Acoustical Assessment
Woz Way Project
City of San José, California

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LIST OF ABBREVIATED TERMS

APN	Assessor's Parcel Number
ADT	average daily traffic
ASTM	American Society for Testing and Materials
dBA	A-weighted sound level
CEQA	California Environmental Quality Act
CSMA	California Subdivision Map Act
CNEL	community equivalent noise level
L_{dn} / DNL	day-night noise level
dB	decibel
du/ac	dwelling units per acre
L_{eq}	equivalent noise level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	heating ventilation and air conditioning
Hz	hertz
in/sec	inches per second
LUD	Land Use Designation
L_{max}	maximum noise level
µPa	micropascals
L_{min}	minimum noise level
PPV	peak particle velocity
RMS	root mean square
STC	Sound Transmission Class
sf	square feet
TNM	Traffic Noise Model
VdB	vibration velocity level

1 INTRODUCTION

This report documents the results of an Acoustical Assessment completed for the Woz Way Project. The purpose of this Acoustical Assessment is to evaluate the Project's potential construction and operational noise and vibration levels associated with the Project and determine the level of impact the Project would have on the environment.

1.1 PROJECT LOCATION

The proposed Project is located on Woz Way in western San José. *Figure 1: Regional Vicinity* and *Figure 2: Project Location,* depict the Project site in a regional and local context. The Project site is currently located on 18 parcels, or approximately 3.08 acres, on Woz Way and South Almaden Boulevard in the City of San José. However, one parcel is excluded for the purposes of Air Quality Assessment Project site. Therefore, 2.93-acre site development boundary will be analyzed.

The Project site is in an area of transitional land uses from a surface parking lot to the north, single-story single-family homes and commercial uses to the east, Interstate 280 (I-280) to the south, and Guadalupe River Park and Gardens to the west. The Guadalupe River Trail and river are located along the western boundary of the Project site to the immediate west of Locust Street. Elevated sections of the I-280 and State Route 87 (SR-87) interchange are visually prominent from the project site. Currently, the Project site is developed with 17 single-family residential dwelling units. There is existing landscaping and surface light fixtures along the frontages of the single-family residences.

1.2 PROJECT DESCRIPTION

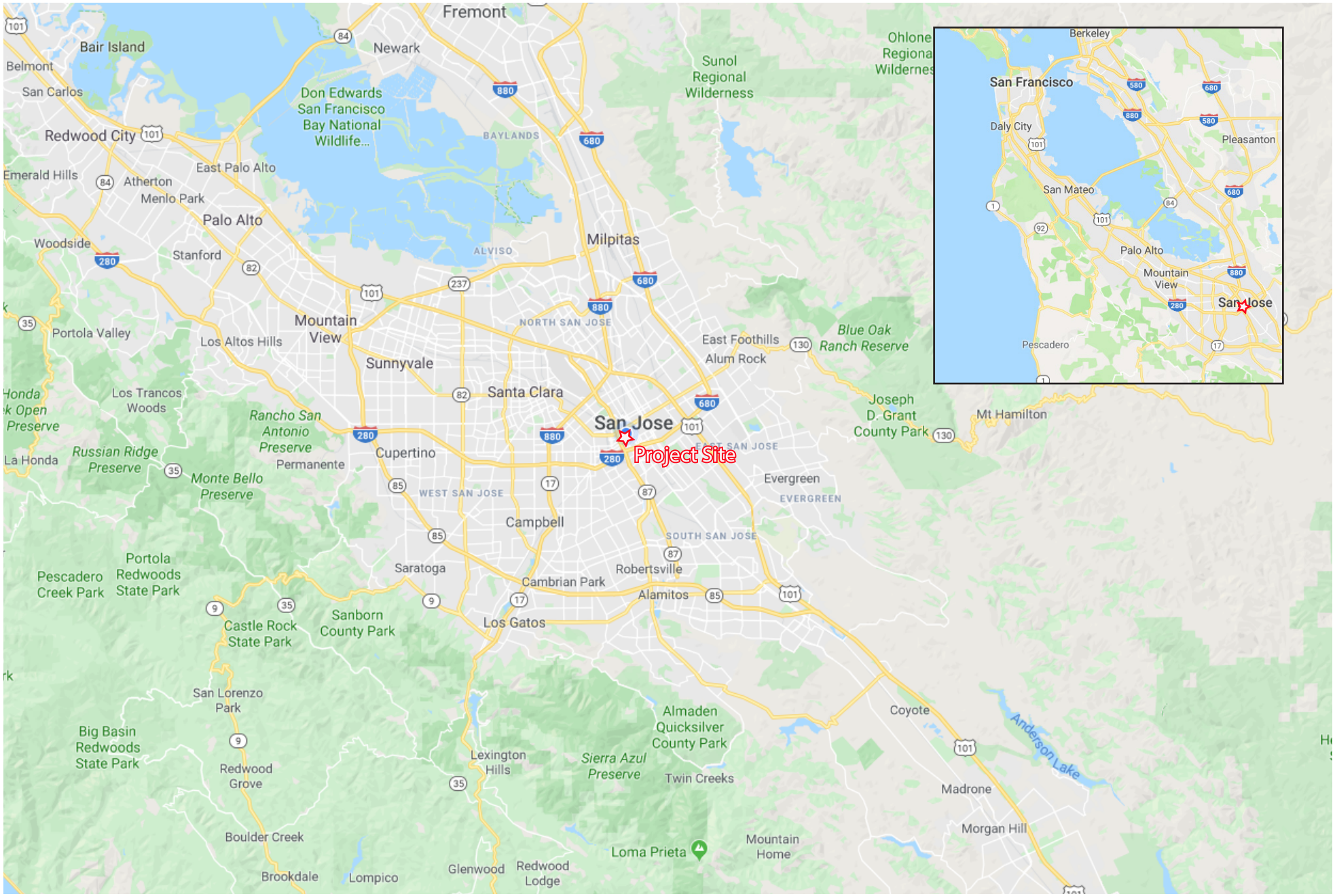
The Project site is located in an urban area with a mix of uses including commercial, office, and residential uses. The proposed Project existing zoning designation is Downtown Primary Commercial and proposed land use designation is Downtown Commercial.

The proposed Project is an infill development that maximizes the use of land in the Downtown Core Area. The Project proposes the development of two 20 story office towers with approximately 1,211,777 square feet (sf) of office space, approximately 9,748 sf of ground floor retail, and four levels of underground parking. The retail uses would provide services and amenities to visitors and residents in the surrounding area. The proposed Project also includes four levels of underground parking and four levels of on- and above- ground parking at the south tower. See *Figure 3*, *Site Plan*.

Currently, vehicle access to the project site is from Woz Way and from South Almaden Boulevard. Vehicle access is also available from the intersection of Woz Way and Locust Street. Currently, Locust Street is not a through road. The project includes an internal driveway, located between the proposed north and south towers, with ingress and egress on both Woz Way and Almaden Boulevard. The primary entrance to the north tower lobby is provided from Woz Way and also via the internal driveway. The primary entrance to the south tower lobby is provided from the internal driveway. Vehicle ingress and egress to all parking areas (Levels B1 to B4, and Levels 1 to 4) is provided via the internal driveway, on the north side of the south tower, and via a driveway on Almaden Boulevard. There is existing utility access (water, sewer, electricity, gas) to the Project site. The project site is crossed by the Guadalupe River Trail along the western boundary of the Project site. Pedestrian access to the trail is at the intersection of Woz Way and Locust Street.

In addition, the proposed Project site is located within 0.33 miles of bus routes, and 0.25 miles north-east of the Children's Discovery Museum light rail station, therefore these employment opportunities would be easily accessible via transit, furthering the City's General Plan goals to support a healthy community, reduce traffic congestion and decrease greenhouse gas emissions and energy consumption. The proposed Project would increase population and employment, thereby promoting the Downtown Strategy 2040 Final EIR goals for focused and sustainable growth, because it supports the intensification of development in an urbanized area that is currently served by existing roads, transit, utilities, and public service.

Construction is anticipated to begin in early 2021 and last approximately 31 months until summer of 2023. Construction methods would include demolition, site preparation, grading, paving, building construction, and architectural coating. Construction of the Project would be required to be consistent with the City's Best Management Practices and California Building Code.



Source: Google Earth, 2020

Figure 1: Regional Map

Woz Way Project

Not to scale

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Expect More. Experience Better.

Source: Nearmap, 2020

Figure 2: Project Vicinity Map

Woz Way Project

Not to scale

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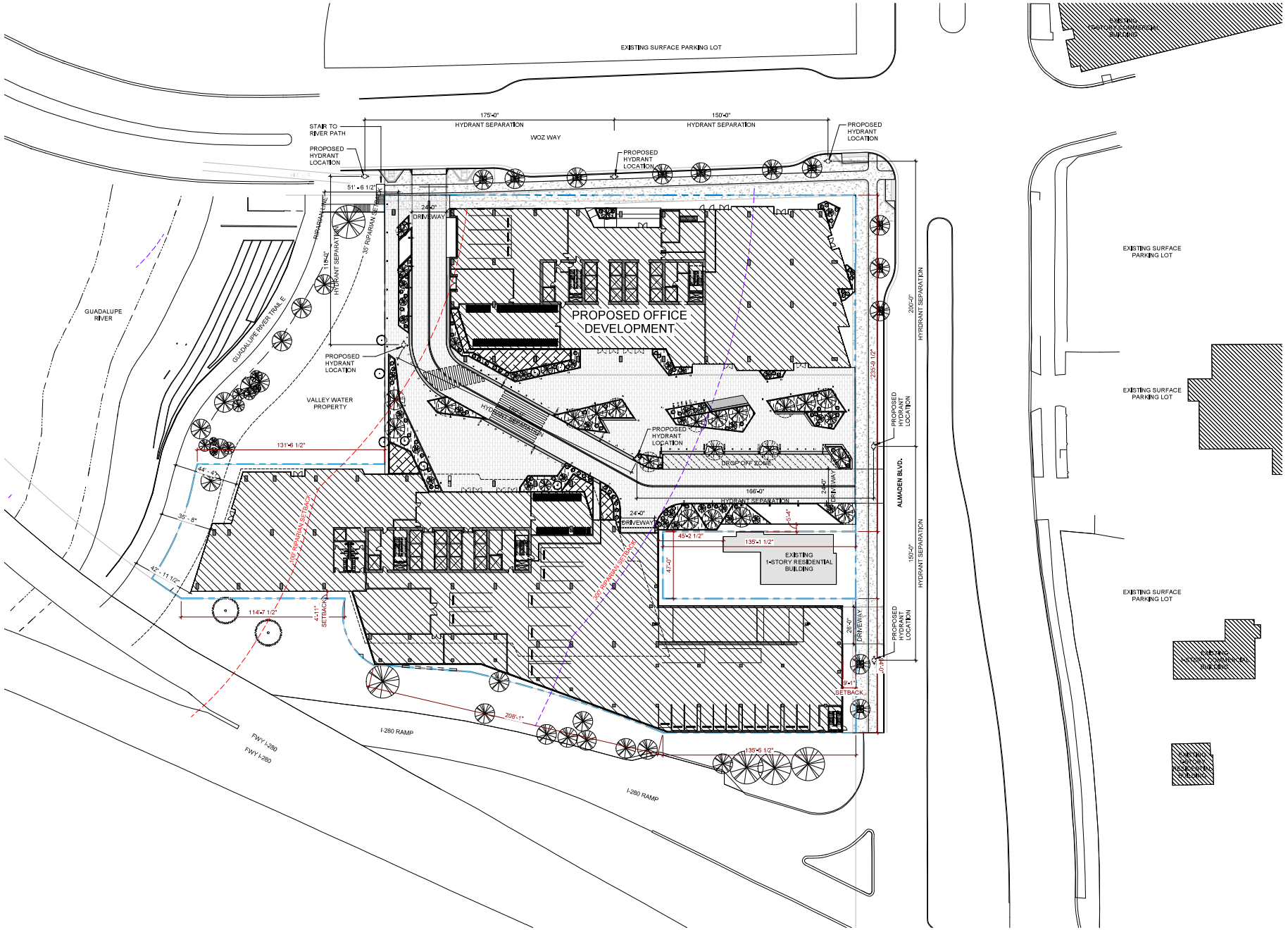

Source: C2K Architecture, 2021

Figure 3: Site Map

Woz Way Project

Not to scale

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2 ACOUSTIC FUNDAMENTALS

2.1 SOUND AND ENVIRONMENTAL NOISE

Acoustics is the science of sound. Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a medium (e.g. air) to human (or animal) ear. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or hertz (Hz).

Noise is defined as loud, unexpected, or annoying sound. The fundamental acoustics model consists of a noise source, receptor, and the propagation path between the two. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path, determine the perceived sound level and noise characteristics at the receptor. Acoustics deal primarily with the propagation and control of sound. A typical noise environment consists of ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this ambient noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micropascals (µPa) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels correspond closely to human perception of relative loudness. *Table 1: Typical Noise Levels* provides typical noise levels.

Table 1: Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	– 110 –	Rock Band
Jet fly-over at 1,000 feet		
	– 100 –	
Gas lawnmower at 3 feet		
	– 90 –	
Diesel truck at 50 feet at 50 miles per hour		Food blender at 3 feet
	– 80 –	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**– 70 –**	Vacuum cleaner at 10 feet
Commercial area		Normal Speech at 3 feet
Heavy traffic at 300 feet	**– 60 –**	
		Large business office
Quiet urban daytime	**– 50 –**	Dishwasher in next room
Quiet urban nighttime	**– 40 –**	Theater, large conference room (background)
Quiet suburban nighttime		
	– 30 –	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	– 20 –	
		Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	**– 0 –**	Lowest threshold of human hearing

Source: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

Noise Descriptors

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level (L_{eq}) is the average noise level averaged over the measurement period, while the day-night noise level (DNL) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. Most commonly, environmental sounds are described in terms of L_{eq} that has the same acoustical energy as the summation of all the time-varying events. Each is applicable to this analysis and defined *Table 2: Definitions of Acoustical Terms.*

Table 2: Definitions of Acoustical Terms

Term	Definitions
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.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in µPa (or 20 micronewtons per square meter), where 1 pascals 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 dB 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 µPa). 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 dB 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 acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
Maximum Noise Level (L_{max}) Minimum Noise Level (L_{min})	The maximum and minimum dBA during the measurement period.
Exceeded Noise Levels (L_{01}, L_{10}, L_{50}, L_{90})	The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Noise Level (DNL)	A 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity at nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA DNL.

Table 2: Definitions of Acoustical Terms	
Term	**Definitions**
Community Noise Equivalent Level (CNEL)	A 24-hour average L_{eq} with a 5 dBA weighting during the hours of 7:00 a.m. to 10:00 a.m. and a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
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 on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

The A-weighted decibel (dBA) sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. 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 used. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

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

A-Weighted Decibels

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of dBA, but are expressed as dB, unless otherwise noted.

Addition of Decibels

The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions. Under the dB scale, three sources of equal loudness together would produce an increase of 5 dBA.

Sound Propagation and Attenuation

Sound spreads (propagates uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound

levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics. No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The way older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted:

- Except in carefully controlled laboratory experiments, a 1-dBA change cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A minimum 5-dBA change is required before any noticeable change in community response would be expected. A 5-dBA increase is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on People

Hearing Loss. While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational

Safety and Health Administration has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

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 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. A noise level of about 55 dBA DNL is the threshold at which a substantial percentage of people begin to report annoyance[1].

2.2 GROUNDBORNE VIBRATION

Sources of groundborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g. factory machinery) or transient (e.g. explosions). 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 is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 3: Human Reaction and Damage to Buildings from Vibration, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, 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. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

[1] Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

Table 3: Human Reaction and Damage to Buildings from Vibration

Peak Particle Velocity (in/sec)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006-0.019	64-74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Virtually no risk of architectural damage to normal buildings
0.2	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
0.4-0.6	98-104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Architectural damage and possibly minor structural damage

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

3 REGULATORY SETTING

To limit population exposure to physically or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

3.1 STATE OF CALIFORNIA

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 – Building Code

The State's noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.2 LOCAL

City of San José General Plan

The San José General Plan identifies goals, policies, and implementations in the Noise Element. The Noise Element provides a basis for comprehensive local programs to regulate environmental noise and protect citizens from excessive exposure. *Table 4: Land-Use Compatibility Guidelines for Community Noise in San José,* highlights five land-use categories and the outdoor noise compatibility guidelines.

Table 4: Land-Use Compatibility Guidelines for Community Noise in San José

Land-Use Category	Exterior Noise Exposure (DNL), in dBA		
	Normally Acceptable[1]	Conditionally Acceptable[2]	Unacceptable[3]
Residential, Hotels and Motels, Hospitals, and Residential Care	Up to 60	>60 to 75	>75
Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds	Up to 65	>65 to 80	>80
Schools, Libraries, Museums, Meeting Halls, Churches	Up to 60	>60 to 75	>75
Office Buildings, Business Commercial, and Professional Offices	Up to 70	>70 to 80	>75
Sports Area, Outdoor Spectator Sports	Up to 70	>70 to 80	>65
Public and Quasi-Public Auditoriums, Concert Halls, Amphitheaters	N/A	>55 to 70	>70

Source: City of San José General Plan, 2011.

Table Notes:

[1] 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.

[2] Conditionally Acceptable – Specified land use may be permitted only after detailed analysis of the noise reduction requirements and noise mitigation features included in the design.

[3] Unacceptable – New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies. Development will only be considered when technically feasibly mitigation is identified that is also compatible with relevant design guidelines.

The following lists applicable noise goals and targets that apply to the project obtained from the Envision San José 2040 General Plan:

Goal EC-1: Community Noise Levels and Land Use Compatibility. Minimize the impact of noise on people through noise reduction and suppression techniques, and through appropriate land use policies.

Policy 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 Day/Night Average Sound Level (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 San José 2040 General Plan traffic volumes to ensure land use compatibility and 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 in the General Plan, Table 10 below). The acceptable exterior noise level objective is established for the City, except in the environs of the Mineta 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 standards for noise from sources other than aircraft and elevated roadway segments.

Policy 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.

Policy 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.

Policy EC-1.9: Require noise studies for land use proposals where known or suspected loud intermittent noise sources occur which may impact adjacent existing or planned land uses. For new residential development affected by noise from heavy rail, light rail, BART or other single-event noise sources, implement mitigation so that recurring maximum instantaneous noise levels do not exceed 50 dBA L_{max} in bedrooms and 55 dBA L_{max} in other rooms.

Policy EC-1.1:1 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.

Policy EC-1.14: Require acoustical analyses for proposed sensitive land uses in areas with exterior noise levels exceeding the City's noise and land use compatibility standards to base noise attenuation techniques on expected Envision San José 2040 General Plan traffic volumes to ensure land use compatibility and General Plan consistency.

Policy EC-2.3: Require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a 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 vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

City of San José Standard Permit Conditions

Construction-related noise minimization measures include, but are not limited to the following:

Noise

I. **Construction-Related Noise.** Noise minimization measures include, but are not limited to, the following:
   i. Limit construction hours to between 7:00 a.m. and 7:00 p.m., Monday through Friday, unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence.
   ii. Construct solid plywood fences around ground level construction sites adjacent to operational businesses, residences, or other noise-sensitive land uses.
   iii. Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
   iv. Prohibit unnecessary idling of internal combustion engines.
   v. 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.
   vi. Utilize “quiet” air compressors and other stationary noise sources where technology exists.
   vii. Control noise from construction workers’ radios to a point where they are not audible at existing residences bordering the project site.

viii. 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.

ix. 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.

x. 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.

xi. 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.

City of San José Municipal Code

Section 20.100.450, Hours of Construction Within 500 Feet of a Residential Unit, of the San José Municipal Code (Municipal Code), specifies the following standard exceptions to the provisions of Section 20.100.450. Unless otherwise expressly allowed in a Development Permit or other planning approval, no applicant or agent of an applicant shall suffer or allow any construction activity on a site located within 500 feet of a residential unit before 7:00 a.m. or after 7:00 p.m., Monday through Friday, or at any time on weekends.

Table 5: City of San José Zoning Ordinance Noise Standards shows the land use types and maximum noise levels allowed at the property line.

Table 5: City of San José Zoning Ordinance Noise Standards

Land Use Types	Maximum Noise Level in Decibels at Property Line
Residential, open space, industrial or commercial uses adjacent to a property used or zoned for residential purposes	55
Open space, commercial, or industrial use adjacent to a property used or zoned for commercial purposes or other nonresidential uses	60
Industrial use adjacent to a property used or zoned for industrial or use other than commercial or residential purposes	70

Source: Downtown Strategy 2040 FEIR, 2018.

4 EXISTING CONDITIONS

4.1 EXISTING NOISE SOURCES

The City of San José is impacted by various noise sources. Mobile sources of noise, especially cars and trucks along nearby roadways, as well as airplanes landing and taking off from the Norman Y. Mineta

International Airport, are the most common and significant sources of mobile noise for the Project site. Other sources of stationary noise are associated with the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) throughout the area.

Noise Measurements

To determine ambient noise levels in the project area, four 10-minute noise measurements were taken using a 3M SoundPro DL-1 Type I integrating sound level meter between 10:11 a.m. and 11:05 a.m. on October 9, 2019; refer to Appendix A for existing noise measurement data and *Figure 4: Noise Measurement Locations*. Ambient noise measurements were made during the day, which is representative of when the most activity would occur on-site. Noise measurements 1 and 2 were taken to represent the ambient noise level in the existing land uses located to the north and west of the Project site, which include the Almaden/Woz Way parking lot and the Guadalupe River trail west of the Project site. Noise Measurement 3 was taken to represent the ambient noise level in the existing I-280 on-ramp, which is located directly south of the Project site. Noise measurement 4 was taken to represent the ambient noise level on the existing street frontage on Almaden Boulevard, east of the Project site. The primary noise sources during all four measurements were traffic from I-280, SR-87, and Almaden Boulevard, airplane traffic, and ambulance sirens. *Table 6: Noise Measurements*, provides the ambient noise levels measured at these locations.

Table 6: Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Time
1	Almaden/Woz Way Parking	64.6	56.6	80.4	10:11 a.m.
2	Guadalupe Train	68.2	60.9	80.2	10:30 a.m.
3	I-280 Entrance	72.3	65.1	89.3	10:46 a.m.
4	527 Almaden Boulevard	68.2	59.2	78.3	11:05 a.m.

dBA = A-weighted decibels
Source: Noise Measurements taken by Kimley-Horn on October 9, 2019.

Existing Mobile Noise

Existing roadway noise levels were calculated for the roadway segments in the Project vicinity. This task was accomplished using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and existing traffic volumes from the project Local Transportation Analysis (LTA) (Kimley-Horn 2020). FHWA RD-77-108 is an industry standard traffic noise model that provides for the uniform evaluation of roadways. The noise prediction model (FHWA-RD-77-108) calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (also referred to as energy rates) used in the FHWA model have been modified to reflect average vehicle noise rates identified for California by Caltrans. The Caltrans data indicates that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. The average daily noise levels along roadway segments in proximity to the Project site are included in *Table 7:*
.

Table 7: Existing Traffic Noise

Roadway Segment	ADT	dBA DNL[1]
Almaden Boulevard		

San Carlos Ave to Woz Way	17,050	62.1
Woz Way to I-280 NB On-Ramp	20,170	63.2
Woz Way		
SR-87 NB Off-Ramp to Almaden Blvd.	7,000	56.5

ADT = average daily trips; dBA = A-weighted decibels; DNL = day-night noise level
[1] Traffic noise levels are at 100 feet from the roadway centerline.
Source: Based on traffic data provided by Kimley-Horn, 2020. Refer to Appendix A for traffic noise modeling assumptions and results.

I-280, trending in an east-west direction to the south of the project site, has annual average daily traffic (AADT) volumes of 232,000.[2] According to the *Environmental Impact Report for the Downtown Strategy* (City of San José, December 2018), the project site is located within the 70-75 dB DNL noise contour for I-280 and SR-87. Additionally, the Project site is located within the 65-70 dB DNL noise contour for Almaden Boulevard and Woz Way.

Existing Stationary Noise

The primary sources of stationary noise in the project vicinity are those associated with the operations of nearby residential uses to the east of the site. The noise associated with these sources may represent a single-event noise occurrence, short-term noise, or long-term/continuous noise.

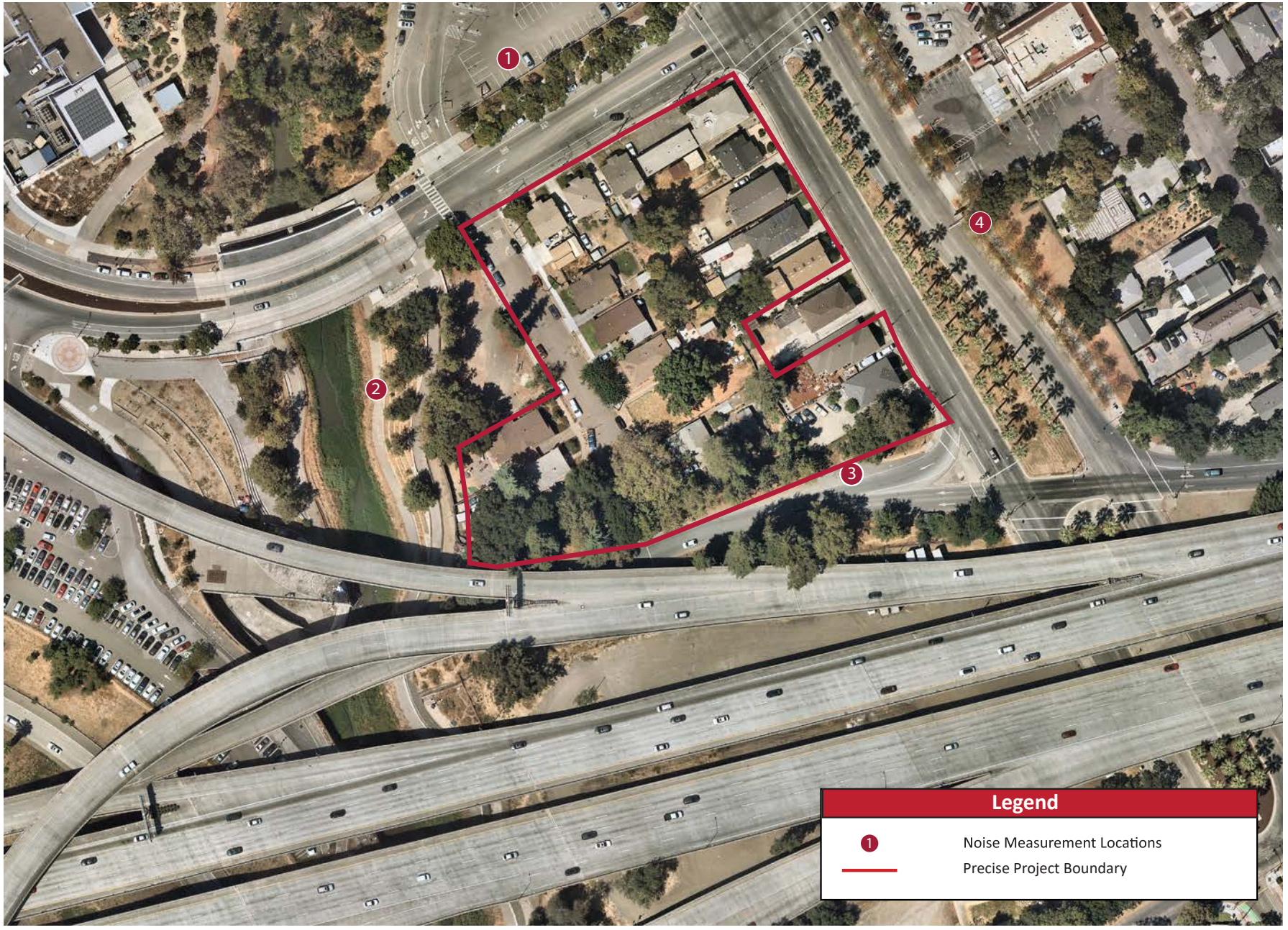
4.2 SENSITIVE RECEPTORS

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. As shown in *Table 8: Sensitive Receptors,* sensitive receptors near the Project site include adjoining single-family residences. Single-family residential communities are located surrounding the Project site. These distances are from the Project site to the sensitive receptor property line.

[2] California Department of Transportation, *2017 Traffic Volumes: Route 280-405*, https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017/route-280-405, accessed November 4, 2019.

Table 8: Sensitive Receptors

	Receptor Description	Distance and Direction from the Project Site
1	Single-family residential community	Adjoining
2	Single-family residential community	150 feet west
3	Guadalupe River and Park	500 feet north
4	Children's Discovery Museum	500 feet north
5	San José Convention Center	750 feet northwest
6	Hilton San José	1,000 feet north
7	San José Performing Arts Center	1,200 feet north
8	Rocketship Mateo Sheedy Elementary School	1,300 feet south
9	Parque De Los Pobladores	1,400 northeast
10	Notre Dame High School	1,800 feet east
11	Plaza De Cesar Chavez	0.3 miles north
12	The Tech Museum of Innovation	0.35 miles northeast
13	Come Community Outreach	0.40 miles east
14	First Immanuel Lutheran Church and School	0.45 miles east



Source: Nearmap, 2020

Figure 4: Noise Measurement Locations

Woz Way Project

Not to scale

Kimley»Horn
Expect More. Experience Better.

5 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA THRESHOLDS

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains analysis guidelines related to noise impacts. These guidelines have been used by the City to develop thresholds of significance for this analysis. A project would create a significant environmental impact if it would:

- Generate 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;
- Generate excessive groundborne vibration or groundborne noise levels; and
- 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, expose people residing or working in the project area to excessive noise levels.

5.2 METHODOLOGY

Construction noise estimates are based upon noise levels from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (FHWA-HEP-05-054) as well as the distance to nearby receptors. Reference noise levels from FHWA are used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Construction noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. Predicted construction noise levels were based on typical noise levels generated by construction equipment. The traffic noise levels in the Project vicinity were calculated using the FHWA Highway Noise Prediction Model (FHWA-RD-77-108).

Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from Federal Transit Administration (FTA) published data for construction equipment. Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, considering the distance from construction activities to nearby land uses and typically applied criteria for structural damage and human annoyance.

6 POTENTIAL IMPACTS AND MITIGATION

6.1 ACOUSTICAL IMPACTS

Threshold 6.1 Would the Project generate 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?

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g. land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods surrounding the construction site. Project construction would occur adjacent to an existing single-family residence. However, construction activities would occur throughout the Project site and would not be concentrated at a single point near sensitive receptors. Noise levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources, such as industrial machinery. During construction, exterior noise levels could affect the residential neighborhoods and the single-family residence adjoining the construction site adjoining the construction site.

Construction activities associated with future development would include demolition, site preparation, grading, construction, paving, and architectural coating. Such activities would require graders, scrapers, and tractors during site preparation; graders, dozers, and tractors during grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, tractors, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Grading and excavation phases of project construction tend to be the shortest in duration and create the highest construction noise levels due to the operation of heavy equipment required to complete these activities. It should be noted that only a limited amount of equipment can operate near a given location at a particular time. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. According to the applicant, no pile-driving would be required during construction.

Typical noise levels associated with individual construction equipment are listed in *Table 9: Typical Construction Noise Levels.* These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (hourly L_{eq}) noise level associated with each construction stage is calculated based on the quantity, type, and usage factors for each type of

equipment that would be used during each construction stage.[3] These noise levels are typically associated with multiple pieces of equipment operating on part power, simultaneously.

Table 9: Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source[1]	Typical Noise Level (dBA) at 30 feet from Source[1]	Typical Noise Level (dBA) at 150 feet from Source[1]
Air Compressor	80	84	70
Backhoe	80	84	70
Compactor	82	86	72
Concrete Mixer	85	89	75
Concrete Pump	82	86	72
Concrete Vibrator	76	80	66
Crane, Mobile	83	87	73
Dozer	85	89	75
Excavator	81	85	71
Forklift	85	89	75
Generator	82	86	72
Grader	85	89	75
Impact Wrench	85	89	75
Jack Hammer	88	92	78
Loader	80	84	70
Paver	85	89	75
Pneumatic Tool	85	89	75
Pump	77	81	67
Roller	85	89	75
Saw	83	80	66
Scraper	85	89	75
Shovel	82	86	72
Truck	84	88	74
Welder	74	78	65

[1] Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1+20Log(d_1/d_2)$
Where: dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018, except for the welder reference noise level (Federal Highway Administration, Roadway Construction Noise Model User's Guide, 2006).

Sensitive receptors near the Project area include: a resident adjoining the Project site and approximately 150 feet east of the Project site. Noise impacts for mobile construction equipment are typically assessed as emanating from the center of the equipment activity or construction site.[4] For the proposed Project, this center point would be approximately 30 feet from the nearest sensitive receptor property line. These sensitive uses may be exposed to elevated noise levels during project construction. These assumptions represent the worst-case noise scenario because construction activities would typically be spread out throughout the Project site, and thus some equipment would be farther away from the affected receptors. In addition, construction noise levels are not constant, and construction activities and associated noise

[3] The FHWA Roadway Construction Noise Model User's Guide (2006) defines the usage factor as the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

[4] Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual, September 2018. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

levels would fluctuate and generally be brief and sporadic, depending on the type, intensity, and location of construction activities.

General Policy EC-1.7 requires construction operations within San Jose to use best available noise suppression devices and techniques and limit construction hours near residential uses. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential 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 Downtown Strategy 2040 FEIR it was stated that for temporary construction-related noise to be considered significant, construction noise levels would have to exceed ambient noise levels by 5 dBA L_{eq} or more and exceed the normally acceptable levels of 60 dBA L_{eq} at the nearest noise-sensitive land use for a period of more than 12 months. As shown in *Table 9*: Construction Equipment Noise Levels noise levels at the nearest sensitive receptor property line are at 92 dBA at 30 feet. The highest anticipated construction noise level for the adjoining residential uses are jack hammers during demolition phase and cranes during the building construction phase. Majority of the construction does not occur near the sensitive receptor and instead would occur at least 50 feet away where noise levels would attenuate to 88 dBA. As noted above, the loudest construction phases are also typically the shortest and construction activities would also be spread out throughout the Project site. The entire construction of the Project is anticipated to last approximately 31 months. The phases with substantial noise generating activities (demolition, site preparation, excavation, grading, and paving) would last slightly longer than 11 months and would not last more than 12 months. The remaining two phases, building construction sub phase and architectural coating, typically use lighter equipment and hand tools and do not use the heavy equipment listed in *Table 9*. However, the construction noise levels would potentially exceed 5 dBA above ambient noise levels and exceed 60 dBA for more than 12 months. Therefore, consistent with General Plan Policy EC-1.7 and the Downtown Strategy EIR noise control measures the Project is required to prepare a Construction Noise Logistics Plan; refer to MM NOI_1.

The Project construction would comply with San José Municipal Code Section 20.100.450, stating construction activities may only occur between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, unless permission is granted with a development permit or other planning approvals. Construction activities are prohibited on weekends at sites within 500 feet of a residence. As the proposed Project is within 500 feet of residences, no construction is permitted on weekends. These permitted hours of construction are included in the code in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant disruption. Construction would occur throughout the Project site and would not be concentrated or confined in the area directly adjacent to sensory receptors. Therefore, construction noise would be acoustically dispersed throughout the Project site.

Construction activities would be primarily limited to daytime hours when people would be out of their houses and would conform to the time-of-day restrictions of the City's Municipal Code. The Project would require some nighttime construction during a 24-hour foundation concrete pour. Therefore, per the requirements of Municipal Code Section 20.100.450 and to further reduce the potential for noise impacts, City Standard Permit Conditions and Downtown Strategy measures

would be implemented to require a construction noise logistics plan that would incorporate best management practices during construction. Incorporation of the Permit Conditions would further minimize impacts from construction noise as it requires best practices such as placing stationary noise sources away from receptors, use of temporary barriers, requiring construction equipment to be equipped with properly operating and maintained mufflers and other state required noise attenuation devices. Additionally, construction should utilize quiet air compressors and other stationary noise sources where technology exists, control construction workers' radio noise, and construct solid plywood fences around ground level constructions sites adjacent to sensitive land uses. The Downtown Strategy standard noise control measures are required to ensure that construction noise levels are minimized and time-of-day restrictions are adhered to. As described in the Downtown Strategy 2040 EIR, the Project would be required to implement standard noise control measures, which have been included below. Thus, with incorporation of standard noise control measures, a less than significant noise impact would result from construction activities. The Downtown Strategy 2040 EIR found less than significant impact from construction noise with implementation of the standard noise control measures (MM NOI-1) and compliance with General Plan policies.

The Project proposes nighttime construction for concrete pouring only. Therefore, in addition to the construction noise logistics plan required per MM NOI-1 as well as the requirements of General Plan Policy EC-1.7 and the Downtown Strategy 2040 FEIR, MM NOI-2 is required to reduce nighttime construction noise to less than significant levels. MM NOI-2 includes limitations to the number of pieces of equipment that would operate at night, arranging work sites away from sensitive receptors and to avoid the use of backup beepers, use shielding when adjacent to sensitive receptors, notifications for nighttime activities, and the provision of alternate accommodations, if necessary.

Construction Traffic Noise

Construction noise may be generated by large trucks moving materials to and from the Project site. Large trucks would be necessary to deliver building materials as well as remove dump materials. Excavation and cut and fill would be required. The Project is anticipating approximately 190,000 cubic yards (cy) of export material. Based on the California Emissions Estimator Model (CalEEMod) default assumptions for this project, as analyzed in Woz Way Air Quality Assessment, the Project would generate the highest number of daily trips during the building construction phase. The Project would generate approximately 641 worker trips and 300 vendor trips per day during the building construction phase. The model estimates that the Project would generate up to 23,875 hauling trips during the grading phase which would last approximately 150 days. This would be approximately 159 daily hauling trips. Because of the logarithmic nature of noise levels, a doubling of the traffic volume (assuming that the speed and vehicle mix do not also change) would result in a noise level increase of 3 dBA. Almaden Boulevard between Woz Way and I-280 northbound on-ramp has an average daily trip volume of 20,140 vehicles (*Table 10*) while Woz Way between SR 87 northbound off-ramp and Almaden Boulevard has an average daily trip volume of 7,000 vehicles (*Table 10)*. Therefore, 941 project construction trips (641 worker trips plus 300 vendor trips) would not double the existing traffic volume per day. Construction related traffic noise would not be noticeable and would not create a significant noise impact.

California establishes noise limits for vehicles licensed to operate on public roads using a pass-by test procedure. Pass-by noise refers to the noise level produced by an individual vehicle as it travels past a

fixed location. The pass-by procedure measures the total noise emissions of a moving vehicle with a microphone. When the vehicle reaches the microphone, the vehicle is at full throttle acceleration at an engine speed calculated for its displacement.

For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dB. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline.

Operations

Implementation of the Project would create new sources of noise in the project vicinity. The major noise sources associated with the Project that would potentially impact existing and future nearby residences include the following:

- Off-site traffic noise;
- Crowd noise;
- Mechanical equipment (i.e., trash compactors, air conditioners, etc.);
- Delivery trucks on the project site, and approaching and leaving the loading areas;
- Activities at the loading areas (i.e., maneuvering and idling trucks, loading/unloading, and equipment noise);
- Parking areas (i.e., car door slamming, car radios, engine start-up, and car pass-by); and
- Landscape maintenance activities.

As discussed above, the closest sensitive receptors is the onsite single-family residence. The City of San José stationary source exterior noise standard for residential areas is 55 dBA L_{eq} (*Table 5: City of San José Zoning Ordinance Noise Standards)*. The land use compatibility standard for residential areas is also 60 dBA DNL for normally acceptable conditions *(Table 4).*

Traffic Noise

Implementation of the Project would generate increased traffic volumes along study roadway segments. The Project is expected to generate a net of 7,418 average daily trips, which would result in noise increases on project area roadways. In general, a traffic noise increase of less than 3 dBA is barely perceptible to people, while a 5-dBA increase is readily noticeable (Caltrans, 2013). Generally, traffic volumes on project area roadways would have to approximately double for the resulting traffic noise levels to increase by 3 dBA. Therefore, permanent increases in ambient noise levels of less than 3 dBA are considered to be less than significant.

As shown in *Table 10: Existing and Project Traffic Noise*, the existing traffic-generated noise level on Project area roadways is between 56.5 dBA DNL and 62.1 dBA DNL at 100 feet from the centerline. As previously described, DNL is 24-hour average noise level with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. As such, traffic noise under existing conditions dBA DNL is greater than the City's normally acceptable 60 dBA threshold for residential uses.

Table 10: Existing and Project Traffic Noise						
Roadway Segment	**Existing Conditions (Existing Development)**		**With Project**		**Project Change from Existing Conditions**	**Significant Impact?**
	ADT	**dBA DNL[1]**	**ADT**	**dBA DNL[1]**		
Almaden Boulevard						
San Carlos Ave to Woz Way	17,050	62.1	18,360	62.5	0.4	No
Woz Way to I-280 NB On-Ramp	20,170	62.9	27,230	64.2	1.3	No
Woz Way						
SR-87 NB Off-Ramp to Almaden Blvd.	7,000	56.5	12,26	58.9	2.4	No

ADT = average daily trips; dBA = A-weighted decibels; DNL= day-night noise levels
[1] Traffic noise levels are at 100 feet from the roadway centerline.
Source: Based on traffic data provided by Kimley-Horn, 2020. Refer to Appendix A for traffic noise modeling results.

Traffic noise levels for roadways primarily affected by the project were calculated using the FHWA's Highway Noise Prediction Model (FHWA-RD-77-108). Traffic noise modeling was conducted for conditions with and without the project, based on traffic volumes (Kimley-Horn, 2020). As noted in *Table 10*, the project would not have an increase of less than 3.0 dBA for the three roadway segments analyzed. As an increase under 3 dBA is barely perceptible to people, the Project would not have a significant impact on existing traffic noise levels. The Downtown Strategy 2040 EIR determined that significant traffic noise impacts would occur at sensitive receptors along Almaden Boulevard. However, as shown in *Table 10*, the project's contribution to traffic noise levels would not be significant.

Table 11: Background and Background Plus Project Traffic Noise shows the background conditions which includes projects that have been approved but not yet constructed near the project study area. Per the LTA, the Background Conditions Analysis includes 14 approved/pending project that were added to the existing 2019 volumes. The Almaden Boulevard & Woz Way- Boston Property was excluded in Background scenario and included in Cumulative scenario. Refer to the LTA for a complete list of approved/pending projects included.

As shown in the *Table 11*, background roadway noise levels with the Project would range from 57.4 to 63.7 dBA. The highest increase in noise levels would occur on Woz Way between SR-87 NB Off-Ramp and Almaden Boulevard. Noise levels along Woz Way would increase by 2.1 dBA with the Project. This level is below the perceptible noise level change of 3.0 dBA. Therefore, impacts are less than significant.

Table 11: Background and Background Plus Project Traffic Noise						
Roadway Segment	**Background**		**With Project**		**Project Change from Background**	**Significant Impact?**
	ADT	**dBA DNL[1]**	**ADT**	**dBA DNL[1]**		
Almaden Boulevard						
San Carlos Ave to Woz Way	22,560	63.4	23,870	63.6	0.2	No
Woz Way to I-280 NB On-Ramp	23,990	63.7	31,050	64.8	1.1	No
Woz Way						
SR-87 NB Off-Ramp to Almaden Blvd	8,630	57.4	13,890	59.5	2.1	No

ADT = average daily trips; dBA = A-weighted decibels; DNL= day-night noise levels
[1] Traffic noise levels are at 100 feet from the roadway centerline.
Source: Based on traffic data provided by Kimley-Horn, 2020. Refer to Appendix A for traffic noise modeling results.

Project traffic would traverse and disperse over project area roadways, where existing ambient noise levels already exist. Future development associated with the Project would result in additional traffic on adjacent roadways, thereby increasing vehicular noise near existing and proposed land uses. This level is below the perceptible noise level change of 3.0 dBA. Therefore, impacts would be less than significant.

On-Site Mobile Noise

Exterior Noise at Outdoor Areas

The proposed Project would include a number of amenity terraces in the new towers. As discussed above, the project site is located within the 70-75 dB DNL I-280 and SR 87 traffic noise contours. As such, on-site visitors using the terrace could be exposed to traffic noise levels that exceed the City's 60 dBA DNL exterior noise standard. However, it should be noted that General Plan Policy EC-1.1 exempts the Downtown area from the 60 dBA DNL exterior noise standard. Therefore, impacts in this regard would be less than significant.

Stationary Noise Sources

Implementation of the Project would create new sources of noise in the project vicinity from crowd noise, mechanical equipment, truck loading areas, parking lot noise, and landscape maintenance.

Crowd Noise

The Project may include some crowd noise due to events or amenities at the proposed office and retail areas. Crowd noise is dependent on several factors including vocal effort, impulsiveness, and the random orientation of the crowd members. Crowd noise is estimated at 60 dBA at one meter (3.28 feet) away for raised normal speaking. This noise level would have a +5 dBA adjustment for the impulsiveness of the noise source, and a -3 dBA adjustment for the random orientation of the crowd members. Therefore, crowd noise would be 62 dBA at one meter from the source. Noise has a decay rate due to distance attenuation, which is calculated based on the Inverse Square Law for sound propagation. Based upon the Inverse Square Law, sound levels decrease by 6 dBA for each doubling of distance from the source. As a result, crowd noise would be 56.0 dBA at 6.56 feet and 52.3 dBA at 10 feet. Therefore, crowd noise from the outdoor areas to the closest existing sensitive receptors (located 10 feet away) would not exceed the City's 55 dBA standard. Noise from crowd noise would primarily occur during the "daytime" activity hours of 7:00 a.m. to 7:00 p.m. Furthermore, the Project would be required to comply with the noise standards set forth in the City's General Plan and Municipal Code. A less than significant impact would occur in this regard.

Mechanical Equipment

Regarding mechanical equipment, the Project would generate stationary-source noise associated with heating, ventilation, exhaust fans, generators, and air conditioning (HVAC) units. HVAC units typically generate noise levels of approximately 50 to 60 dBA at 50 feet. Mechanical equipment for the Project would be located in fully enclosed spaces throughout the proposed building. In addition there would be dedicated rooms/spaces for mechanical exhaust, electrical, and generators. Most of the equipment rooms and all of the below-grade equipment rooms proposed by the Project would be located on the interior of the building. The Project would not place mechanical equipment near residential uses; the mechanical equipment would be located approximately 200 feet from existing residential uses. At 200 feet the

mechanical equipment noise levels would be 48 dBA. However, an enclosure would provide additional noise level reduction of 10 dBA or more, which would reduce noise levels below the City's 55 dBA standard for mechanical equipment per Policy EC-1.3 at the nearest sensitive receptor property line. Given the distance and enclosures, noise from this equipment would not be perceptible at the closest sensitive receptor (existing single-family residences adjoining the Project site) and the City's noise standards would not be exceeded. Impacts from mechanical equipment would be less than significant.

Loading Area Noise

The Project's loading areas are within the parking garages of the north and south buildings. The project is an office and retail development that would necessitate occasional deliveries. The primary noise associated with deliveries is the arrival and departure of trucks. Operations of proposed mix use structure would potentially require deliveries of vans and light trucks and not heavy-duty trucks. Normal deliveries typically occur during daytime hours. During loading and unloading activities, noise would be generated by the trucks' diesel engines, exhaust systems, and brakes during low gear shifting' braking activities; backing up toward the docks/loading areas; dropping down the dock ramps; and maneuvering away from the docks. Typically, trucks used to make deliveries can generate a maximum noise level of 75 dBA at 50 feet. These are levels generated by a truck that is operated by a typically experienced driver with typically applied accelerations. Higher noise levels may be generated by the excessive application of power. Lower levels may be achieved but would not be considered representative of a nominal truck operations. The loading/unloading zone would be fully enclosed and noise truck idling/loading/unloading would be inaudible at the nearest sensitive receptors (adjoining the Project site).

Parking Areas

Traffic associated with parking areas is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up and car pass-bys may be an annoyance to adjacent noise-sensitive receptors. Parking lot noise can also be considered a "stationary" noise source.

The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA at 50 feet and may be an annoyance to noise-sensitive receptors. Conversations in parking areas may also be an annoyance to sensitive receptors.[5] Sound levels of speech typically range from 33 dBA at 48 feet for normal speech to 50 dBA at 50 feet for very loud speech.[6] It should be noted that parking lot noise are instantaneous noise levels compared to noise standards in the DNL scale, which are averaged over time. As a result, actual noise levels over time resulting from parking lot activities would be far lower.

The proposed Project includes four levels of underground parking and three levels of above ground parking for a total of 1,259 parking stalls. Noise impacts associated with parking would be considered

[5] Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.
[6] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden. Noise Navigator Sound Level Database with Over 1700 Measurement Values, July 6, 2010.

minimal since the parking area would be enclosed within a structure. However, the centerline of the gated driveway access to the parking garage is located approximately 30 feet south of the nearest sensitive receptor. Another driveway access to the garage is located approximately 50 feet north of the nearest sensitive receptor and is right-in and right-out only. The third driveway is located approximately 300 feet northwest of the nearest sensitive receptor. In addition, parking lot noise would also be partially masked by the background noise from traffic along, Almaden Boulevard, I-280, and SR-87.

For the purpose of providing a conservative, quantitative estimate of the noise levels that would be generated from the vehicles entering and exiting the parking structure, the methodology recommended by FTA for the general assessment of stationary transit noise sources is used. Using the methodology, the Project's peak hourly noise level that would be generated by the on-site parking levels was estimated using the following FTA equation for a parking lot:

$$L_{eq(h)} = SEL_{ref} + 10\log(NA/1{,}000) - 35.6$$

Where:

$L_{eq(h)}$ = hourly L_{eq} noise level at 50 feet
SEL_{ref} = reference noise level for stationary noise source represented in sound exposure level (SEL) at 50 feet
NA = number of automobiles per hour
35.6 is a constant in the formula, calculated as 10 times the logarithm of the number of seconds in an hour

Based on the peak hour trip generation rates in the Transportation Analysis, the Project is forecasted to generate 902 trips during the peak hour. Since there are two driveways, it is reasonable to assume that each driveway would have a peak hour volume of 451 vehicles. Using the FTA's reference noise level of 92 dBA SEL[7] at 50 feet from the noise source, the Project's peak hour vehicle trips would generate noise levels of approximately 53 dBA at 50 feet from the parking structure. The closest adjacent residential uses would be approximately 30 feet from the access driveway to the parking structure. Based on this distance, and using the inverse square law of sound propagation, the vehicle related noise levels would be approximately 57 dBA L_{eq}. Additionally, the walls would be located along the driveways, which would attenuate noise levels by 8 dBA[8], reducing the noise level to 49 dBA. However, noise levels would also be below the City's 55 dBA standard for residential uses. Furthermore, parking noise levels would be below the current ambient noise levels, which were measured at 72 dBA near I-280 and 68 dBA along Almaden Boulevard approximately the same distance from I-280 as the closest sensitive receptors from the parking structure entrance. Noise levels in this area are dominated by freeway noise. Noise from the parking garage would be well below ambient levels, and below the City's standards. Additionally, other hours of the day when less overall vehicles arrive and depart from the Project site, the noise levels at the nearest offsite sensitive land uses would be even lower. Therefore, noise impacts from parking lots would be less than significant.

[7] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

[8] Federal Highway Administration, *Roadway Construction Noise Model User's Guide*, January 2006.

Landscape Maintenance Activities

Development and operation of the Project includes new landscaping that would require periodic maintenance. Noise generated by a gasoline-powered lawnmower is estimated to be approximately 70 dBA at a distance of 5 feet. Maintenance activities would operate during daytime hours for brief periods of time as allowed by the City Municipal Code and would not permanently increase ambient noise levels in the project vicinity and would be consistent with activities that currently occur at the surrounding uses. Therefore, with adherence to the City's Municipal Code, impacts associated with landscape maintenance would be less than significant.

Summary

Overall, implementation of City of San José environmental standard conditions and adherence to Municipal Code requirements, noise impacts associated with traffic, mechanical equipment, deliveries, loading/unloading activities, and parking lot noise would be reduced to a less than significant level.

Mitigation Measures:

MM NOI-1: ***Construction Noise***

Prior to the issuance of any grading or demolition permits, the project applicant shall submit and implement a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting and notification of construction schedules, equipment to be used, and designation of a noise disturbance coordinator. The noise disturbance coordinator shall respond to neighborhood complaints and shall be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses. The noise logistic plan shall be submitted to the Director of Planning or Director's designee of the Department of Planning, Building, and Code Enforcement prior to the issuance of any grading or demolition permits. As a part of the noise logistic plan and project, construction activities for the proposed project shall include, but is not limited to, the following best management practices:

- In accordance with Policy EC-1.7 of the City's General Plan, utilize the best available noise suppression devices and techniques during construction activities.
- Construction activities shall be limited to the hours between 7:00 a.m. and 7:00 p.m., Monday through Friday, unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence (San José Municipal Code Section 20.100.450).
- Construct temporary noise barriers, where feasible, to screen mobile and stationary construction equipment. The temporary noise barrier fences provide noise reduction if the noise barrier interrupts the line of-sight between the noise source and receiver and if the barrier is constructed in a manner that eliminates any cracks or gaps.
- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Unnecessary idling of internal combustion engines shall be strictly prohibited.
- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Construction staging areas shall be established at locations that would create the greatest distance between the construction-related noise source and noise-sensitive receptors nearest the project site during all project construction.
- A temporary noise control blanket barrier shall be erected, if necessary, along building facades facing construction sites. This mitigation would only be necessary if conflicts occurred which were irresolvable by proper scheduling.
- Pile-driving is prohibited.
- Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile.
- Locate material stockpiles, as well as maintenance/equipment staging and parking areas, as far as feasible from residential receptors.
- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.
- The project applicant shall prepare a detailed construction schedule for major noise-generating construction activities. The construction plan shall identify a procedure for coordination with adjacent residential land uses so that construction activities can be scheduled to minimize noise disturbance.
- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to the adjacent land uses and nearby residences

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

MM NOI-2: Nighttime Construction

San José requires the issuance of a Development Permit for construction occurring outside of the allowable hours of 7:00 a.m. to 7:00 p.m., Monday through Friday within 500 feet of existing residential land uses. Concrete pouring is proposed during nighttime

hours. The following measures would reduce nighttime noise impacts at nearby noise-sensitive residences:

- Limit the active equipment to as few pieces of equipment as possible.
- To the extent consistent with applicable regulations and safety considerations, operation of back-up beepers shall be avoided near sensitive receptors during nighttime hours, and/or the work sites shall be arranged in a way that avoids the need for any reverse motions of trucks or the sounding of any reverse motion alarms during nighttime work. If these measures are not feasible, equipment and trucks operating during the nighttime hours with reverse motion alarms must be outfitted with SAE J994 Class D alarms (ambient-adjusting, or "smart alarms" that automatically adjust the alarm to 5 dBA above the ambient near the operating equipment).
- Limit nighttime concrete pouring to the northern location or a minimum distance of 270 feet from the sensitive receptor, where feasible. Restrict concrete trucks and pumps along Almaden Boulevard near sensitive receptor during all nighttime activities. Nighttime concrete trucks located closer than 270 feet shall install a temporary barrier with a minimum height of eight feet around the property line of the adjacent residence.
- If nighttime construction noise continues to result in excessive disruption to nearby neighbors, implement a construction noise monitoring plan, which includes a provision for noise monitoring at the nearby receptors to confirm that nighttime construction noise levels meet nighttime noise level thresholds at the adjoining single-family residential. Construction monitoring shall occur for the first two days of construction for period of nighttime construction work to demonstrate that the nighttime construction activities are compliant with the construction noise level thresholds (68 dBA L_{eq} exterior noise level at the adjacent residence). These thresholds are based on existing ambient conditions. Additional noise monitoring shall be completed on a more frequent basis if needed, in response to complaints. In the event of noise complaints, the contractor will provide information to client within 48 hours of being notified of the complaint, regarding the noise levels measured and activities that correspond to the complaints, as well as the proposed changes at the site to reduce the noise levels to below the thresholds.
- Sensitive receptors identified by the noise-monitoring with the potential to be exposed to nighttime construction noise levels exceeding 68 dBA Leq at the adjacent residence shall be provided with vouchers for alternate accommodations for the duration of the nighttime construction.
- Residences or other noise-sensitive land uses within 500 feet of construction sites should be notified of the nighttime construction schedule, in writing, prior to the beginning of construction. This notification shall specify the dates for all nighttime construction. Designate a "construction liaison" that would be responsible for responding to any local complaints about nighttime construction noise. The liaison would determine the cause of the noise complaints (e.g., starting too early,

bad muffler, etc.) and institute reasonable measures to correct the problem. Conspicuously post a telephone number for the liaison at the construction site.

Level of Significance: Less than significant impact with mitigation incorporated.

Threshold 6.2 Would the Project generate excessive groundborne vibration or groundborne noise levels?

Construction

Increases in groundborne vibration levels attributable to the Project would be primarily associated with construction-related activities. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

According to General Plan Policy EC-2.3, a continuous vibration limit of 0.20 in/sec PPV is used to minimize damage at buildings of conventional construction, however sensitive historic structures have a vibration limit of 0.08 in/sec PPV. The nearest sensitive receptor (541 Vine Street) is listed in the City of San Jose's Historic Resources Inventory as an Identified Structure. The structure is a one-story plus attic wood frame Neoclassical Cottage constructed in circa 1908. For the purposes of this analysis, the 0.08 in/sec PPV threshold was utilized.

Project construction activities, such as drilling, the use of jackhammers, rock drills and other highpower 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 12: Typical Construction Equipment Vibration Levels, lists vibration levels at 5 feet, 25 feet, and 150 feet for typical construction equipment. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in Table 12, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.018 to 0.523 in/sec PPV at 5 feet from the source of activity based on the anticipation construction equipment. The nearest sensitive receptors is the single-family residence adjoining the Project site.

Table 12: Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec) Reference Level	Peak Particle Velocity at 5 Feet (in/sec) [1, 2] Adjacent Sensitive Receptor	Peak Particle Velocity at 150 Feet (in/sec) [1, 2] Sensitive Receptor across Almaden Boulevard
Large Bulldozer	0.089	0.523	0.012
Loaded Trucks	0.076	0.446	0.011
Rock Breaker	0.059	0.347	0.082

Jackhammer	0.035	0.206	0.005
Small Bulldozer/Tractors	0.003	0.018	0.000

1. Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.1}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018; D = the distance from the equipment to the receiver.
2. PPV levels have been adjusted based on the site's soil type per the *Caltrans Transportation and Construction Vibration Guidance Manual*, September 2013.

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

As shown in *Table 12*, the highest vibration levels are achieved with the large bulldozer operations. These pieces of equipment would have the potential to produce vibration levels of 0.08 in/sec PPV or more at the historic sensitive receptor within 5 feet of the Project site. At this distance, Project construction activities could reach levels of 0.523 in/sec PPV which would exceed the 0.08 in/sec PPV threshold. Groundborne vibration decreases rapidly with distance. Other buildings within the vicinity are calculated to be below the City's conventional vibration limit of 0.2 in/sec PPV.

While the nearest sensitive receptor is adjacent to the property line of the Project site, large pieces of vibratory equipment would not be used along the boundary. Due to site constraints, smaller and quieter pieces of lighter-duty construction equipment would be along the property lines and boundaries. For instance, the small bulldozer and tractor generating 0.018 in/sec would be utilized along the boundary rather than the heavier large bulldozer.

The U.S. Bureau of Mines analyzed the effects of vibration generated by construction activity on buildings and found approximately 20 percent probability of "threshold damage" at vibration levels of 1.2 in/sec PPV or less and no observations of minor or major damage at 1.2 in/sec PPV or less.[9] Therefore, based on the data threshold damage in the form of hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects may occur but not hairline cracking on masonry, loosening of plaster, wide cracking, or shifting of foundation or bearing walls to the single-family residence assuming a maximum vibration level of 1.2 in/sec PPV.

The Downtown Strategy 2040 EIR recommends placing operating equipment as far as possible from vibration-sensitive receptors and using smaller equipment, among other measures. In general, other construction activities would occur throughout the Project site and would not be concentrated at the point closest to the nearest residential structure. Additionally, MM NOI-3 would require a Vibration Management Plan that would ensure the applicant demonstrates vibration control during demolition and construction activities. Mitigation Measure NOI-4 requires vibration monitoring at the nearest sensitive receptor during construction activities. With implementation of MM NOI-3 and MM NOI-4, vibration would not be expected to cause structural 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

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

businesses, perceptible vibration can be kept to a minimum. Therefore, vibration impacts associated with the Project would be less than significant.

Operations

The Project would not generate ground-borne vibrations that could be felt at surrounding uses. The proposed Project would not involve railroads or substantial heavy truck operations, and therefore would not result in vibration impacts at surrounding uses. As such, a less than significant impact would occur in this regard.

Mitigation Measures:

MM NOI-3: Vibration Management Plan

Prior to any construction or demolition activities, the applicant shall provide a Vibration Management Plan or other evidence acceptable to the City of San José that demonstrates that vibration control of demolition and construction activities will be implemented wherever possible. The applicant shall prepare a list of all high vibratory equipment to be used and shall submit the list to the City's Director of Planning, Building and Code Enforcement or Designee for review and approval. This list shall be used to identify equipment and activities that would potentially generate substantial vibration and shall identify methodologies and tasks to effort require for continuous vibration monitoring. This includes performing high-vibration activities during the middle of the day and spaced as far apart as possible to avoid multiple high-vibration activities at once. Vehicle routes should avoid sensitive receptor area as much as possible. Pile-driving is prohibited.

MM NOI-4: Vibration Monitoring

The project applicant shall prepare and implement a Construction Vibration Monitoring, Treatment, and Reporting Plan to document conditions at the adjacent historic sensitive receptor prior to, during, and after vibration generating construction activities. The project applicant shall submit the Plan to the City's Director of Planning, Building and Code Enforcement or Designee prior to issuance of any demolition or grading permits for review and approval. All plan tasks shall be conducted under the direction of a Professional Structural Engineer licensed in the State of California and be in accordance with industry accepted standard methods. The Plan shall include, but is not limited to, the following:

- A photo survey, elevation survey, and crack monitoring survey for the historic residence. Surveys shall be performed prior to, in regular intervals during, and after completion of vibration generating construction activities and shall include internal and external crack monitoring in the structure, settlement, and distress and shall document the condition of the foundation, walls and other structural elements in the interior and exterior of said structure. Frequency of intervals shall be recommended by the Professional Structural Engineer and shall be approved by the City.
- A contingency section or plan to identify where monitoring would be conducted, set up a vibration monitoring schedule, define structure specific vibration limits, and address the need to conduct photo, elevation, and crack surveys to further

document before and after construction period. Construction contingencies would be identified for when vibration levels approach the limits.

  - If vibration levels approach limits (0.08 in/sec PPV), suspend construction and implement contingencies to either lower vibration levels or secure the affected structure.

- Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage. Make appropriate repairs in accordance with the Secretary of the Interior's Standards where damage has occurred as a result of construction activities.
- Summarize the results of all vibration monitoring and submit results in a report after completion of each phase identified in the project schedule. The report shall include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits shall be included together with proper documentation supporting any such claims. The report shall be submitted to the City's Director of Planning, Building and Code Enforcement or designee and the Historic Preservation Officer two weeks after completion of each phase identified in the project schedule.
- Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted on the construction site.

Level of Significance: Less than significant impact with mitigation incorporated.

Threshold 6.3 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, would the Project expose people residing or working in the Project area to excessive noise levels?

The nearest airports to the Project site are the Norman Y. Mineta San José International Airport located approximately 2 miles north of the Project and Reid Hillview Airport located approximately 3.5 miles east of the Project site. The Project site lies near the 65 dBA CNEL 2027 noise contour and future exterior noise levels would be up to 65 dBA CNEL/DNL at the Project site. According to General Plan Policy EC-1.11, the required safe and compatible threshold for exterior noise levels would be at or below 65 dBA CNEL/DNL for aircrafts. The proposed project would not expose people working in the project area to excessive noise levels.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6.2 CUMULATIVE NOISE IMPACTS

Noise is a localized phenomenon, and drastically reduces as distance from the source increases. Cumulative noise impacts involve development of the Project in combination with ambient growth and other related development projects. As noise levels decrease as distance from the source increases, only

projects in the nearby area could combine with the Project to potentially result in cumulative noise impacts.

Cumulative Construction Noise

The Project's construction activities, when properly mitigated, would not result in a substantial temporary increase in ambient noise levels. The City permits construction hours within 500 feet of a residential unit are limited to the hours of 7:00 a.m. to 7:00 p.m. on Monday through Friday, unless otherwise expressly allowed in a Development Permit or other planning approval. The Project would contribute to other proximate construction noise impacts if construction activities were conducted concurrently. However, based on the noise analysis above, the Project's construction-related noise impacts would be less than significant following compliance with local regulations and mitigation measures outlined in this study.

Construction activities at other planned and approved projects would be required to take place during daytime hours, and the City and project applicants would be required to evaluate construction noise impacts and implement mitigation, if necessary, to minimize noise impacts. Construction for the proposed Almaden Office Project would overlap with the proposed Project. However, the Almaden Office Project is in the vicinity of two other projects while the Woz Way Project is only in the vicinity of one project (Almaden Office Project), so there is less of a cumulative contribution. The proposed Project is further away from the receptors that would be affected by the Almaden Office Project and its related projects. Conversely, the proposed Project receptors are further away from the Almaden Office Project. Noise attenuates with distance and from intervening topography and structures which would reduce cumulative exposure. A receptor close to one construction site is shielded by other features from the related project. For example, the Park Avenue receptors have a direct line of sight to the Almaden Office Project, but line of sight is obstructed to the proposed Project by the convention center. Construction would be distributed throughout both sites and not focused adjacent to one receptor. Additionally, the loudest construction phase is usually earthwork, which is also one of the shortest as discussed above. There would be less potential for these phases to overlap for the two Projects. Also, if there are subterranean levels, once the equipment gets below grade, the site has a natural noise barrier, which reduces the duration that overlapping construction noise would interact. It takes a doubling of sound energy to result in a noticeable noise increase. Therefore, even if the both construction projects were equal distances from a receptor, the cumulative contribution would be barely perceptible.

Both the Almaden Office Project and the proposed Project are required to implement extensive noise reduction measures that include the use of quiet equipment, best practices, and noise mitigation plans. Each project would be required to comply with the applicable City of San José Municipal Code limitations on allowable hours of construction. Therefore, Project construction would not contribute to cumulative impacts and impacts in this regard are not cumulatively considerable.

Cumulative Operational Noise

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the Project and other foreseeable projects. Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to buildout of the Project and other projects in the vicinity. However, noise from generators and other stationary sources could also generate cumulative noise levels.

Stationary Noise

As discussed above, impacts from the Project's operations would be less than significant. Due to site distance, intervening land uses, and the fact that noise dissipates as it travels away from its source, noise impacts from on-site activities and other stationary sources would be limited to the Project site and vicinity. Similar to the proposed Project, other planned and approved projects would be required to mitigate for stationary noise impacts at nearby sensitive receptors, if necessary. As stationary noise sources are generally localized, there is a limited potential for other projects to contribute to cumulative noise impacts. Therefore, other potential projects in the vicinity would not compound or increase the operational noise levels generated by the Project. Thus, the Project would not make a cumulatively considerable contribution to significant cumulative operational noises and cumulative operational noise impacts from related projects, in conjunction with project-specific noise impacts, would not be cumulatively significant.

Traffic Noise

A project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. Cumulative increases in traffic noise levels were estimated by comparing the Existing Plus Project and Cumulative scenarios to existing conditions. The traffic analysis considers cumulative traffic from future growth assumed in the traffic mode, as well as cumulative projects identified by the City of San José.

The following criteria is used to evaluate the combined effect of the cumulative noise increase.

- *Combined Effect*. The cumulative with Project noise level ("Cumulative With Project") would cause a significant cumulative impact if a 3.0 dB increase over "Existing" conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use. Although there may be a significant noise increase due to the project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the project.

The following criteria have been used to evaluate the incremental effect of the cumulative noise increase.

- *Incremental Effects*. The "Cumulative With Project" causes a 1.0 dBA increase in noise over the "Cumulative Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon and reduces as distance from the source increases. Consequently, only the Project and growth due to occur in the general area would contribute to cumulative noise impacts. *Table 13: Cumulative Plus Project Conditions Predicted Traffic Noise Levels*, identify the traffic noise effects along roadway segments in the vicinity of the Project site for "Existing," "Cumulative Without Project," and "Cumulative With Project," conditions, including incremental and net cumulative impacts.

Table 13: Cumulative Plus Project Conditions Predicted Traffic Noise Levels

Roadway Segment	Existing[1]	Cumulative Without Project[1]	Cumulative With Project[1]	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
				dBA Difference: Existing and Cumulative With Project	dBA Difference: Cumulative Without and With Project	
Almaden Boulevard						
San Carlos Ave to Woz Way	62.1	64.0	64.2	2.1	0.2	No
Woz Way to I-280 NB On-Ramp	62.9	64.1	65.1	2.2	1.0	No
Woz Way						
SR-87 NB Off-Ramp to Almaden Blvd.	56.5	59.6	61.0	4.5	1.4	No[2]

ADT = average daily trips; dBA = A-weighted decibels; DNL= day-night noise levels

1. Traffic noise levels are at 100 feet from the roadway centerline.
2. This level is above the combined and incremental effects for cumulative analysis. However, the downtown core is exempt from the standard 60 dBA noise threshold for residential and museum uses. There are no residences located on Woz Way. The closest museum activity area is approximately 135 feet from the roadway centerline. At this distance, traffic noise would not exceed 60 dBA at the nearest residential or museum use.

Source: Based on traffic data provided by Kimley-Horn, 2020. Refer to Appendix A for traffic noise modeling assumptions and results.

First, it must be determined whether the "Future With Project" increase above existing conditions (Combined Effects) is exceeded. As indicated in *Table 15*, the Project would have one roadway segment (Woz Way between SR 87 and Almaden Boulevard) that would exceed the combined effects criterion. The Project would increase local noise levels by a maximum of 4.5 dBA DNL. The increase is greater than 3 dBA and the resulting noise level would be 61.0 dBA which is greater than the City's noise threshold for residential and museum uses (60 dBA). Next, under the incremental effects criteria, cumulative noise impacts are defined by determining if the forecast ambient ("Future Without Project") noise level is increased by 1 dB or more. The Project would exceed the incremental effects for two roadway segment (Almaden Boulevard between Woz Way and I-280 NB On-Ramp and Woz Way between SR 87 and Almaden Boulevard) However, General Plan Policy EC 1-1 exempts the downtown core from the noise standard. Additionally, the cumulative traffic noise would be below the City's standard for outdoor recreation and park uses (65 dBA). The noise level 61 dBA is conditionally acceptable by the City and that per the U.S. EPA (Protective Noise Levels, 1978), standard construction reduces noise levels by approximately 25 dBA, which would reduce interior noise to 36 dBA and below the 45 dBA interior standard. Therefore, the Project's cumulative noise contribution would be less than significant. The Project would not result in long-term mobile noise impacts based on project-generated traffic as well as cumulative and incremental noise levels. Therefore, the Project, in combination with cumulative background traffic noise levels, would not result in a significant cumulative impact.

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Appendix A

Noise Data

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Woz Way
Project Number:
Scenario: Existing
Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

										Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	Ldn at	Distance to Contour				
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	Alameda Blvd	San Carlos to Woz	6	30	17,050	30	0	2.0%	1.0%	62.1	-	-	164	518
2	Alamaden Blvd	Woz to I-280 NB On-Ramp	6	35	20,170	30	0	2.0%	1.0%	62.9	-	-	197	622
3	Woz Way	SR87 NB Off-Ramp to Almaden	3	15	7,000	25	0	2.0%	1.0%	56.5	-	-	-	141

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Woz Way
Project Number:
Scenario: Existing Plus Project
Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	Ldn at	Distance to Contour		
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	Alameda Blvd	San Carlos to Woz	6	30	18,360	30	0	2.0%	1.0%	62.5	-	-	177	558
2	Alamaden Blvd	Woz to I-280 NB On-Ramp	6	35	27,230	30	0	2.0%	1.0%	64.2	-	84	266	840
3	Woz Way	SR87 NB Off-Ramp to Almaden	3	15	12,260	25	0	2.0%	1.0%	58.9	-	-	78	246

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Woz Way
Project Number:
Scenario: Opening Year
Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	Ldn at	Distance to Contour		
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	Alameda Blvd	San Carlos to Woz	6	30	22,560	30	0	2.0%	1.0%	63.4	-	-	217	686
2	Alamaden Blvd	Woz to I-280 NB On-Ramp	6	35	23,990	30	0	2.0%	1.0%	63.7	-	74	234	740
3	Woz Way	SR87 NB Off-Ramp to Almaden	3	15	8,630	25	0	2.0%	1.0%	57.4	-	-	55	173

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Woz Way
Project Number:
Scenario: Opening Year Plus Project
Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	Ldn at	Distance to Contour		
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	Alameda Blvd	San Carlos to Woz	6	30	23,870	30	0	2.0%	1.0%	63.6	-	73	230	726
2	Alamaden Blvd	Woz to I-280 NB On-Ramp	6	35	31,050	30	0	2.0%	1.0%	64.8	-	96	303	958
3	Woz Way	SR87 NB Off-Ramp to Almaden	3	15	13,890	25	0	2.0%	1.0%	59.5	-	-	88	279

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Woz Way
Project Number:
Scenario: Horizon Year
Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix			Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	Ldn at	Distance to Contour		
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	Alameda Blvd	San Carlos to Woz	6	30	26,170	30	0	2.0%	1.0%	64.0	-	80	252	796
2	Alamaden Blvd	Woz to I-280 NB On-Ramp	6	35	26,130	30	0	2.0%	1.0%	64.1	-	81	255	806
3	Woz Way	SR87 NB Off-Ramp to Almaden	3	15	14,420	25	0	2.0%	1.0%	59.6	-	-	92	289

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Woz Way
Project Number:
Scenario: Horizon Year Plus Project
Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	Ldn at	Distance to Contour		
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	Alameda Blvd	San Carlos to Woz	6	30	27,480	30	0	2.0%	1.0%	64.2	-	84	264	836
2	Alamaden Blvd	Woz to I-280 NB On-Ramp	6	35	33,190	30	0	2.0%	1.0%	65.1	-	102	324	1,024
3	Woz Way	SR87 NB Off-Ramp to Almaden	3	15	19,680	25	0	2.0%	1.0%	61.0	-	-	125	395

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

Noise Measurement Field Data

Project:	Woz Way	**Job Number:**	97817008
Site No.:	1	**Date:**	10/9/2019
Analyst:	Sophie La Herran	**Time:**	10:10 AM
Location:	Almaden/Woz Way Parking Lot		
Noise Sources:	Freeway, parking lot, traffic, and airplane		
Comments:			

Results (dBA):

	Leq:	Lmin:	Lmax:	Peak:
Measurement 1:	64.6	56.6	80.4	98.1

Equipment	
Sound Level Meter:	SoundPro DL-1
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	62°
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.07"
Humidity:	27%

Photo:

Kimley»Horn

Noise Measurement Field Data				
Project:	Woz Way		**Job Number:**	97817008
Site No.:	2		**Date:**	10/9/2019
Analyst:	Sophie La Herran		**Time:**	10:30 AM
Location:	Guadalupe Trail			
Noise Sources:	Traffic, Freeway, and Airplane			
Comments:				

Results (dBA):

	Leq:	Lmin:	Lmax:	Peak:
Measurement 1:	68.2	60.9	80.2	101.9

Equipment	
Sound Level Meter:	SoundPro DL-1
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	62°
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.07"
Humidity:	27%

Photo:

Kimley»Horn

Noise Measurement Field Data

Project:	Woz Way	**Job Number:**	97817008
Site No.:	3	**Date:**	10/9/2019
Analyst:	Sophie La Herran	**Time:**	10:46 AM
Location:	I-280 Freeway Entrance		
Noise Sources:	Freeway, Traffic, Airplane, and Ambulance		
Comments:			

Results (dBA):

	Leq:	Lmin:	Lmax:	Peak:
Measurement 1:	72.3	65.1	89.3	101.2

Equipment	
Sound Level Meter:	SoundPro DL-1
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	62°
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.07"
Humidity:	27%

Photo:

Kimley»Horn

Noise Measurement Field Data

Project:	Woz Way	**Job Number:**	97817008
Site No.:	4	**Date:**	10/9/2019
Analyst:	Sophie La Herran	**Time:**	11:05 AM
Location:	527 Almaden Blvd.		
Noise Sources:	Traffic and Airplane		
Comments:			

Results (dBA):

	Leq:	Lmin:	Lmax:	Peak:
Measurement 1:	68.2	59.2	78.3	96.2

Equipment	
Sound Level Meter:	SoundPro DL-1
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	62°
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.07"
Humidity:	27%

Photo:

Kimley»Horn