ARBOR PROJECT ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT

San José, California

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INTRODUCTION

The Arbor Project proposes to retain the existing office building on the site and construct a new 18-story mixed-use building at 255 West Julian Street in San José, California. The new building would include 585 residential units and 13,000 square feet of ground-floor retail space. The proposed building would also include four stories of below-grade parking, with 318 total 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 the results of the ambient noise monitoring survey completed to document existing noise conditions; 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

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.

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 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 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.[1] 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.

[1] Based on the U.S. Department of Transportation Federal Highway Administration document "Highway Traffic Noise: Analysis and Abatement Guidance" (2010) and data from Illingworth & Rodkin, Inc. noise monitoring projects.

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.[2]

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.

[2] Kryter, Karl D. The Effects of Noise on Man. Menlo Park, Academic Press, Inc., 1985.

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.

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.

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 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*,[3] which limit daytime construction noise to 80 dBA L_{eq} at residential land uses, to 85 dBA L_{eq} at commercial and office uses, and to 90 dBA L_{eq} at 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:

(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.

2022 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.

2022 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 2022 California Green Building Standards Code (Section 5.507.4.1 and 5.507.4.2). 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 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 when the building falls within the 65 dBA L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway noise source, as determined by the local general plan noise element.

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 shall be constructed to provide an interior noise environment attributable to

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

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.

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 Mineta 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 guidelines and policies herein, the Noise Compatibility Guidelines/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-4 No residential 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 project. All property owners within the 65 dB CNEL contour boundary who rent or lease their property for residential use shall include in their rental/lease agreement with the tenant, a statement advising that they (the tenants) are living within a high noise area and the exterior noise level is predicted to be greater than 65 dB CNEL.

N-5 Residential construction will not be permitted in the area between the 60 dB CNEL contour boundary and the 65 dB CNEL contour boundary unless it can be demonstrated that the resulting interior sound level will be no greater than 45 dB CNEL.

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-1.3 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.

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 buildings 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 255 West Julian Street in the downtown area of San José, California. The site is bound to the west by State Route 87 (SR 87), to the east by Terraine Street, to the south by West Julian Street/West St. James Street, and to the north by a vacant lot. East of Terraine Street are residential buildings, and south of West Julian Street/West St. James Street is a commercial building and a residential building. Government buildings are located west of SR 87.

The existing noise environment at the site results primarily from vehicular traffic along SR 87. The local traffic along West Julian Street/West St. James Street and aircraft associated with San José Mineta International Airport also contribute to the noise environment at the site.

Due to the Shelter-in-Place restrictions in the Bay Area at the time of the original study in 2021, a noise monitoring survey was not completed during the completion of the original project. At that time, traffic volumes along the surrounding roadways were reduced from typical conditions. However, a noise monitoring survey was completed for the Westbank Terraine Project in 2023, which was approved in March 2024. Since this project has been approved and the Environmental Noise and Vibration Assessment[4] has been made public, the data from that study is used in this project.

The noise monitoring survey completed for the Westbank Terraine Project consisted of two long-term (LT-1 and LT-2) and three short-term (ST-1 through ST-3) noise measurements, which were conducted at the adjoining site to the north between Wednesday, July 19, 2023, and Friday, July 21, 2023. All measurement locations are shown in Figure 1.

Long-term noise measurement LT-1 was made along Terraine Street, approximately 20 feet west of the centerline. LT-1 was also approximately 320 feet from the centerline of the nearest through lane along SR 87. LT-1 was installed on a streetlight, approximately 12 feet above the ground. While LT-1 was slightly elevated above the ground, there may be some shielding from the elevated SR 87 structure. Hourly average noise levels at LT-1 typically ranged from 66 to 72 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 55 to 68 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise level was 71 dBA DNL on Thursday, July 20, 2023. The daily trend in noise levels at LT-1 is shown in Figures A1 through A3 of Appendix A.

4 Illingworth & Rodkin, Inc., "Terraine Site Mixed-Use Project Noise and Vibration Assessment," December 4, 2023.

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



Source: Google Earth, 2024.

Long-term noise measurement LT-2 was made along Bassett Street, halfway between the elevated SR 87 structure and Terraine Street. LT-2 was approximately 20 feet south of the centerline of Bassett Street and approximately 185 feet from the centerline of the nearest through lane along SR 87. Similar to LT-1, LT-2 would be partially shielded from the elevated SR 87 structure. Hourly average noise levels at LT-2 typically ranged from 65 to 72 dBA L_{eq} during daytime hours and from 56 to 69 dBA L_{eq} during nighttime hours. The day-night average noise level was 71 dBA DNL on Thursday, July 20, 2023. The daily trend in noise levels at LT-2 is shown in Figures A4 through A6 of Appendix A.

Short-term noise measurements ST-1 through ST-3 were made on Wednesday, July 19, 2023, between 11:00 a.m. and 11:50 a.m. At each short-term location, noise level measurements were made at two heights: five feet and 24 feet above the ground. The elevated short-term measurements captured the direct line-of-sight noise levels for the expressway, representative of elevated receptors. The five-foot high measurements, which were made concurrently with the 24-foot-high measurements, would not only represent the existing noise environment of the ground-level receptors, but could also be used to calculate the attenuation of the elevated structure at the ground-level. Table 4 summarizes the noise measurement results measured at each site.

ST-1 was made at the westernmost building façade of the proposed building, approximately 75 feet from the centerline of the nearest through lane of SR 87 and approximately 75 feet south of the centerline of Bassett Street. The dominant noise source at ST-1 was traffic noise along SR 87. At a height of five feet, traffic noise from SR 87 produced noise levels ranging from 64 to 68 dBA, while SR 87 generated noise levels of 64 to 78 dBA at a height of 24 feet. Additionally, a jet flyover produced noise levels of 78 dBA at both heights during ST-1. The 10-minute L_{eq} measured at ST-1 was 67 dBA at five feet high and 71 dBA at 24 feet high.

ST-2 was made near the southern façade of the proposed building, approximately 245 feet from the centerline of the nearest through lane of SR 87 and approximately 100 feet west of the centerline of Terraine Street. Traffic from SR 87 dominated the noise environment at ST-2. Typical traffic noise levels along SR 87 ranged from 62 to 65 dBA at a height of five feet and from 63 to 73 dBA at a height of 24 feet. During the ST-2 measurement, a helicopter flyover generated noise levels of 71 dBA at a height of five feet and of 73 dBA at a height of 24 feet. General aviation produced noise levels of 72 to 73 dBA. The 10-minute L_{eq} measured at ST-2 was 65 dBA at five feet high and 68 dBA at 24 feet high.

ST-3 was made along the eastern façade of the proposed building, halfway between the northern and southern boundaries of the project site. ST-3 was approximately 300 feet from the centerline of the nearest through lane of SR 87 and approximately 40 feet west of the centerline of Terraine Street. Expressway traffic from SR 87 dominated the noise environment at ST-3, with noise levels ranging from 63 to 66 dBA at the five-foot-height and from 60 to 74 dBA at the 24-foot-height. Jet aircraft produced noise levels of 73 to 74 dBA. The 10-minute L_{eq} measured at ST-3 was 65 dBA at five feet high and 67 dBA at 24 feet high.

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

Noise Measurement Location	Date, Time	Height, ft	Measured Noise Level, dBA					
			L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
ST-1: western façade of proposed building	7/19/2023, 11:00-11:10	5	78	75	68	66	63	67
		24	78	76	73	70	68	71
ST-2: southern façade of proposed building	7/19/2023, 11:20-11:30	5	72	71	67	64	61	65
		24	73	72	70	67	65	68
ST-3: eastern façade of proposed building	7/19/2023, 11:40-11:50	5	73	72	67	64	61	65
		24	74	72	69	67	65	67

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 residential land uses.

- The City's acceptable exterior noise level standard is 65 dBA DNL or less for the proposed outdoor parks.

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

- The Cal Green Code standards specify an interior noise environment attributable to exterior sources not to exceed an hourly equivalent noise level ($L_{eq\ (1\text{-}hr)}$) of 50 dBA in occupied areas of nonresidential uses during any hour of operation.

The future noise environment at the site would continue to result primarily from vehicular traffic along SR 87 and local roadways. To estimate the future noise environment at the project site, the future noise level increase was estimated using the *Envision San José 2040 General Plan Comprehensive Update EIR*, which showed the traffic noise level increase along SR 87 to be up to 1 dBA DNL. At 75 feet from the centerline of the nearest through lane along SR 87, the future buildout noise levels would be 75 dBA DNL. Assuming worst-case conditions, a future noise level increase at the project site would be 1 dBA DNL.

Future Exterior Noise Environment

The site plan shows a ground-level dog run, a second-floor outdoor amenity area, a third-floor pool area, and common use patios on the 10th, 11th, 13th, 14th, 16th, 17th, and 18th floors. While the dog run would be treated as a neighborhood park, the remaining outdoor use areas would be associated with the residential component of the proposed project. This site plan does not show outdoor use areas associated with the ground-floor retail uses.

Neighborhood Park Uses

Recent noise measurements made at the adjoining site to the north included short-term measurements at 5 and 24 feet to estimate the attenuation at the ground level. Along the western side of the project site, noise levels would be about 4 dBA lower at the ground level. Therefore, future exterior noise levels at the dog run would be 64 dBA DNL. This meets the City's 65 dBA DNL threshold for neighborhood parks. Therefore, this proposed use would be compatible with the future noise environment at the site.

Residential Land Uses

The second-floor outdoor amenity is located along the eastern façade, facing Terraine Street. This outdoor use area would be well shielded from SR 87 by the proposed building. The center of the outdoor amenity would be approximately 65 feet from the centerline Terraine Street. The elevation of the second-floor outdoor amenity relative to the roadway below would provide partial shielding from the traffic noise along Terraine Street. With the partial shielding provided by the building itself, future exterior noise levels at the center of the outdoor space, which is where the majority of the extended outdoor use would occur, would be below 60 dBA DNL.

The third-floor pool area is located along the western façade, facing SR 87, with the center set back approximately 250 feet from the centerline of the nearest through lane. The building would partially shield the pool area on north and south sides. At this distance and assuming no attenuation, future exterior noise levels would be 67 dBA DNL.

Common-use outdoor decks facing SR 87 are located on floors 10, 11, 13, 14, 16, 17, and 18. The centers of these decks range from 195 to 305 feet from the centerline of the nearest through lane along SR 87. Assuming a three-foot ledge or railing, the elevation of each of these decks above SR-87 would provide partial shielding. With the centers of each deck being approximately 10 feet from the edge of the decks and receptors being the standard five feet tall, the elevation would provide a minimum 12 dBA attenuation for each deck facing SR 87. Therefore, the future exterior noise levels at the common use decks along the western façade of the proposed building would be at or below 60 dBA DNL.

Common-use outdoor decks facing Terraine Street are located on floors 10, 11, 13, 14, 16, 17, and 18. The centers of these decks range from 40 to 100 feet from the centerline of Terraine Street. Additionally, the elevation of each of these decks above the ground would provide partial shielding. With the centers of each deck being approximately 10 feet from the edge of the decks, the elevation would provide a minimum 15 dBA attenuation for each deck facing Terraine Street. Therefore, the future exterior noise levels at the common use decks along the eastern façade of the proposed building would be below 60 dBA DNL.

The future exterior noise levels at the centers of each common use deck on floors 10 through 18 and at the second-floor outdoor amenity would meet the City's exterior noise threshold of 60 dBA DNL for residential uses. The third-floor pool area would exceed the City's normally acceptable thresholds for residential uses.

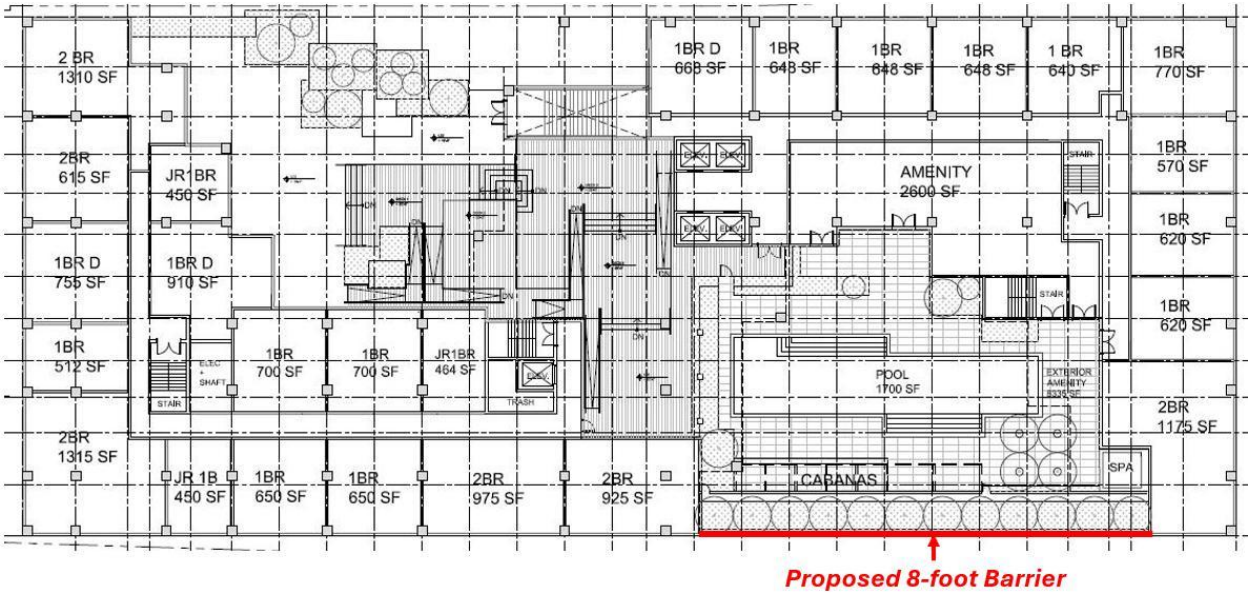
Recommended Measures to Reduce Exterior Noise Levels

Methods available to reduce exterior noise levels at the residential pool area would include site planning alternatives (e.g., using the proposed buildings as noise barriers), the construction of traditional noise barriers, or a combination of the above. The optimal method for the existing site plan would be constructing a noise barrier along the western edge of the outdoor space, as shown in Figure 2.

The proposed barrier would be continuous from grade to top, with no cracks or gaps, and have a minimum surface density of three lbs/ft^2 (e.g., one-inch nominal thickness fence boards, ½-inch laminated glass, concrete masonry units (CMU)). As shown in Figure 2, the barrier shall connect to the building on both ends. To reduce future exterior noise levels by at least 7 dBA, a minimum barrier height of 8 feet would be required for reducing noise levels to 60 dBA DNL or less. The barrier height shall be measured relative to the elevation of the pool deck.

Final design recommendations shall be made when building designs have been finalized. An acoustical consultant shall be retained to review the final site plan and provide recommendations to reduce future exterior noise levels.

FIGURE 2 Recommended Location for the 8-foot Barrier



Future Interior Noise Environment

Residential Land Uses

Standard residential construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation. Standard construction with the windows 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 smaller window and door sizes as a percentage of the total building façade facing the noise source, 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 proposed building would include residential units on floors two through 18. The units located along the western façade would have direct exposure to traffic noise from SR 87. These units would be set back approximately 180 to 220 feet from the centerline of the nearest through lane, and at these distances, the units located along the western building façade would be exposed to future exterior noise levels ranging from 68 to 70 dBA DNL. Assuming windows to be partially open for ventilation, future interior noise levels would be up to 55 dBA DNL at the residential interiors.

While units located along the eastern façade would be mostly shielded from SR 87, they would have direct exposure to traffic noise along Terraine Street, with setbacks of approximately 35 feet from the centerline. At this distance, units along the eastern façade would be exposed to future exterior noise levels up to 69 dBA DNL. Assuming windows to be partially open for ventilation, future interior noise levels would be up to 54 dBA DNL at the residential interiors.

The upper floors along each façade would be exposed to future exterior noise levels lower than those stated above, decreasing by about 1 dBA DNL every two floors.

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.

Commercial Land Uses

Ground-level commercial retail uses are proposed as part of the project and would be located along the eastern and southern façades. Additionally, the existing commercial building would be renovated to include ground-level retail uses and maintain offices on floors two through six. The commercial uses would be set back approximately 220 to 360 feet from the centerline of the nearest through lane of SR 87 and approximately 35 to 175 feet from the centerline of Terraine Street. At these distances, the future hourly average noise levels during daytime hours of operation would be up to 70 dBA L_{eq}, with day-night average noise levels up to 69 dBA DNL.

Standard construction materials for commercial uses would provide about 25 dBA of noise reduction in interior spaces. The inclusion of adequate forced-air mechanical ventilation systems

is normally required so that windows may be kept closed at the occupant's discretion and would provide an additional 5 dBA reduction. The standard construction materials in combination with forced-air mechanical ventilation would satisfy the daytime threshold of 50 dBA $L_{eq(1\text{-}hr)}$.

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 residential interiors:

- Provide a suitable form of forced-air mechanical ventilation, as determined by the local building official, for all residential units at the project site 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 residential units located along the western façade would require windows and doors with a minimum rating of 35 STC with adequate forced-air mechanical ventilation to meet the interior noise threshold of 45 dBA DNL.

- Preliminary calculations indicate that residential units located along the eastern façade would require windows and doors with a minimum rating of 35 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 residential uses.

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 residential units and to 50 dBA $L_{eq(1\text{-}hr)}$ or lower within commercial interiors. 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) 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.

Impact 1a: **Temporary Construction Noise.** Construction of the proposed project would expose existing residential land uses located within 500 feet and existing commercial uses within 200 feet of the project site to a temporary increase in noise levels for a period of more than one year. With the incorporation of the City's Standard Permit Condition as a project condition of approval, this would be a **less-than-significant** impact.

The construction schedule assumed that the earliest possible start date would be early January 2026, and the project is expected to be completed by the end of August 2028 (approximate 32-month period). Construction phases would include demolition, site preparation, grading/excavation, trenching/foundation, building superstructure, building cores and elevators, and sitework. 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.

The project proposes construction work hours from 7:00 a.m. to 10:00 p.m. Monday through Friday and from 7:00 a.m. to 7:00 p.m. on Saturdays. The proposed hours extend beyond the City's allowable construction hours (7:00 a.m. to 7:00 p.m. Monday through Friday) and would require a permit from the City.

The City of San José does not establish noise level thresholds for construction activities. The Federal Transit Administration (FTA) thresholds are used in this analysis to establish acceptable noise levels for temporary construction work. The FTA identifies construction noise limits in the *Transit Noise and Vibration Impact Assessment Manual*.[5] During daytime hours, an exterior threshold of 80 dBA L_{eq} shall be enforced at residential land uses and 85 dBA L_{eq} shall be enforced at commercial uses.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. 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. 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 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

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

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/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 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 residential 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 results in lower construction noise levels at distant receptors.

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 Construction Noise Levels for the Proposed Project at a Distance of 50 feet

Phase of Construction	Total Number of Workdays	Construction Equipment (Quantity)	Estimated Construction Noise Level at 50 feet, dBA L_{eq}
Demolition	6	Concrete/Industrial Saw (1)[a] Excavator (1)[a] Rubber-Tired Dozer (1) Tractor/Loader/Backhoe (1)[a]	85
Site Preparation	65	Grader (1)[a] Rubber-Tired Dozer (1) Tractor/Loader/Backhoe (2)[a]	84
Grading/Excavation	140	Excavator (2) Grader (1)[a] Rubber-Tired Dozer (1) Concrete/Industrial Saw (2)[a] Tractor/Loader/Backhoe (1)	85
Trenching/ Foundation	30	Tractor/Loader/Backhoe (1) [a] Excavator (1)[a] Crane (2) Cement & Mortar Mixer (6)	82
Building – Superstructure/ Exterior	380	Crane (2) a Forklift (2) Aerial Lift (5) Cement & Mortar Mixer (6)[a]	77
Building – Cores/ Elevators	304	Industrial Saw (2) [a] Aerial Lift (5)[a]	83
Sitework	50	Cement & Mortar Mixer (6) Paving Equipment (8)[a] Roller (1) Tractor/Loader/Backhoe (1)[a]	84

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

To assess construction noise impacts at the receiving property lines of existing noise-sensitive receptors, the worst-case hourly average noise level, which is calculated by combining all pieces of equipment per phase, was propagated from the geometrical center of the nearest project site parcel to the nearest property lines 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 8 Construction Noise Levels for the Proposed Project at the Receiving Property Lines in the Project Vicinity

Phase of Construction	Calculated Hourly Average Noise Levels, L_{eq} (dBA)				
	North Fut. Mixed-Use (200ft)	East Res. (120ft)	South Comm. (390ft)	SE Res. (410ft)	West Off. (640ft)
Demolition	74	78	68	68	64
Site Preparation	74	78	68	68	64
Grading/Excavation	77	81	71	70	67
Trenching/Foundation	74	78	68	67	64
Building – Superstructure/Exterior	72	77	66	66	62
Building – Cores/ Elevators	74	78	68	68	64
Sitework	80	85	75	74	70

Construction noise levels would intermittently range from 77 to 85 dBA L_{eq} when activities occur 50 feet from nearby receptors (see Table 7). When focused near the center of the project site (see Table 8), construction noise levels would typically range from 66 to 85 dBA L_{eq} at the surrounding residential land uses and would typically range from 62 to 80 dBA L_{eq} at the surrounding commercial and offices uses. While these noise levels would potentially exceed the FTA's threshold of 80 dBA L_{eq} for residential uses, the FTA threshold for commercial uses would not be exceeded.

The project site is located within 500 feet of existing residential uses and within 200 feet of existing nonresidential uses. Since total project construction is expected to last for a period of more than one year, the City of San José's Standard Permit Conditions for Construction-Related Noise, which provides a list of noise minimization measures to be incorporated into construction projects within the City, would be incorporated into the proposed project as a condition of approval. These measures include, but are not limited to, the following:

- Limit construction to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday for any on-site or off-site work within 500 feet of any residential unit. Construction outside of these hours may be approved through a development permit based on a site-specific "construction noise mitigation plan" and a finding by the Director of Planning, Building and Code Enforcement that the construction noise mitigation plan is adequate to prevent noise disturbance of affected residential uses.

- Construct solid plywood fences around ground level construction sites adjacent to operational businesses, residences, or other noise-sensitive land uses.

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

- Prohibit unnecessary idling of internal combustion engines.

- 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.

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

- 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.

- If complaints are received or excessive noise levels cannot be reduced using the measures above, erect a temporary noise control blanket barrier along surrounding building facades that face the construction sites.

- 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 shall 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.

Implementation of the above Standard Permit Condition measures as project conditions of approval would reduce construction noise levels emanating from the site, limit construction hours, and minimize disruption and annoyance. With the implementation of these measures and recognizing that noise generated by construction activities would occur over a temporary period, the impact would be less-than-significant.

Mitigation Measure 1a: No further mitigation required.

Impact 1b: Permanent Noise Level Increase/Exceed Applicable Standards. The proposed project would not result in a substantial permanent noise level increase at the noise-sensitive receptors in the project vicinity. Operational noise levels generated by the proposed project would not exceed applicable standards established by the City of San José. 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. While the initial tower would include residential uses, the future project would also include an office tower. Therefore, Policies EC-1.3 and EC-1.6 shall be applied to the proposed project.

The City's General Plan does not include thresholds for equipment noise generated at residential buildings or noise thresholds at receiving office land uses; 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 uses. Additionally, the Municipal Code includes a noise limit of 60 dBA on receiving nonresidential uses when generated at residential or commercial/office uses.

Project Traffic Increase

The traffic study included peak hour turning movements for the existing traffic volumes and project trips at six intersections in the vicinity of the project site. The project trips were added to the existing traffic volumes to generate the existing plus project scenario. By comparing the existing plus project traffic scenarios to the existing scenario, the total contribution of both project stages to the overall noise level increase was determined to be 1 dBA DNL or less along each 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 Noise Level Increases of Existing Plus Project Traffic Volumes Over Existing Volumes at Receptors in the Project Vicinity

Roadway	Segment	Noise Level Increase, dBA DNL
Market Street/ Coleman Avenue	North of Julian Street	0
	Julian Street to West St. James Street	1
	South of West St. James Street	0
Terraine Street	North of Julian Street	0
	Julian Street to West St. James Street	1
	South of West St. James Street	0
Notre Dame Avenue	South of Julian Street/St. James Street	0
Almaden Boulevard	South of Julian Street	0
Julian Street	East of Market Street	0
	Market Street to Terraine Street	0
	Notre Dame Avenue to Almaden Boulevard	0
	West of Almaden Boulevard	0
St. James Street	East of Market Street	0

Roadway	Segment	Noise Level Increase, dBA DNL
	Market Street to Terraine Street	0
	Terraine Street to Notre Dame Avenue	0

Mechanical Equipment

The proposed project would include two 1,000-kW generators and a fire pump located below grade and cooling tower cells, exhaust fans, stair pressurization fans, and heat pump packaged units located on the ground and rooftop levels.

The emergency generators will be located on the basement level B3, while the fire pump will be located in B4. The underground location would protect the surrounding receptors from noise produced by the emergency generators and fire pump. Therefore, monthly testing of the emergency generators would not generate noise levels exceeding the City's General Plan threshold of 55 dBA DNL at the surrounding future and existing residential uses. Additionally, operation of the fire pump and testing of the emergency generators would not generate noise levels exceeding the City's Municipal Code thresholds at the surrounding commercial and office uses. For all existing receptors in the project vicinity, the noise level increase produced from the below-grade equipment would not be measurable or detectable (i.e., 0 dBA DNL increase).

The cooling tower cells will be located within the first floor of the proposed building, along the western façade. The proposed building would adequately shield the surrounding noise-sensitive receptors from noise generated by the cooling tower cells. The cooling tower cells at the proposed building would not generate noise levels exceeding the City's General Plan threshold of 55 dBA DNL at the surrounding future and existing residential uses or the City's Municipal Code thresholds at the surrounding commercial and office uses. For all existing receptors in the project vicinity, the noise level increase produced from the cooling towers would not be measurable or detectable (i.e., 0 dBA DNL increase).

The exhaust fans, stair pressurization fans, and heat pump packaged units would be located on the rooftop of the proposed building. When operating at full speed, noise levels from fans would be up to 76 dBA at a distance of 5 feet and up to 65 dBA at 5 feet when operating at 35% speed; however, fans typically operate at speeds below 35% at mixed-use buildings, which would generate noise levels even lower. Residential heat pump units typically generate noise levels ranging from 53 to 63 dBA at 3 feet. The roof plan shows multiple units located in the northwest corner and in the southeast corner of the proposed building. The northwest corner shows two stair fans, a smoke fan, a trash fan, and two areas for ventilation units, and the southeast corner shows a stair fan, a corridor fan, and one area for ventilation units. Assuming all equipment would cycle on and off over a 24-hour period, the combined source levels for the equipment in the northwest corner would range from 72 to 82 dBA, assuming up to three total ventilation units operating in each ventilation area. The combined source levels for the equipment in the southeast corner would range from 69 to 79 dBA, assuming up to three total ventilation units operating in the ventilation area.

The future mixed-use building to the north would be 14-stories tall, while the east existing residential, south commercial, and west office buildings are two to six stories tall. Due to the height

of the rooftop equipment above these receptors, a minimum attenuation of 20 dBA would apply to these receptors. The existing residential building to the southeast would be about the same height as the proposed building. Conservatively, no attenuation is assumed for this building.

Table 10 summarizes the rooftop mechanical equipment noise levels at the surrounding receptors, with the appropriate attenuation applied.

The rooftop equipment at the proposed building would not generate noise levels exceeding the City's General Plan threshold of 55 dBA DNL at the surrounding future and existing residential uses or the City's Municipal Code thresholds at the surrounding commercial and office uses. For all existing receptors in the project vicinity, the noise level increase produced from the rooftop equipment would not be measurable or detectable (i.e., 0 dBA DNL increase).

Truck Loading and Unloading

The site plan shows truck loading and unloading activities occurring within the building on the ground level in the entrance of the northwest corner of the proposed building. All loading activities would be shielded from all existing noise-sensitive uses surrounding the site. However, the future mixed-use development would be exposed to truck maneuvering activities at the proposed project site. It should be noted that the portion of the future mixed-use development facing the truck loading and unloading area would be a parking garage initially and later converted to an office building. Therefore, the receptors that would be exposed to truck loading and unloading activities at the project site would be office receptors, not residential receptors.

Trucks maneuvering would generate 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. Medium moving trucks, which would be expected for residential buildings and small commercial uses, typically generate maximum instantaneous noise levels of 60 to 65 dBA at a distance of 50 feet. The noise level of backup alarms can vary depending on the type and directivity of the sound, but maximum noise levels are typically in the range of 65 to 75 dBA at a distance of 50 feet. Assuming maneuvering activities for one truck would take up to five minutes in a given hour, hourly average noise levels would be up to 54 dBA L_{eq} at 50 feet for one medium truck per hour. Assuming all truck deliveries to occur during daytime hours between 7:00 a.m. and 10:00 p.m. and a maximum of two deliveries in a 24-hour period, the day-night average noise level would be 43 dBA DNL at 50 feet.

The future north mixed-use property line would be about 90 feet from the center of the loading area. The proposed building would provide a minimum 5 dBA attenuation due to the building façade. Assuming this conservative attenuation, the future north mixed-use development would be exposed to hourly average noise levels of 44 dBA L_{eq} and a day-night average noise level of 33 dBA DNL.

TABLE 10 Estimated Operational Noise Levels for the Rooftop Equipment

Receptor	Northwest Equipment		Southeast Equipment		Combined Levels		
	Distance from Center of Equipment Area, feet	Hourly L_{eq}, dBA	Distance from Center of Equipment Area, feet	Hourly L_{eq}, dBA	Hourly L_{eq}, dBA	DNL, dBA	Noise Level Increase, dBA DNL
North Future Residences	100	26 to 36[a]	310	<20 to 23[a]	27 to 37[a]	43[a]	N/A[b]
East Residences	160	22 to 32[a]	110	22 to 32[a]	25 to 35[a]	42[a]	0
South Commercial	675	< 20 to 20[a]	450	< 20 to 20[a]	< 20 to 23[a]	29[a]	0
Southeast Residences	575	31 to 41	365	32 to 42	35 to 45	51	0
West Offices	575	<20 to 21[a]	715	<20[a]	<20 to 22[a]	29[a]	0

[a] A conservative 20 dBA reduction was applied to the noise levels due to the elevation of the equipment above the surrounding receptors.
[b] The future mixed-use development would not be exposed to a noise level increase since the receptors do not currently exist.

Therefore, truck loading and unloading at the proposed building would not generate noise levels exceeding the City's General Plan threshold of 55 dBA DNL at the surrounding future and existing residential uses or the City's Municipal Code thresholds at the surrounding commercial and office uses. For all existing receptors in the project vicinity, the noise level increase produced from the truck loading and unloading activities would not be measurable or detectable (i.e., 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 result in an increase of 1 dBA DNL or less at all existing noise-sensitive receptors surrounding the project site. Therefore, the proposed project would not result in a substantial increase over existing ambient noise levels in the project vicinity.

Operational noise levels produced at the proposed project would not exceed 55 dBA DNL at the nearest residential receptors. Additionally, the proposed project would not exceed the City's Municipal Code noise limit of 60 dBA DNL at the property line of the surrounding commercial and office uses. Therefore, this would be a less-than-significant impact.

Mitigation Measure 1b: None required.

Impact 2: Exposure to Excessive Groundborne Vibration. Construction-related vibration levels are not expected to exceed applicable vibration thresholds at nearby sensitive land uses. **This is a less-than-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.

The City's Historic Resource Inventory[6] was reviewed to identify historical structures in the project vicinity. Figure 3 shows the project site, with respect to the historical inventory map. Several of the buildings identified as historical in the City's inventory are recently constructed buildings. The residential buildings east and southeast of the project site appear to have been built within the last 20 years and therefore would not be considered historical structures. For purposes of this analysis, the buildings considered historical would include the commercial building south of the project site and law office building located at the corner of Devine Street and Element Road.

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

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

designed to provide the ultimate level of protection for existing buildings in San José. 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.

FIGURE 3 Nearby Historical Buildings Surrounding the Project Site

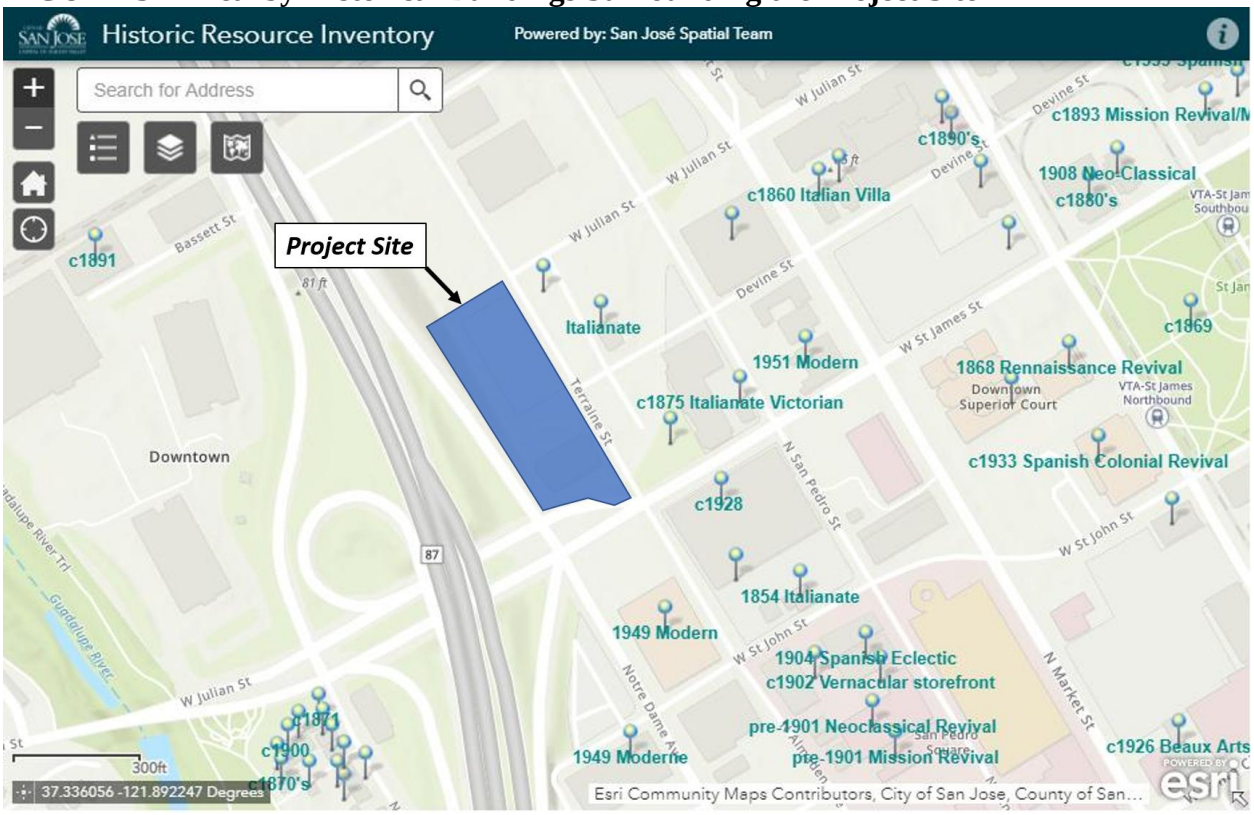


TABLE 11 Vibration Source Levels for Construction Equipment

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	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, September 2018, as modified by Illingworth & Rodkin, Inc., February 2021.

The nearest building of normal conventional construction would be the residential building east of the project site (approximately 40 feet from the eastern boundary of the project boundary). This building would not be exposed to vibration levels exceeding 0.2 in/sec PPV.

The existing on-site commercial building, which shall be renovated as part of project construction would be exposed to vibration levels exceeding 0.2 in/sec PPV; however, it is expected that any damage to this building caused by project construction would be repaired as part of the project. Being an on-site receptor, exposure to excessive vibration levels would not be considered a significant impact. Therefore, the buildings designated as historical are the focus of this study.

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 are different than the distances used to propagate construction noise levels (shown in Table 8). Table 12 summarizes the construction vibration levels estimated at the nearest façades of the surrounding off-site buildings based on distances measured from the nearest project boundary.

TABLE 12 Vibration Source Levels for Construction Equipment

Equipment		PPV (in/sec)				
		East Res. (40ft)	SE Res. (130ft)	East Historical Law Office (125ft)	South Historical Comm. (240ft)	NE Res. (60ft)
Clam shovel drop		0.120	0.033	0.034	0.017	0.077
Hydromill (slurry wall)	in soil	0.005	0.001	0.001	0.001	0.003
	in rock	0.01	0.003	0.003	0.001	0.006
Vibratory Roller		0.125	0.034	0.036	0.017	0.080
Hoe Ram		0.053	0.015	0.015	0.007	0.034
Large bulldozer		0.053	0.015	0.015	0.007	0.034
Caisson drilling		0.053	0.015	0.015	0.007	0.034
Loaded trucks		0.045	0.012	0.013	0.006	0.029
Jackhammer		0.021	0.006	0.006	0.003	0.013
Small bulldozer		0.002	0.0005	0.0005	0.0002	0.001

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., February 2025.

Neither cosmetic, minor, or major damage would occur at buildings located 30 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 not generate vibration levels exceeding the General Plan threshold of 0.08 in/sec PPV at historic properties or 0.2 in/sec PPV at conventional buildings. This would be a less-than-significant impact.

Mitigation Measure 2: None required.

Impact 3: **Excessive Aircraft Noise.** The project site is located less than 2 miles from San José Mineta International Airport but the noise environment attributable to aircraft is considered normally acceptable under the Santa Clara County ALUC noise compatibility policies for residential land uses. This is a **less-than-significant** impact.

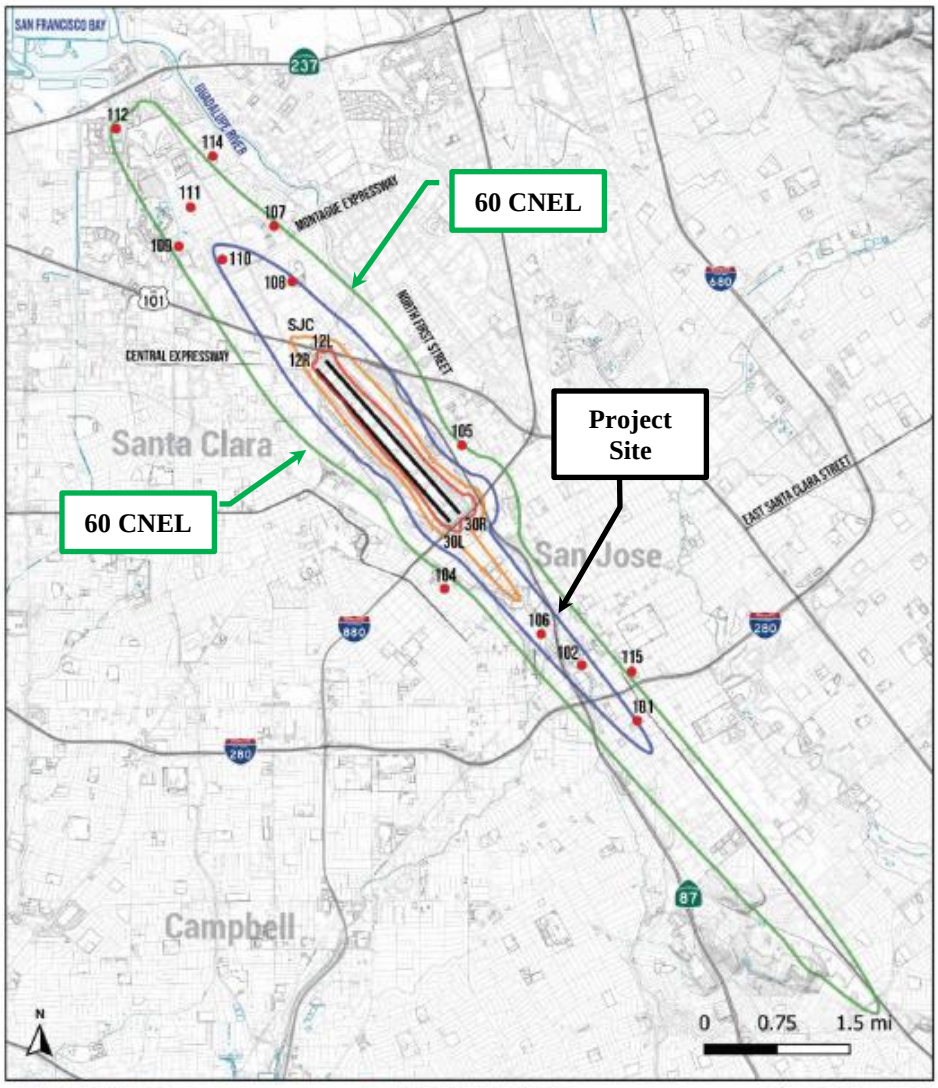
San José Mineta International Airport is a public-use airport located approximately 1.3 miles northwest of the project site. According to the City's Airport Master Plan Environmental Impact Report,[7] the project site lies between the 60 and 65 dBA CNEL/DNL contour lines (see Figure 4). The required safe and compatible threshold for exterior noise levels included in Policy EC-1.11 of

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

FIGURE 4 2037 CNEL Noise Contours for SJIA Relative to Project Site

Figure 5
Scenario 2: With Project 2037 Noise Contour Map

SAN JOSE INTERNATIONAL AIRPORT | Environmental Impact Report FINAL | October 2019



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

the City's General Plan would be at or below 65 dBA CNEL/DNL for residential land uses. Therefore, the proposed residential component of the project would be compatible with the City's exterior noise standards for aircraft noise. Assuming standard construction materials, aircraft noise ranging from 60 to 65 dBA DNL would result in future interior noise levels below 50 dBA $L_{eq(1\text{-}hr)}$ at commercial components of the project. Therefore, future interior noise within commercial components of the proposed building would also be compatible with aircraft noise. This would be a less-than-significant impact.

Mitigation Measure 3: None required.

Cumulative Impacts

Cumulative noise impacts would include cumulative traffic noise increases and temporary construction noise from cumulative construction projects. Cumulative traffic noise increases due to the proposed project was studied in the *Downtown San José Strategy Plan 2040 EIR.* Therefore, no further cumulative traffic noise increases would occur due to the proposed project.

Due to the close proximity of SR 87, noise-sensitive receptors located within 1,000 feet of the project site would be exposed to a noisy existing ambient environment. From the City's website,[8] three planned or approved projects are located within 1,000 feet of the proposed project:

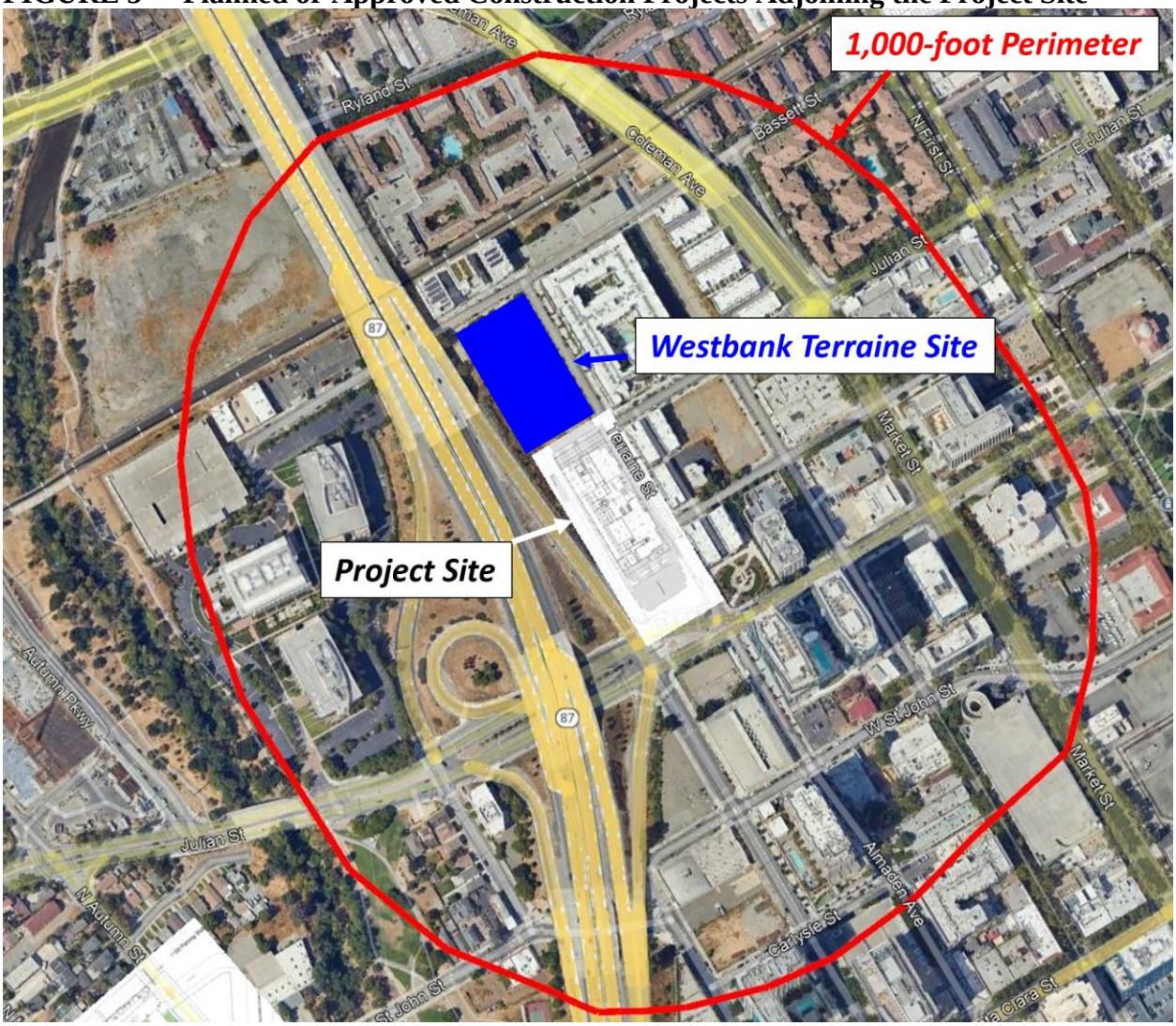
- **Westbank Terraine** – this project adjoins the Arbor Office site to the north (see Figure 5). This project includes a residential tower located on the north portion of the adjoining site and an office building on the southern portion of the site. This mixed-use development has been approved by the City of San José but is currently going through design revisions. The construction schedule for this project is unknown at this time. Cumulative construction is therefore not assumed.

- **Aviato –** located at 199 Bassett Street, this approved project would include an 18-story tower with 803 residential units and 3,800 square feet of ground-level retail. This site is 460 feet northeast of the project site, at the corner of Terraine Street and Bassett Street. The construction schedule for this project is also unknown at this time, and cumulative construction is therefore not assumed.

- **The Carlysle** – this approved project site is approximately 740 feet south of the Arbor Office site and is located at the corner of Notre Dame Avenue and Carlysle Street. This project consists of a mixed-use 21-story building with 220 residential units, 4,000 square feet of commercial space, and 70,000 square feet of office space. This project would not share noise-sensitive receptors with the Arbor Office Project.

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

FIGURE 5 Planned or Approved Construction Projects Adjoining the Project Site



The existing residential building located east of Terraine Street, between Old West Julian Street and Bassett Street, would be considered a sensitive receptor during construction activities at the Arbor Project site, the Westbank Terraine site, and the Aviato site. However, cumulative construction activities are not assumed at this time. Additionally, all of the identified project sites are located within the boundary of the *Downtown San José Strategy Plan 2040 EIR*. According to the Strategy Plan, implementation of the construction noise and vibration mitigation measures in combination with Policies EC-1.7 and EC-2.3 of the City's General Plan and the construction allowable hours identified in the City's Municipal Code would reduce construction occurring within the Plan Area to a less-than-significant impact. Each individual project includes measures to further reduce noise and vibration levels emanating from the individual sites. With the implementation of construction noise and vibration mitigation measures included in the *Downtown San José Strategy Plan 2040 EIR* and the construction noise and vibration mitigation measures from the individual projects, construction noise and vibration levels would be reduced as much as possible at all surrounding sensitive receptors during construction of each individual project. Therefore, cumulative construction impacts would be less-than-significant.

APPENDIX A

FIGURE A1 Daily Trend in Noise Levels for LT-1 on Wednesday, July 19, 2023

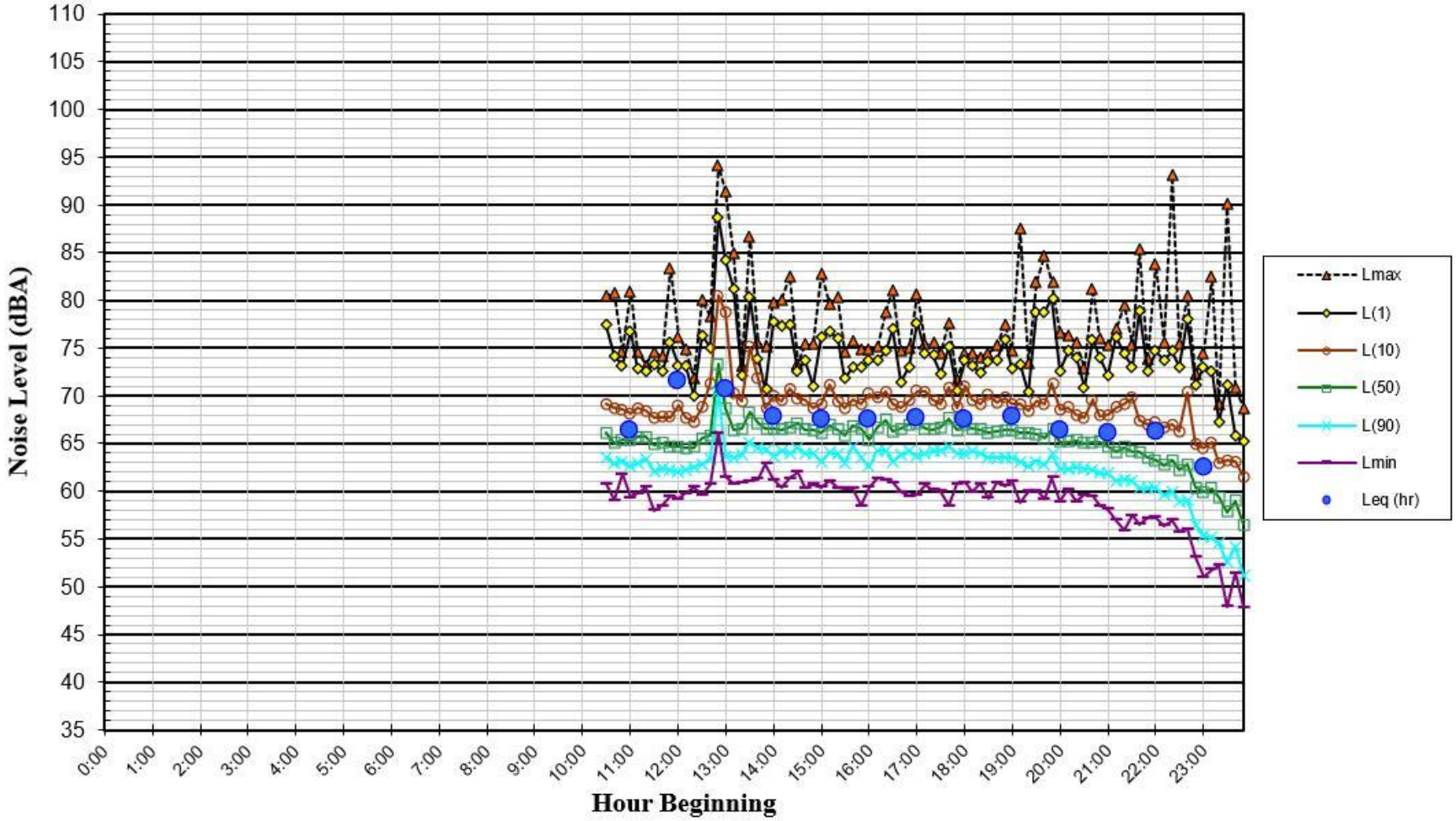


FIGURE A2 Daily Trend in Noise Levels for LT-1 on Thursday, July 20, 2023

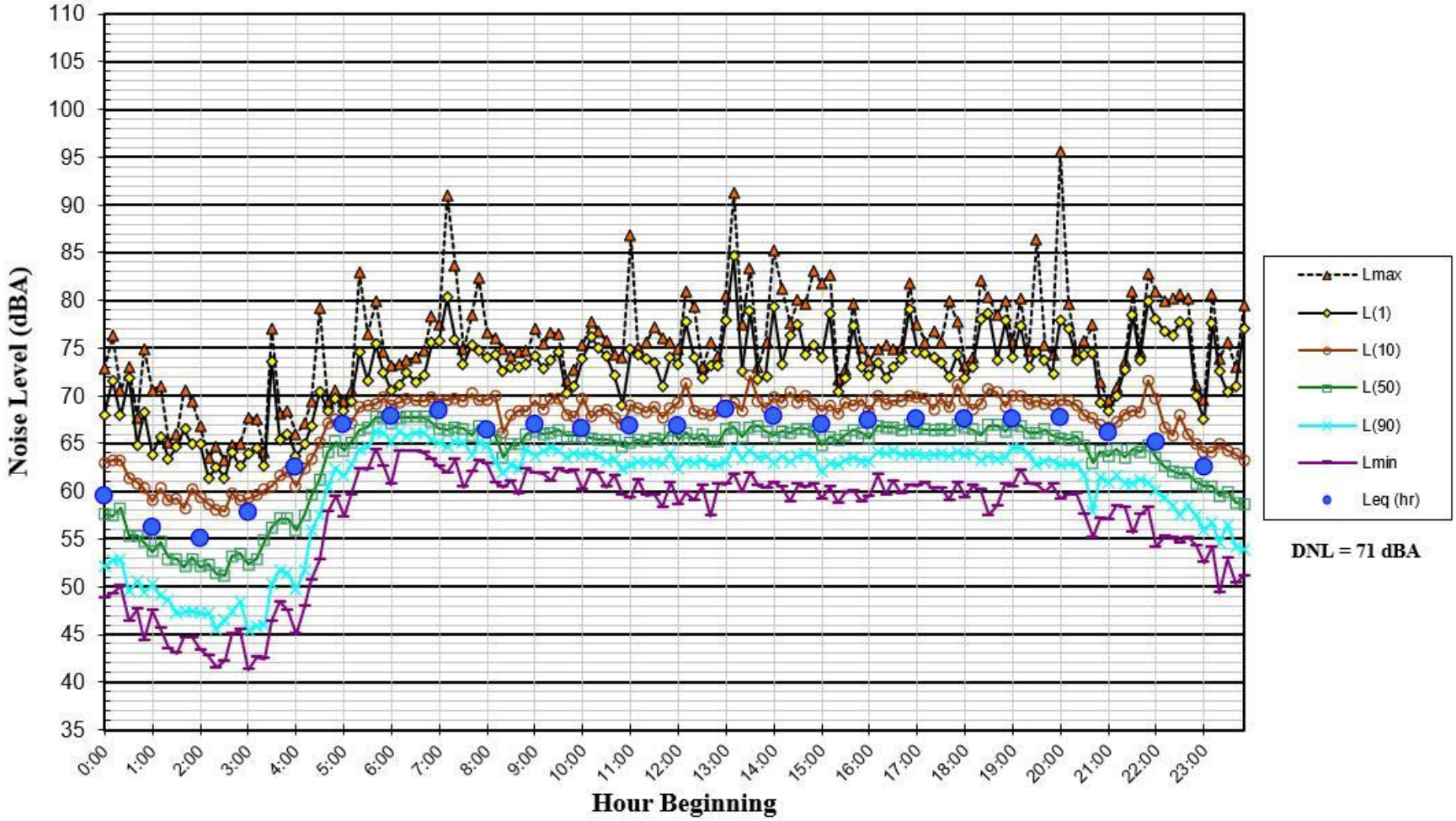


FIGURE A3 Daily Trend in Noise Levels for LT-1 on Friday, July 21, 2023

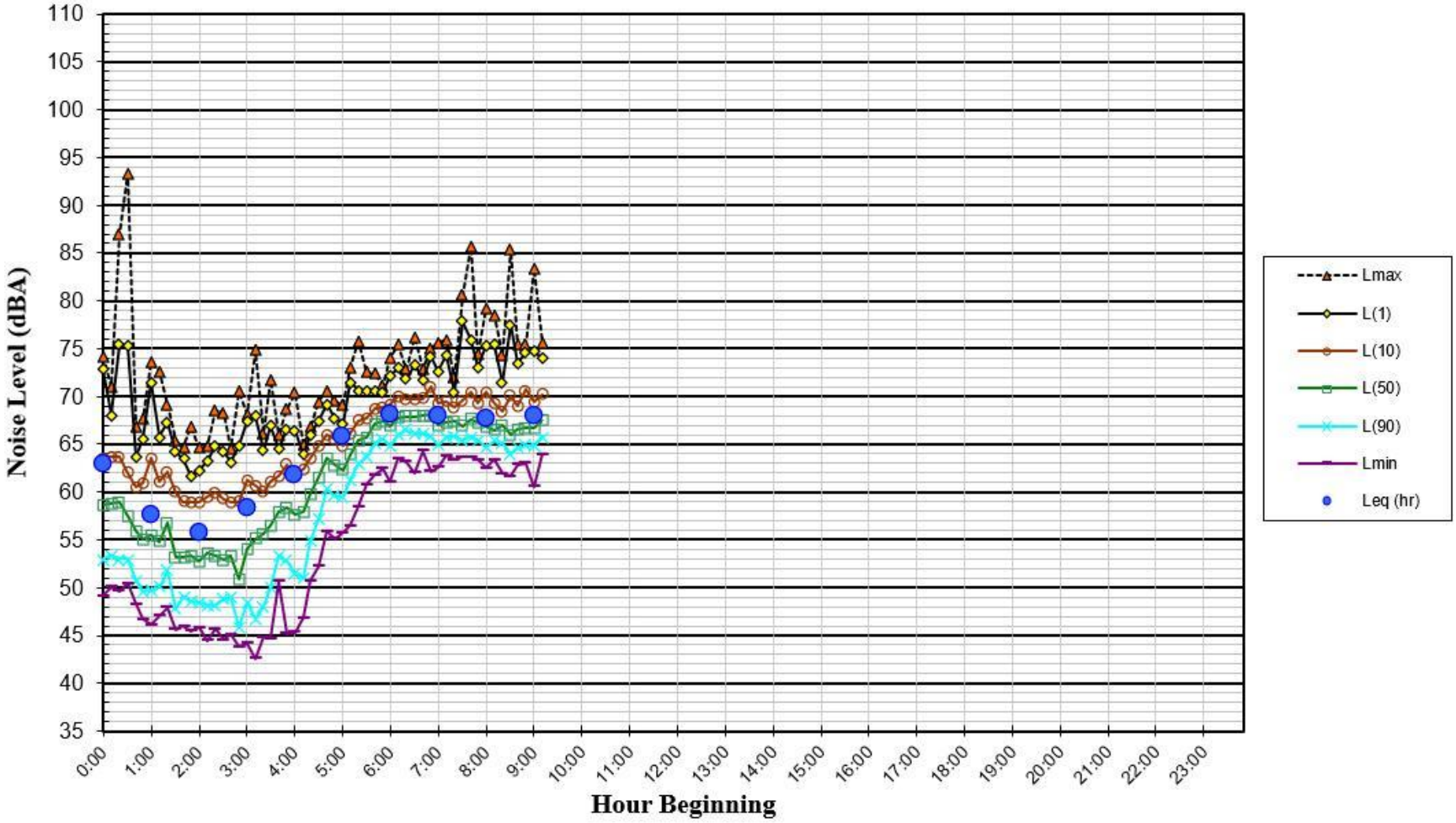


FIGURE A4 Daily Trend in Noise Levels for LT-2 on Wednesday, July 19, 2023

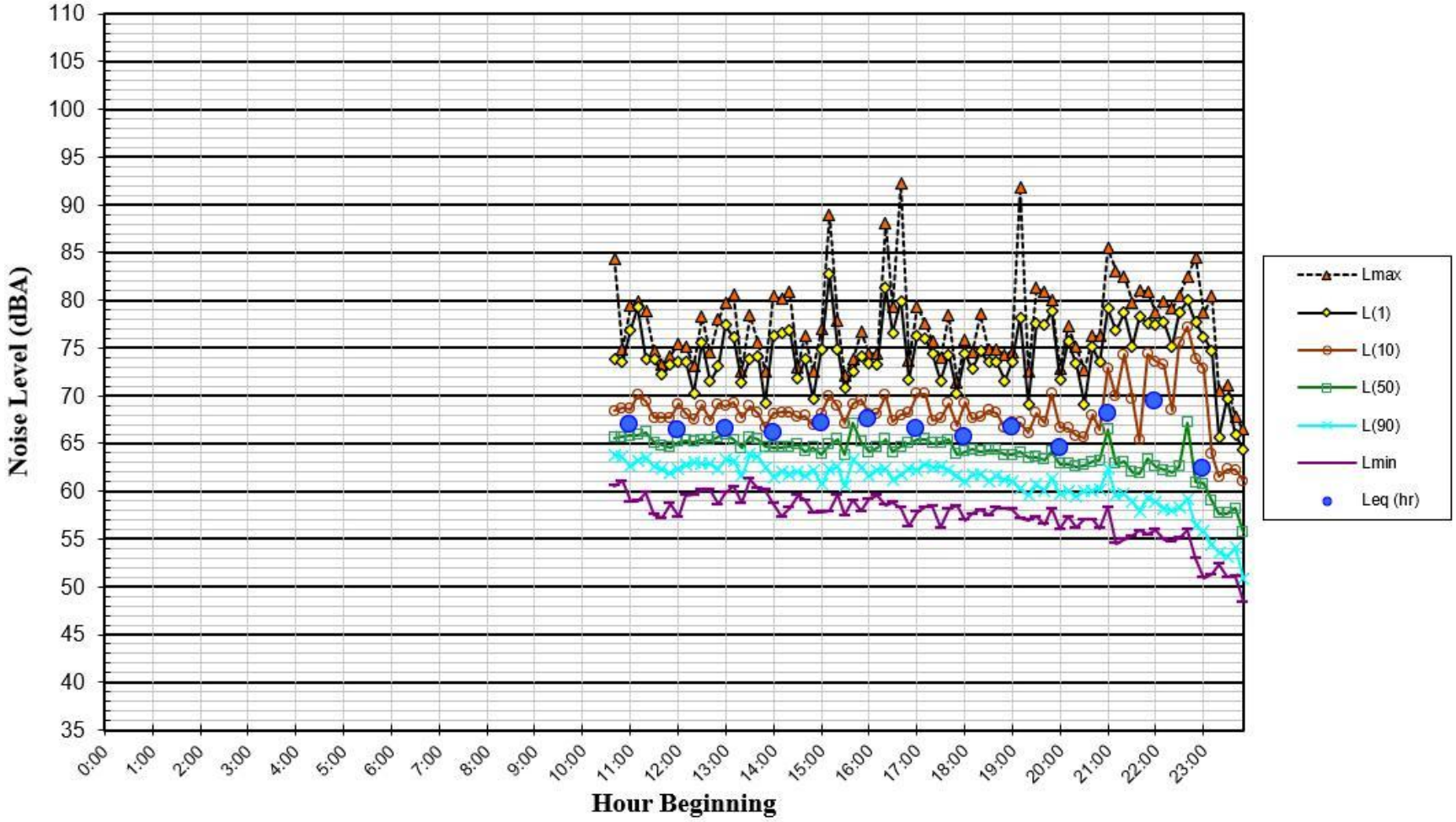


FIGURE A5 Daily Trend in Noise Levels for LT-2 on Thursday, July 20, 2023

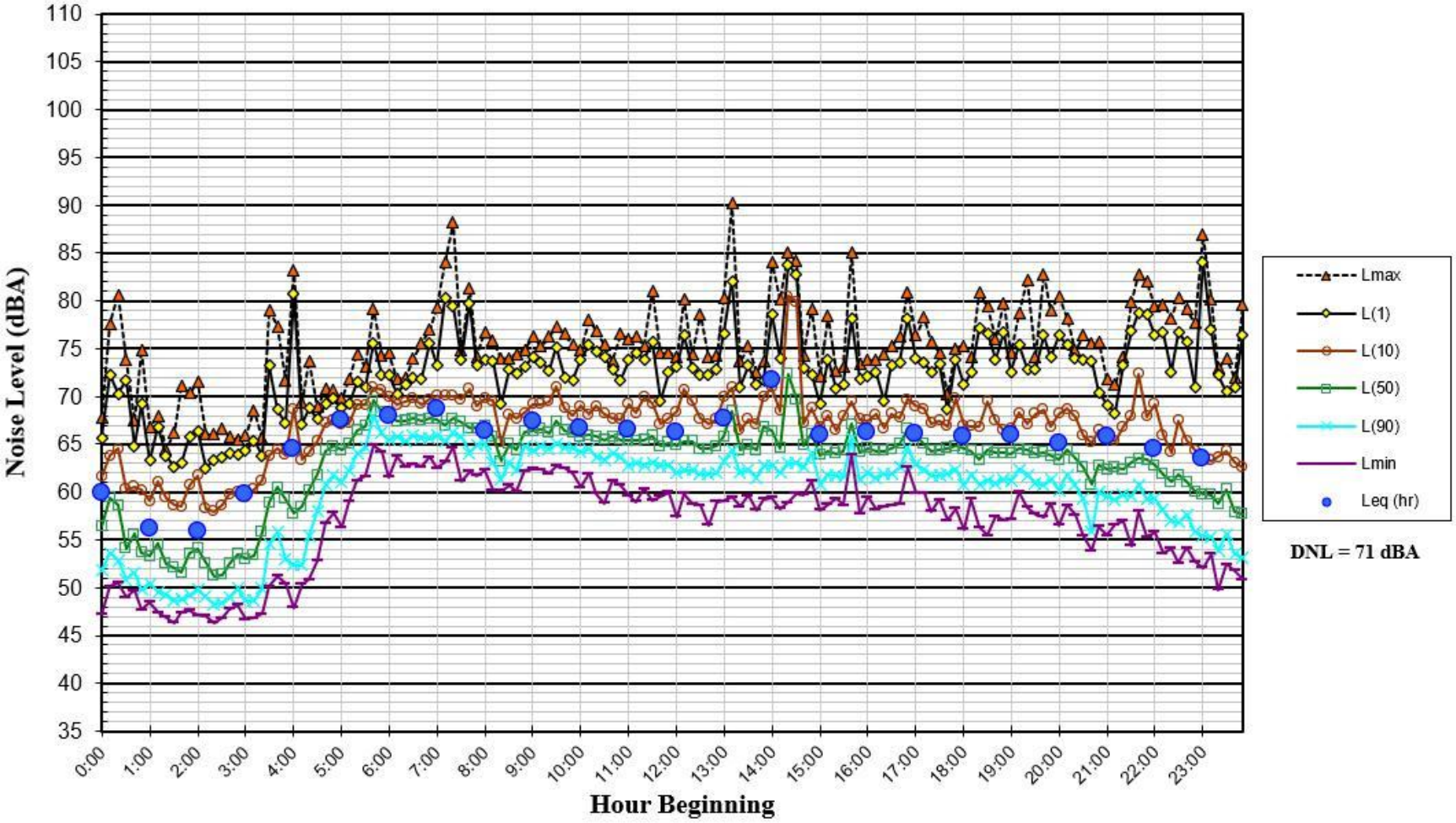


FIGURE A6 Daily Trend in Noise Levels for LT-2 on Friday, July 21, 2023

