction noise to 80 dBA L_{eq} at residential land uses and to 90 dBA L_{eq} at commercial and industrial land uses.

State of California

State CEQA Guidelines. The California Environmental Quality Act (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:

1 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, FTA Report No. 0123, September 2018.

(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;

(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.

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

Santa Clara County

Santa Clara County Airport Land Use Commission Comprehensive Land Use Plan. The Comprehensive Land Use Plan (CLUP) 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;

4.3.2.1 Noise Compatibility Policies

N-1 The Community Noise Equivalent Level (CNEL) method of representing noise levels shall be used to determine if a specific land use is consistent with the CLUP.

N-2 In addition to the other policies herein, the Noise Compatibility Policies presented in Table 4-1 shall be used to determine if a specific land use is consistent with this CLUP.

N-3 Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5 (not shown in this report).

N-6 Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. Table 4-1 presents acceptable noise levels for other land uses in the vicinity of the Airport.

Table 4 - 1

NOISE COMPATIBILITY POLICIES

LAND USE CATEGORY	CNEL					
	55-60	60-65	65-70	70-75	75-80	80-85
Residential – low density Single-family, duplex, mobile homes	*	**	***	****	****	****
Residential – multi-family, condominiums, townhouses	*	**	***	****	****	****
Transient lodging - motels, hotels	*	*	**	****	****	****
Schools, libraries, indoor religious assemblies, hospitals, nursing homes	*	***	****	****	****	****
Auditoriums, concert halls, amphitheaters	*	***	***	****	****	****
Sports arena, outdoor spectator sports, parking	*	*	*	**	***	****
Playgrounds, neighborhood parks	*	*	***	****	****	****
Golf courses, riding stables, water recreation, cemeteries	*	*	*	**	***	****
Office buildings, business commercial and professional, retail	*	*	**	***	****	****
Industrial, manufacturing, utilities, agriculture	*	*	*	***	***	****
* Generally 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. Mobile homes may not be acceptable in these areas. Some outdoor activities might be adversely affected.					
** Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Outdoor activities may be adversely affected. Residential: Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.					
*** Generally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor activities are likely to be adversely affected.					
**** Unacceptable	New construction or development shall not be undertaken.					

Source: Based on General Plan Guidelines, Appendix C (2003), Figure 2 and Santa Clara County ALUC 1992 Land Use Plan, Table 1

Source: Comprehensive Land Use Plan Santa Clara County, Norman Y Mineta San José International Airport, May 25, 2011, Amended May 23, 2019.

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.

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.

Source: Envision San José 2040 General Plan, Adopted November 1, 2011, As Amended on May 16, 2019.

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-1.7 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.

EC-1.11 Require safe and compatible land uses within the Mineta International Airport noise zone (defined by the 65 CNEL contour as set forth in State law) and encourage aircraft operating procedures that minimize noise.

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 at 1669 Monterey Road in the City of San José. Commercial and light industrial land uses border the site to the north, west, and south, with Monterey Road bordering the eastern side of the property. The nearest single-family residences are located approximately 160 feet northwest of the project site along San Jose Avenue.

The noise environment at the site and in the surrounding area results primarily from local vehicular traffic along Monterey Road, with other contributing noise sources including local commercial/industrial noise and aircraft flyovers associated with San José International Airport.

A noise monitoring survey consisting of one long-term (LT-1) and two short-term (ST-1 and ST-2) noise measurements was conducted at the site between Tuesday, February 8, 2022, and Friday, February 11, 2022. All measurement locations are shown in Figure 1.

Long-term noise measurement LT-1 was made approximately 50 feet west of the centerline of Monterey Road to represent typical noise levels at the east façade of the proposed building. Hourly average noise levels at LT-1 typically ranged from 69 to 77 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 60 to 72 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise levels were 74 dBA DNL on Wednesday, February 9, 2022, and 75 dBA DNL on Thursday, February 10, 2022.

Short-term noise measurement ST-1 was made on Tuesday, February 8, 2022, between 11:50 a.m. and 12:10 p.m. in two 10-minute measurement intervals. As shown in Figure 1, ST-1 was made at the approximate setback of the proposed pool area. Typical local traffic noise levels from Monterey Road ranged from 48 to 59 dBA. Commercial/industrial noise, including air compressor noise, ranged from 54 to 63 dBA. Jet flyovers occurring during the 10-minute measurements generated noise levels of 67 to 74 dBA. The 10-minute L_{eq} measured at ST-1 was 57 and 63 dBA. The higher noise level during the second measurement interval was attributable to three additional jet flyovers as compared to the first measurement interval.

Short-term noise measurement ST-2 was made on Tuesday, February 8, 2022, between 11:50 a.m. and 12:00 p.m. ST-2 was made on the western side of the site to document noise levels located further from Monterey Road. Typical traffic noise levels from Monterey Road ranged from 47 to 56 dBA. Jet flyovers occurring during the 10-minute measurement generated noise levels up to 72 dBA at ST-2. The 10-minute L_{eq} measured at ST-2 was 56 dBA.

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

Noise Measurement Location	Date, Time	Measured Noise Level, dBA					
		L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
ST-1: ~363 feet southwest of the centerline of Monterey Road	2/8/2022, 11:50-12:00	71	68	58	53	49	57
	2/8/2022, 12:00-12:10	74	73	67	55	49	63
ST-2: ~620 feet southwest of the centerline of Monterey Road	2/8/2022, 11:50-12:00	72	69	55	50	48	56

FIGURE 1 Aerial Image of the Project Site and Surrounding Area, with the Noise Measurement Locations Identified

Source: Google Earth, 2022.

PLAN CONSISTENCY ANALYSIS

Noise and Land Use Compatibility

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 applicable General Plan policies were presented in detail in the Regulatory Background section and are summarized below for the proposed project:

- The City's acceptable exterior noise level standard is 60 dBA DNL or less for the proposed hotel.

- The City's acceptable interior noise level standard is 45 dBA DNL or less for the proposed hotel.

The future noise environment at the site would continue to result primarily from vehicular traffic along Monterey Road. No measurable noise level increase was calculated along this segment of Monterey Road for the *Envision San José 2040 General Plan Comprehensive Update Draft EIR*.[2] Additionally, the peak hour trips included in the traffic study for the proposed project, which included 65 project trips in the peak AM hour and 77 project trips in the peak PM hour, resulted in no measurable increase over existing ambient noise levels. For purposes of assessing the worst-case scenario, a 1% to 2% increase in traffic volumes are assumed along Monterey Road through the year 2040. This represents typical growth for developed areas, similar to the project site vicinity. Under this assumption, a noise level increase of 1 dBA DNL would be conservatively applied to the existing noise levels to represent the worst-case future noise levels at the project site.

Future Exterior Noise Environment

The site plan shows an outdoor pool behind the proposed hotel on the ground level and an outdoor amenity area on the rooftop of the proposed hotel, which would include a bar, yoga area, and garden.

The pool would be well shielded from traffic noise along Monterey Road by the proposed hotel area and the existing structures surrounding the site. With the center of the pool area set back approximately 325 feet from the centerline of Monterey Road and considering the shielding provided by the proposed hotel, the future exterior noise levels at the ground-level pool area would be less than 60 dBA DNL.

The outdoor use areas located on the rooftop of the proposed hotel is expected to be 55 feet or more above the ground, which would provide a minimum attenuation of 15 dBA, at a distance of 10 feet from the eastern edge of the roof. The center of the rooftop bar would be approximately 110 feet from the centerline of Monterey Road. With this setback and the elevation of the building, there would be a minimum attenuation of 20 dBA at the center of the rooftop bar. The future

[2] City of San José, *San José 2040 General Plan Comprehensive Update Draft EIR*, December 2018.

exterior noise levels at center of the rooftop bar would be less than 60 dBA DNL, while future noise levels within 10 feet of the nearest edge of the rooftop bar would exceed 60 dBA DNL, the majority of the rooftop bar would be exposed to future noise levels at or below the City's normally acceptable threshold of 60 dBA DNL.

The yoga area and garden would be set back farther from Monterey Road than the rooftop bar, and would, therefore, have noise levels lower than the rooftop bar. Future exterior noise levels at these outdoor use areas would be below 60 dBA DNL.

The City's normally acceptable threshold for hotel uses would be below the City's normally acceptable threshold at the center of outdoor use areas. Therefore, the proposed project would be compatible with the future noise environment at the project site.

Future Interior Noise Environment

Standard hotel construction with the windows and doors closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. Where exterior noise levels range from 60 to 65 dBA DNL, the inclusion of adequate forced-air mechanical ventilation is often the method selected to reduce interior noise levels to acceptable levels by closing the windows to control noise. Where noise levels exceed 65 dBA DNL, forced-air mechanical ventilation systems and sound-rated construction methods are normally required. Such methods or materials may include a combination of sound-rated windows and doors, sound-rated exterior wall assemblies, and mechanical ventilation so windows may be kept closed at the occupant's discretion.

The eastern façade of the proposed hotel would be set back approximately 75 feet from the centerline of Monterey Road. At this distance, the hotel rooms would be exposed to future exterior noise levels up to 74 dBA DNL. Assuming windows to be partially open, future interior noise levels in these rooms would be up to 54 dBA DNL.

Rooms located along the northern and southern façades of the proposed hotel would have setbacks of approximately 75 to 300 feet from the centerline of Monterey Road. These rooms would be partially shielded from existing structures located on the adjoining sites. Assuming no shielding from surrounding buildings, rooms located along the northern and southern façades would be exposed to future exterior noise levels ranging from 65 to 74 dBA DNL. Assuming windows to be partially open, future interior noise levels in these rooms would range from 45 to 54 dBA DNL.

To meet the interior noise requirements set forth by the City of San José of 45 dBA DNL, implementation of noise insulation features would be required.

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 at hotel interiors:

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

closed at the occupant's discretion to control interior noise and achieve the interior noise standards.

- Preliminary calculations indicate that hotel rooms along the eastern building façade of the proposed hotel and along the northern and southern façades located within 150 feet of the centerline of Monterey Road would require windows and doors with a minimum rating of 35 to 36 STC with adequate forced-air mechanical ventilation to meet the interior noise threshold of 45 dBA DNL.

- Preliminary calculations indicate that hotel rooms along the northern and southern façades of the proposed hotel located 150 feet or more from the centerline of Monterey Road would require windows and doors with a minimum rating of 28 to 31 STC with adequate forced-air mechanical ventilation to meet the interior noise threshold of 45 dBA DNL.

The implementation of these noise insulation features would reduce interior noise levels to 45 dBA DNL or less at hotel interiors.

Conditions of Approval

The project applicant shall prepare final design plans that incorporate building design and acoustical treatments to ensure compliance with State Building Codes and City noise standards. A project-specific acoustical analysis shall be prepared to ensure that the design incorporates controls to reduce interior noise levels to 45 dBA DNL or lower within the hotel rooms. The project applicant shall conform with any special building construction techniques requested by the City's Building Department, which may include sound-rated windows and doors, sound-rated wall constructions, and acoustical caulking.

NOISE IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA, provides a discussion of each project impact, and presents mitigation measures, where necessary, to reduce project impacts to less-than-significant levels.

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 and that would exceed applicable noise standards presented in the General Plan at existing noise-sensitive receptors surrounding the project site.

    - A significant noise impact would be identified if temporary construction-related activities would substantially 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. After a period of 12 months, a significant temporary noise impact would occur if construction noise levels would exceed 80 dBA L_{eq} at residential land uses near the site or 90 dBA L_{eq} at commercial land uses near the site.

- A significant permanent noise level increase would occur if the project 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.

- 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 0.08 in/sec PPV would have the potential to result in cosmetic damage to historic buildings, and 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: **Temporary Construction Noise.** Existing noise-sensitive land uses would be exposed to a temporary increase in ambient noise levels due to project construction activities. With the implementation of standard construction best management practices as conditions of approval, this would be considered a **less-than-significant** impact.

The project applicant proposes to demolish the existing buildings on the project site. The construction schedule assumed that the earliest possible start date would be the beginning of January 2023, and the project would be built out over a period of approximately 14 months. Construction phases would include demolition, site preparation, grading, trenching, building construction, architectural coating, and paving. During each phase of construction, there would be a different mix of equipment operating, and noise levels would vary by phase and vary within phases, based on the amount of equipment in operation and the location at which the equipment is operating.

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 that is 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.

While the City of San José does not establish noise level thresholds for construction activities, this analysis uses the noise limits established by the Federal Transit Administration (FTA) to identify the potential for impacts due to substantial temporary construction noise. The FTA identifies construction noise limits in the *Transit Noise and Vibration Impact Assessment Manual*.[1] During daytime hours, an exterior threshold of 80 dBA L_{eq} shall be applied at residential land uses and 90 dBA L_{eq} shall be applied at commercial and industrial land uses.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The construction of the proposed project would involve demolition, excavation, trenching, and building construction. The hauling of excavated materials and construction materials would generate truck trips on local roadways, as well. For the proposed project, pile driving, which generates excessive noise levels, is not expected.

Construction activities for individual projects are typically carried out in phases. During each phase of construction, there would be a different mix of equipment operating, and noise levels would vary by phase and vary within phases, based on the amount of equipment in operation and the location at which the equipment is operating. The typical range of maximum instantaneous noise levels for the proposed project would be 70 to 90 dBA L_{max} at a distance of 50 feet (see Table 5) from the equipment. Table 6 shows the hourly average noise level ranges, by construction phase, typical for various types of projects. Hourly average noise levels generated by construction are about 72 to 88 dBA L_{eq} for hotel buildings, 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 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
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.

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.

Equipment expected to be used in each construction stage are summarized in Table 7, along with the quantity of each type of equipment and the reference noise level at 50 feet, assuming the operation of the two loudest pieces of construction equipment for each construction phase.

Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (RCNM) was used to calculate the hourly average noise levels for each phase of construction, assuming the two loudest pieces of equipment would operate simultaneously, as recommended by the FTA for construction noise evaluations. This construction noise model includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information gathered during the construction of the Central Artery/Tunnel Project in Boston, Massachusetts (CA/T Project or "Big Dig"). The usage factors represent the percentage of time that the equipment would be operating at full power. Table 7 also summarizes the construction noise levels for the two loudest pieces of equipment propagated to the surrounding receiving land uses.

To assess construction noise impacts at the receiving property lines of existing noise-sensitive receptors, the worst-case hourly average noise level, which would result in the noise levels summarized in Table 7, was propagated from the geometrical center of the project site to the nearest property lines or building façades of the surrounding land uses. These noise level estimates are shown in Table 8. Noise levels in Table 8 do not assume reductions due to intervening buildings or existing barriers.

TABLE 7 Estimated Construction Noise Levels for the Proposed Hotel at a Distance of 50 feet

Phase of Construction	Time Duration	Construction Equipment (Quantity)	Estimated Construction Noise Level at 50 feet
Demolition	1/2/2023 – 1/27/2023	Concrete/Industrial Saw (1)[a] Excavator (3)[a] Rubber-Tired Dozer (2)	85 dBA L_{eq}
Site Preparation	1/28/2023 – 2/3/2023	Rubber-Tired Dozer (3)[a] Tractor/Loader/Backhoe (4)[a]	88 dBA L_{eq}
Grading/ Excavation	2/4/2023 – 2/15/2023	Excavator (1) Grader (1)[a] Rubber-Tired Dozer (1) Tractor/Loader/Backhoe (3)[a]	86 dBA L_{eq}
Trenching/ Foundation	2/16/2023 – 2/27/2023	Tractor/Loader/Backhoe (1)[a] Excavator (1)[a]	82 dBA L_{eq}
Building – Exterior	2/28/2023 – 1/15/2024	Crane (1) Forklift (3) Generator Set (1)[a] Tractor/Loader/Backhoe (3)[a] Welder (1)	86 dBA L_{eq}
Building – Interior/ Architectural Coating	1/16/2024 – 2/8/2024	Air Compressor (1)[a]	74 dBA L_{eq}
Paving	2/9/2024 – 3/5/2024	Cement & Mortar Mixer (2) Paver (1) Paving Equipment (2)[a] Roller (2) Tractor/Loader/Backhoe (1)[a]	87 dBA L_{eq}

[a] Denotes two loudest pieces of construction equipment per phase.

TABLE 8 Estimated Construction Noise Levels for the Hotel Building at Nearby Land Uses

Phase of Construction	Calculated Hourly Average Noise Levels, L_{eq} (dBA)				
	North Comm. & Light Ind. (65ft)	South Light Ind. (60ft)	East Comm. & Offices (460ft)	West Comm. & Light Ind. (390ft)	Nearest Res. NW (390ft)
Demolition	84 dBA L_{eq}	85 dBA L_{eq}	67 dBA L_{eq}	69 dBA L_{eq}	69 dBA L_{eq}
Site Preparation	85 dBA L_{eq}	86 dBA L_{eq}	68 dBA L_{eq}	70 dBA L_{eq}	70 dBA L_{eq}
Grading/ Excavation	85 dBA L_{eq}	86 dBA L_{eq}	68 dBA L_{eq}	69 dBA L_{eq}	69 dBA L_{eq}
Trenching/ Foundation	79 dBA L_{eq}	80 dBA L_{eq}	62 dBA L_{eq}	64 dBA L_{eq}	64 dBA L_{eq}
Building –Exterior	84 dBA L_{eq}	85 dBA L_{eq}	67 dBA L_{eq}	68 dBA L_{eq}	68 dBA L_{eq}
Building – Interior/ Architectural Coating	71 dBA L_{eq}	72 dBA L_{eq}	54 dBA L_{eq}	56 dBA L_{eq}	56 dBA L_{eq}
Paving	84 dBA L_{eq}	85 dBA L_{eq}	67 dBA L_{eq}	69 dBA L_{eq}	69 dBA L_{eq}

As shown in Table 8, construction noise levels would intermittently range from 54 to 86 dBA L_{eq} when focused near the center of the project site. Construction noise levels would not exceed the exterior threshold of 80 dBA L_{eq} at nearest residential land uses. The 90 dBA L_{eq} threshold would not be exceeded at commercial land uses in the project vicinity during project construction. While specific construction activities would at times exceed these thresholds when work is conducted near shared property lines, construction would move throughout the project site during the planned 14-month period and thus would not constitute a significant temporary increase. 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 residential uses and within 200 feet of existing commercial uses, this temporary construction impact would be considered significant in accordance with Policy EC-1.7 of the City's General Plan.

The proposed project shall enforce Policy EC-1.7 of the City's General Plan, which states the following:

> Construction operations within the City will be required to use available noise suppression devices and techniques and continue to 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.

Mitigation Measure 1a:

Construction Noise Logistics Plan: Prior to the issuance of any grading or building permits, the project applicant 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, Building and Code Enforcement or Director's designee prior to the issuance of any grading or demolition permits. As a part of the noise logistic plan, construction activities for the proposed project shall include, but are not limited to, the following best management practices:

- 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, to screen mobile and stationary construction equipment. 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 predrilled 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/Exceed Applicable Standards.** The proposed project would not result in a substantial permanent noise level increase or exceed applicable standards at the noise-sensitive receptors in the project vicinity. **This is a less-than-significant impact.**

According to Policy EC-1.2 of the City's General Plan, a significant permanent noise increase would occur if the project would substantially increase noise levels at existing sensitive receptors in the project 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 at residences; or b) the noise level increase is 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or greater at residences. Noise levels at sensitive land uses exceed 60 dBA DNL; therefore, a significant impact would occur if traffic or operational noise due to the proposed project would permanently increase ambient levels by 3 dBA DNL.

Under the City's Noise Element, noise levels from nonresidential building equipment shall not exceed a noise level of 55 dBA DNL at receiving noise-sensitive land uses. Since hotels are treated the same as residential land uses in Table EC-1 of the City's General Plan, the proposed project would not be subject to Policies EC-1.3 and EC-1.6.

The City's General Plan does not include thresholds for noise generated at residential/hotel buildings; however, the Municipal Code requires mechanical equipment noise to be maintained at or below 55 dBA at receiving residential properties when operational noise is generated at residential/hotel uses. Additionally, Section 20.40.600 of the Municipal Code includes a noise limit of 60 dBA on receiving commercial uses and 70 dBA on receiving industrial uses.

Project Traffic Increase

The traffic study included peak hour turning movements for the existing traffic volumes, project trips, and pending project trips at four intersections in the vicinity of the project site. The peak hour project trips and pending project trips were added to the existing traffic volumes to establish the existing plus project traffic and the existing plus project plus pending project traffic scenarios.

By comparing the existing plus project traffic scenario and the existing plus project plus pending project traffic scenario to the existing scenario, the project's contribution to the overall noise level increase was not determined to be measurable or detectable (0 dBA DNL increase) along any roadway segment in the project vicinity, as summarized in Table 9. Therefore, the project would not result in a permanent noise increase of 3 dBA DNL or more at noise-sensitive receptors in the project vicinity.

TABLE 9 Estimated Noise Level Increases of Existing Plus Project Traffic Volumes and Existing Plus Project Plus Pending Project Traffic Volumes Over Existing Volumes at Receptors in the Project Vicinity

Roadway	Segment	Estimated Noise Level Increase	
		Existing Plus Project	Existing Plus Project Plus Pending Project
First Street/ Monterey Road	North of Alma Avenue	0 dBA DNL	0 dBA DNL
	Alma Avenue to Cotton Grove Avenue	0 dBA DNL	0 dBA DNL
	Cotton Grove Avenue to San José Avenue	0 dBA DNL	0 dBA DNL
	San José Avenue to Phelan Avenue	0 dBA DNL	0 dBA DNL
	South of Phelan Avenue	0 dBA DNL	0 dBA DNL
Alma Avenue	East of Monterey Road	0 dBA DNL	0 dBA DNL
	West of Monterey Road	0 dBA DNL	0 dBA DNL
Cotton Grove Avenue	East of Monterey Road	0 dBA DNL	0 dBA DNL
	West of Monterey Road	0 dBA DNL	0 dBA DNL
San José Avenue	East of Monterey Road	0 dBA DNL	0 dBA DNL
	West of Monterey Road	0 dBA DNL	0 dBA DNL
Phelan Avenue	East of Monterey Road	0 dBA DNL	0 dBA DNL
	West of Monterey Road	0 dBA DNL	0 dBA DNL

Mechanical Equipment

The roof plan for the proposed project does not show mechanical equipment. For purposes of this assessment, it is assumed that the individual rooms of the hotel would be equipped with PTAC units for ventilation. As such, mechanical equipment noise would not generate audible noise at the property lines of the surrounding receiving land uses. Therefore, mechanical equipment noise levels would not exceed the City's Municipal Code thresholds at existing receptors in the project vicinity. For all existing receptors, the noise level increase due to mechanical equipment noise would not be measurable or detectable (0 dBA DNL increase).

Truck Loading and Unloading

While the site plan does not indicate a truck loading zone, it is assumed that the main entrance area would be used by trucks for delivery purposes. It is further assumed that all deliveries and on-site maintenance activities would occur during daytime hours between 7:00 a.m. and 10:00 p.m. For a hotel of this size, smaller medium-sized trucks would be assumed to delivery supplies weekly. Smaller medium-sized delivery trucks typically generate maximum noise levels of 60 to 65 dBA at the same distance. Low speed truck noise results from a combination of engine, exhaust, and tire noise, as well as the intermittent sounds of back-up alarms and releases of compressed air associated with truck/trailer air brakes. The noise levels produced by backup alarms can vary depending on the type and directivity of the sound, but maximum noise levels are typically between 65 to 75 dBA at a distance of 50 feet. Typical deliveries would occur for a period of 15 minutes or less in any given hour.

The light industrial and commercial uses to the north would have direct line-of-sight to the main entrance, with distances of about 40 feet. The nearest residential use would be approximately 535 feet from the main entrance. An existing barrier is located along the northern boundary of the project site, which would provide a minimum attenuation of 5 dBA. Additionally, the nearest residence would be partially shielded by intervening buildings, which would provide a minimum 10 dBA attenuation. Table 10 summarizes the hourly average noise levels for truck deliveries occurring at the main entrance, as projected at the nearby receptors, as well as the day-night average noise levels and noise increases calculated at these receptors. The assumed attenuations are applied to the results in Table 10.

TABLE 10 Estimated Noise Levels and Noise Level Increases Generated by Truck Deliveries at the Property Lines of Existing Receptors in the Project Vicinity

Receptor	Distance from Main Entrance	Hourly L_{eq}, dBA	DNL, dBA	Estimated Noise Level Increase, dBA DNL
North Commercial & Light Industrial	40 feet	56[a]	45[a]	0
NW Residence	535 feet	28[b]	< 20[b]	0

[a] Conservative noise attenuation of 5 dBA due to existing barrier wall was applied to these noise levels.
[b] Conservative noise attenuation of 10 dBA due to intervening buildings was applied to these noise levels.

Truck deliveries occurring at the proposed project site would not be expected to generate levels exceeding the City's thresholds at the nearby noise-sensitive land uses. For all existing receptors, the noise level increase due to truck delivery noise would not be measurable or detectable (0 dBA DNL increase).

Total Combined Project-Generated Noise

The operational noise levels produced by the proposed project combined (i.e., traffic, mechanical equipment, and truck loading/unloading activities) would not result in a measurable or detectable increase at any existing noise-sensitive receptors surrounding the project site. Therefore, the proposed project would not result in a substantial increase over ambient noise levels in the project vicinity. Further, operational noise levels would not exceed 55 dBA DNL at the nearest noise-

sensitive receptors, 60 dBA DNL at the nearest commercial uses, or 70 dBA DNL at the nearest industrial uses. This is a less-than-significant impact.

Mitigation Measure 1b: None required.

Impact 2: Exposure to Excessive Groundborne Vibration. Construction-related vibration levels would potentially exceed applicable vibration thresholds at nearby sensitive land uses. **This is a potentially 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. Pile driving equipment, which can cause excessive vibration, is not expected to be required for the proposed project.

According to the City's Historic Resource Inventory,[3] historical structures are located at 1636 Pomona Avenue, 1635 Pomona Avenue, 1639 Pomona Avenue, 1643 Pomona Avenue, 1605 Pomona Avenue, and 1706 Monterey Road. These buildings range from 220 to 630 feet from the nearest boundary of the project site. No historical buildings are located within 200 feet of the project site.

According to Policy EC-2.3 of the City of San José 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. The vibration limits contained in this policy are conservative and designed to provide the ultimate level of protection for existing buildings in San José. As discussed in detail below, vibration levels exceeding these thresholds would be capable of cosmetically damaging adjacent buildings. Cosmetic damage (also known as threshold damage) is defined as hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. Minor damage is defined as hairline cracking in masonry or the loosening of plaster. Major structural damage is defined as wide cracking or the shifting of foundation or bearing walls.

Table 11 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 11 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. Since no historical buildings are located within 60 feet of the site, the 0.08 in/sec PPV threshold would not be exceeded at any historical buildings during project construction and is not discussed further.

[3] www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/historic-preservation/historic-resources-inventory

TABLE 11 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	59	26
Hydromill (slurry wall)	in soil	0.008	4	2
	in rock	0.017	7	3
Vibratory Roller		0.210	61	27
Hoe Ram		0.089	28	13
Large bulldozer		0.089	28	13
Caisson drilling		0.089	28	13
Loaded trucks		0.076	24	11
Jackhammer		0.035	12	6
Small bulldozer		0.003	2	<1

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., March 2022.

Table 12 summarizes the vibration levels at nearest surrounding buildings in the project vicinity, including the nearest historical building, which is located at 1636 Pomona Avenue. Vibration levels are highest close to the source and then attenuate with increasing distance at the rate $\left({}^{D_{ref}}/_{D}\right)^{1.1}$, where D is the distance from the source in feet and D_{ref} is the reference distance of 25 feet. While construction noise levels increase based on the cumulative equipment in use simultaneously, construction vibration levels would be dependent on the location of individual pieces of equipment. That is, equipment scattered throughout the site would not generate a collective vibration 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 12), which are different than the distances used to propagate construction noise levels (as shown in Table 8), were estimated under the assumption that each piece of equipment from Table 11 was operating along the nearest boundary of the project site, which would represent the worst-case scenario.

Project construction activities would potentially generate vibration levels up to 1.2 in/sec PPV at the nearest light industrial structures adjoining the project site to the north. A study completed by the US 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[3] and reproduced by Dowding,[4] Figure 2 presents the damage probability, in terms of "threshold damage" (described above as cosmetic damage), "minor damage," and "major damage," at varying vibration levels. Threshold damage, or cosmetic damage, 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

[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.

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 2, maximum vibration levels of 0.2 in/sec PPV or lower would result in virtually no measurable damage, while maximum vibration levels of 1.2 in/sec PPV would result in about 20% chance of cosmetic damage. No minor or major damage would be expected at the buildings immediately adjoining the project site.

Neither cosmetic, minor, or major damage would occur at historical or conventional buildings located 60 feet or more from the project site. At these locations, and in other surrounding areas where vibration would not be expected to cause cosmetic damage, vibration levels may still be perceptible. However, as with any type of construction, this would be anticipated and would not be considered significant, given the intermittent and short duration of the phases that have the highest potential of producing vibration (use of jackhammers and other high-power tools). 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.

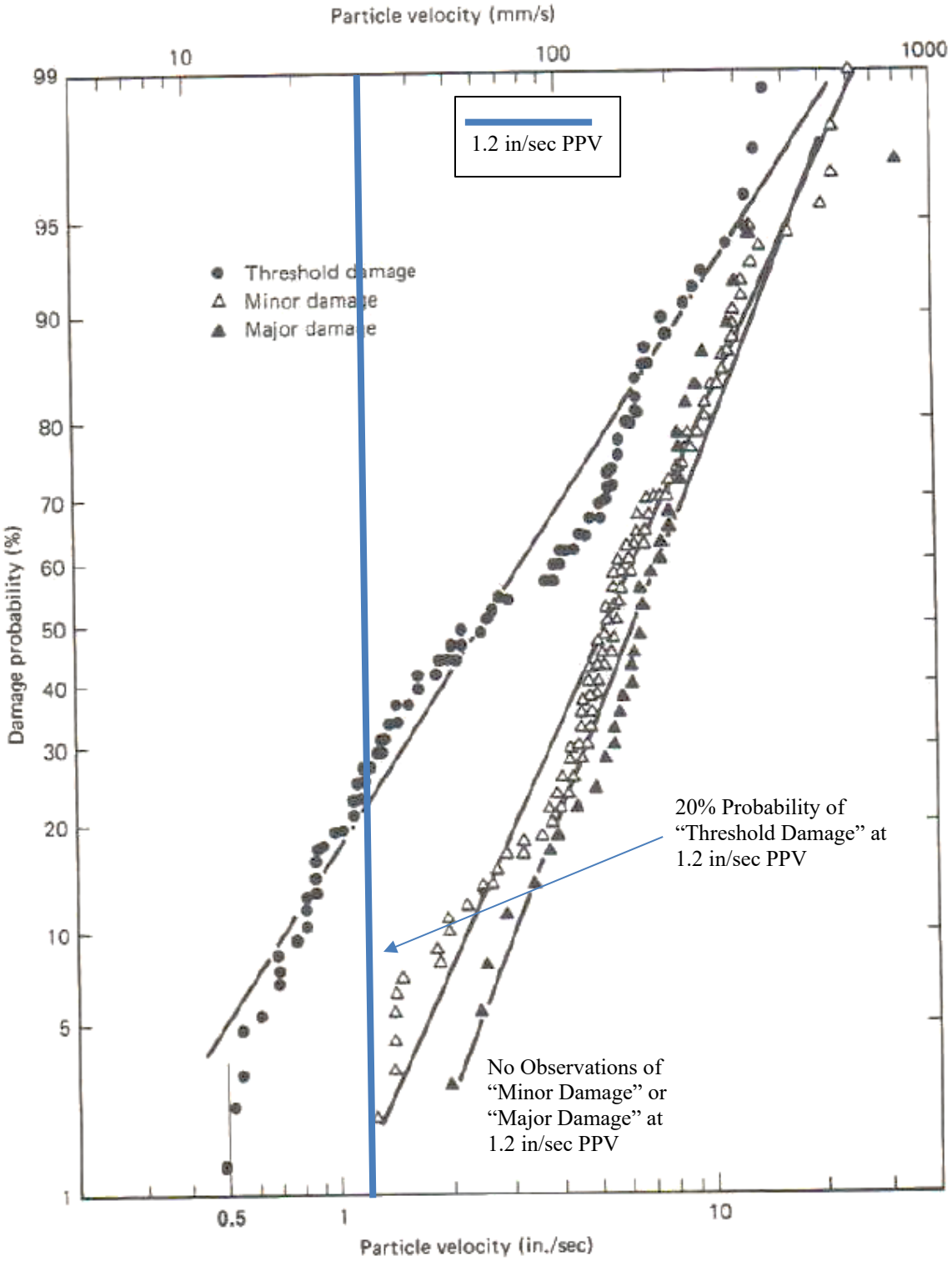
In summary, the construction of the project would potentially generate vibration levels exceeding the General Plan threshold of 0.2 in/sec PPV at nonhistorical properties adjoining the project site. This would be a potentially significant impact.

TABLE 12 Vibration Levels Estimated at the Nearest Structures Surrounding the Project Site

Equipment		PPV (in/sec)					
		South Light Industrial (105ft)	North Light Industrial (5ft)	Nearest North Residence (95ft)	West Light Industrial (80ft)	East Office/ Commercial (180ft)	Nearest Historical Structure at 1636 Pomona Avenue (220ft)
Clam shovel drop		0.042	**1.186**	0.047	0.056	0.023	0.018
Hydromill (slurry wall)	in soil	0.002	0.047	0.002	0.002	0.001	0.001
	in rock	0.004	0.100	0.004	0.005	0.002	0.002
Vibratory Roller		0.043	**1.233**	0.048	0.058	0.024	0.019
Hoe Ram		0.018	**0.523**	0.020	0.025	0.010	0.008
Large bulldozer		0.018	**0.523**	0.020	0.025	0.010	0.008
Caisson drilling		0.018	**0.523**	0.020	0.025	0.010	0.008
Loaded trucks		0.016	**0.446**	0.018	0.021	0.009	0.007
Jackhammer		0.007	**0.206**	0.008	0.010	0.004	0.003
Small bulldozer		0.001	0.018	0.001	0.001	0.0003	0.0003

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., March 2022.

FIGURE 2 Probability of Cracking and Fatigue from Repetitive Loading



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

Mitigation Measure 2:

Construction Vibration Monitoring, Treatment, and Reporting Plan: The project applicant 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.

- Prohibit the use of heavy vibration-generating construction equipment within 30 feet of adjacent buildings.

- Use a smaller vibratory roller, such as the Caterpillar model CP433E vibratory compactor, when compacting materials within 30 feet of adjacent buildings. Only use the static compaction mode when compacting materials within 15 feet of buildings.

- Document conditions at all structures located within 30 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 of vibration generating construction activities, and shall include internal and external crack monitoring in the structures, settlement, and distress, and shall document the condition of the foundations, walls and other structural elements in the interior and exterior of said structures.

- Avoid dropping heavy equipment and use alternative methods for breaking up existing pavement, such as a pavement grinder, instead of dropping heavy objects, within 30 feet of adjacent buildings.

- The contractor shall alert heavy equipment operators to the close proximity of the adjacent structures so they can exercise extra care.

- 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.

- 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.

- 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.

Implementation of this mitigation measure would reduce the impact to a less-than-significant level.

Impact 3: **Excessive Aircraft Noise.** The project site is located about 3.8 miles from Norman Y. Mineta International Airport, and the noise environment attributable to aircraft is considered normally acceptable under the Santa Clara County ALUC noise compatibility policies for hotel land uses. This is a **less-than-significant** impact.

Norman Y. Mineta San José International Airport is a public-use airport located approximately 3.8 miles northwest of the project site. According to the City's new Airport Master Plan Environmental Impact Report,[6] the project site lies just outside the 60 dBA CNEL/DNL contour line (see Figure 3). 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. Assuming standard construction materials for aircraft noise below 60 dBA DNL, the future interior noise levels resulting from aircraft would below 45 dBA DNL. Therefore, future interior noise at the proposed building would be compatible with aircraft noise. This would be a less-than-significant impact.

Mitigation Measure 3: **None required.**

[6] David J. Powers & Associates, Inc., Integrated Final Environmental Impact Report, Amendment to Norman Y. Mineta San Jose International Airport Master Plan, April 2020.

FIGURE 3 2037 CNEL Noise Contours for SJIA Relative to Project Site

Figure 5
Scenario 2: With Project 2037 Noise Contour Map

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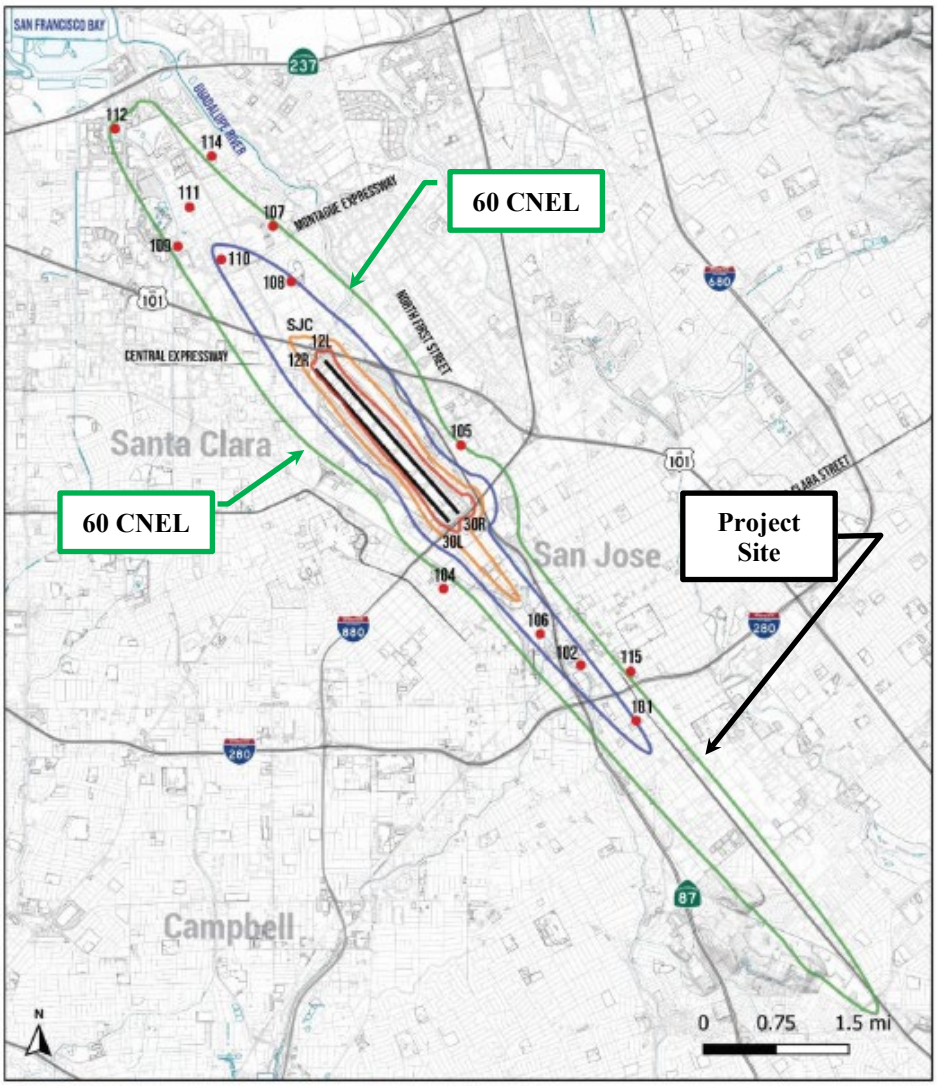

NORMAN Y. MINETA SAN JOSE INTERNATIONAL AIRPORT

- Noise Monitoring Station
- 101 Site ID
- Runway
- 75 dBA and Greater CNEL Contour
- 70 dBA and Greater CNEL Contour
- 65 dBA and Greater CNEL Contour
- 60 dBA and Greater CNEL Contour

Figure 5 Scenario 2: With Project 2037 Noise Contour Map

Source: BridgeNet International 2019

Cumulative Impacts

Cumulative noise impacts would include temporary construction noise from cumulative construction projects. Cumulative traffic was not included in the traffic study. Based on the existing traffic volumes, immeasurable traffic noise increase by the year 2040, which was included in the Envision San Jose 2040 EIR, and the number of project trips generated by the proposed project, a cumulative traffic noise increase would not be expected due to the proposed project.

From the City's website,[7] there are no planned or approved projects located within 1,000 feet of the proposed project. Therefore, there would not be a cumulative construction impact associated with the proposed project.

[7] https://gis.sanjoseca.gov/maps/devprojects/

APPENDIX A

FIGURE A1 Daily Trend in Noise Levels for LT-1 on Tuesday, February 8, 2022

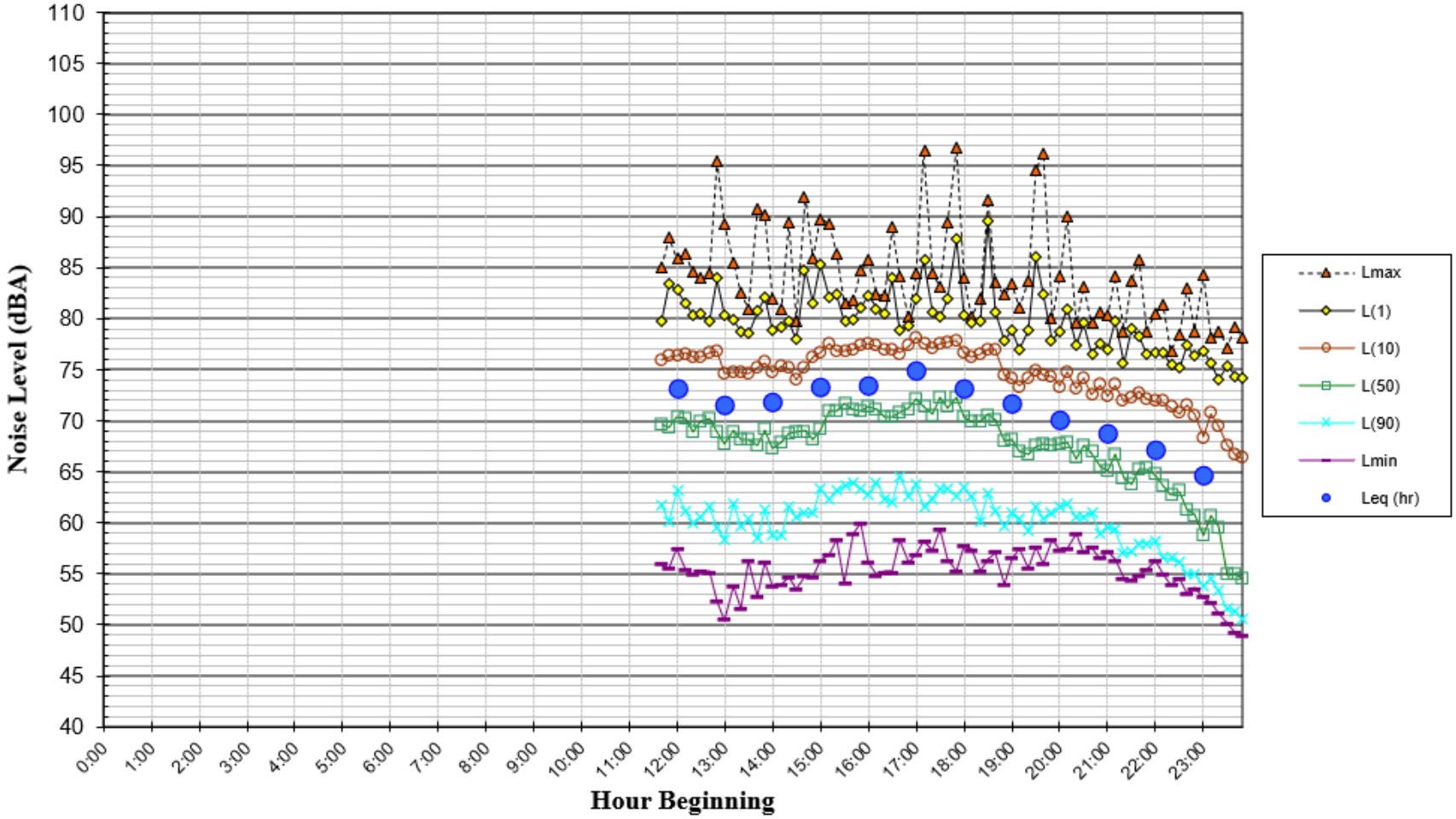

FIGURE A2 Daily Trend in Noise Levels for LT-1 on Wednesday, February 9, 2022

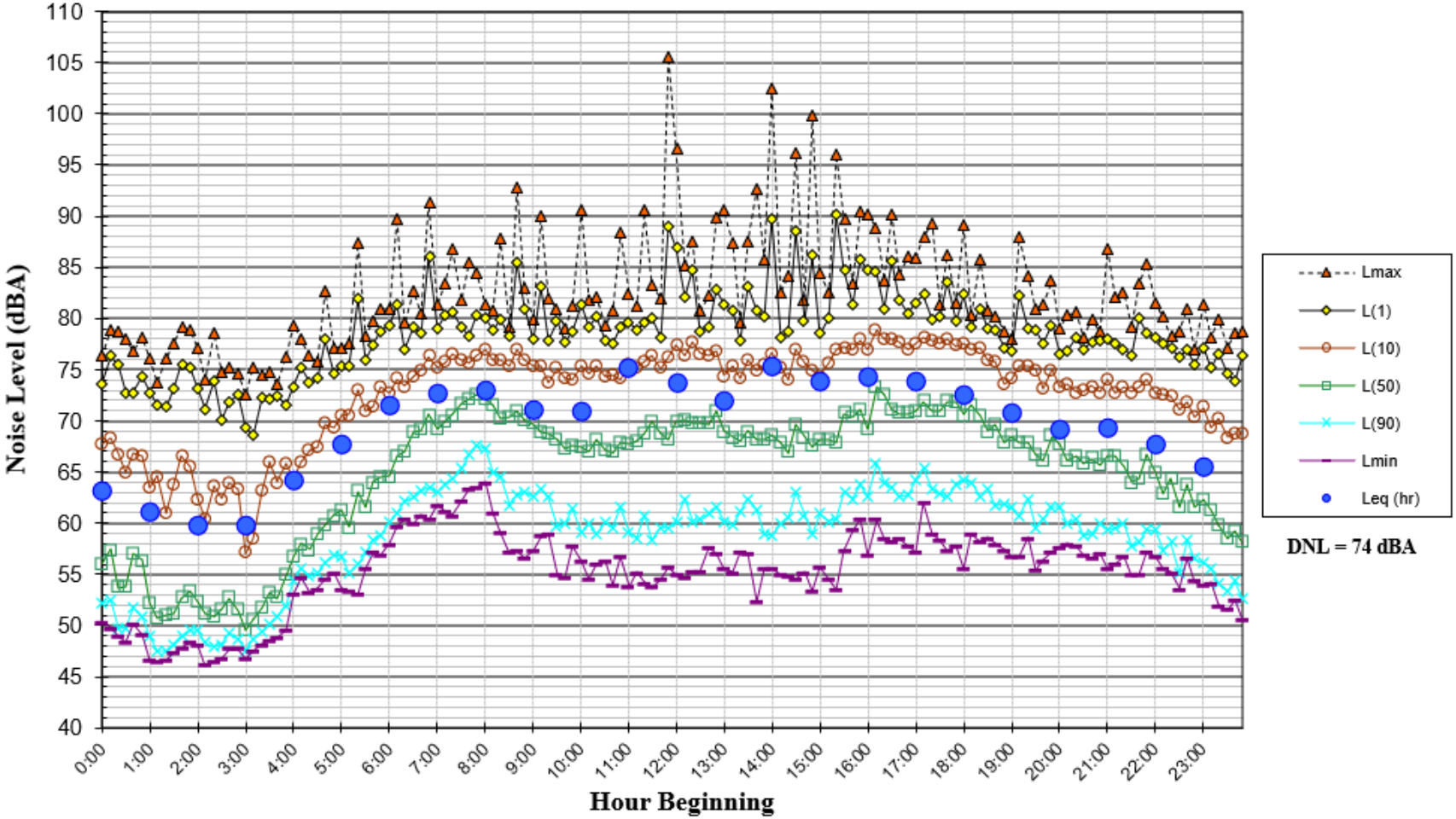

FIGURE A3 Daily Trend in Noise Levels for LT-1 on Thursday, February 10, 2022

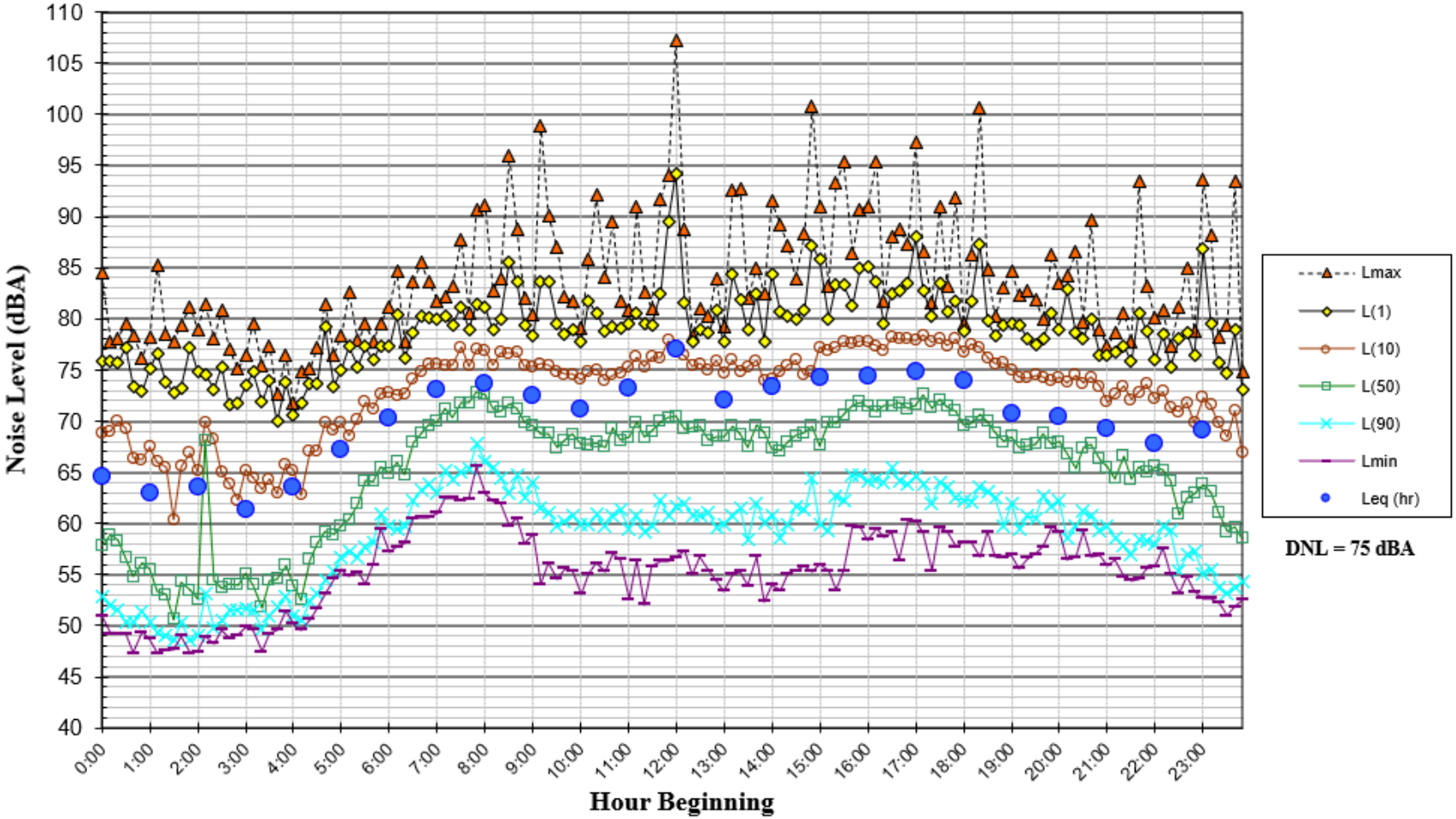

FIGURE A4 Daily Trend in Noise Levels for LT-1 on Friday, February 11, 2022