Appendix F NOISE STUDY

Stantec

Oakland Road Comfort Suites San Jose

Noise Report - Draft

September 3, 2020

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Acronyms and Abbreviations

CalGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CBC	California Building Code
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	Decibels
dB(A)	Decibels A-Weighted
EPA	United Stated Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz (Frequency)
Ldn / DNL	Day-Night Noise Level
Leq	Equivalent Noise Level
Lmax	Maximum Noise Level
Lmin	Minimum Noise Level
OITC	Outside-Inside Transmission Class
PPV	Peak Particle Velocity
RCNM	Roadway Construction Noise Model
STC	Sound Transmission Class

1.0 PROJECT DESCRIPTION

Urban Mint Hospitality (Applicant) is proposing to develop the Oakland Road Comfort Suites Project (Project) in the City of San José, California (City). The Project site is approximately 0.25-acres and consists of a single vacant parcel identified as Assessor's Parcel Number (APN) 241-13-019 at 1338 Oakland Road. The Project involves rezoning the Project site from the CIC Combined Industrial/Commercial zoning district to the CIC (PD) Planned Development zoning district to allow for the construction of a five-story hotel that is approximately 36,513 square feet. The proposed hotel would include up to 50 guest rooms and other onsite guest amenity areas, such as a fitness room, meeting room, and dining area. The Project would also include an alternative parking design (mechanical, stacked parking) to provide 39 onsite parking spaces. Other site improvements that would be part of the Project include landscaping, utility connections, and construction of pedestrian walkways and driveways.

2.0 ENVIRONMENTAL SETTING

2.1 NOISE FUNDAMENTALS AND TERMINOLOGY

Noise is generally defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an existing sound level.

Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting, written as dB(A) and referred to as A-weighted decibels. There is a strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. Table 1 summarizes typical A-weighted sound levels for different common noise sources.

Table 1: Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	-110-	Rock band
Jet flyover at 1,000 Feet		
	-100-	
Gas lawnmower at 3 Feet		
	-90-	
Diesel truck at 50 Feet at 50 MPH		Food blender at 3 Feet
Noisy urban area, daytime	-80-	Garbage Disposal at 3 Feet
Gas lawnmower, 100 Feet		
Commercial area	-70-	Vacuum Cleaner at 10 Feet
Heavy traffic at 300 Feet		Normal Speech at 3 Feet
	-60-	
Quiet urban daytime		Large business office
	-50-	Dishwasher in next room
Quiet urban nighttime		
Quiet suburban nighttime	-40-	Theater, large conference room (Background)
Quiet rural nighttime	-30-	
		Library
	-20-	Bedroom at night, concert hall (Background)
	-10-	
		Broadcast/recording studio
	-0-	

Source: Egan, David M. Architectural Acoustics. J. Ross Pub., Pub 2007

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (Leq), the minimum and maximum sound levels (Lmin and Lmax), percentile-exceeded sound levels (such as L10, L20), the day-night sound level (Ldn), and the community noise equivalent level (CNEL). Ldn and CNEL values often differ by less than 1 dB. As a matter of practice, Ldn and CNEL values are considered to be equivalent and are treated as such in this assessment. Table 2 defines sound measurements and other terminology used in this report.

Table 2: Definition of Sound Measurements

Sound Measurements	Sample Heading
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dB(A))	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
C-Weighted Decibel (dB(C))	The sound pressure level in decibels as measured using the C- weighting filter network. The C-weighting is very close to an unweighted or flat response. C-weighting is only used in special cases when low-frequency noise is of particular importance. A comparison of measured A- and C-weighted level gives an indication of low frequency content.

Sound Measurements	Sample Heading
Maximum Sound Level (Lmax)	The maximum sound level measured during the measurement period.
Minimum Sound Level (Lmin)	The minimum sound level measured during the measurement period.
Equivalent Sound Level (Leq)	The equivalent steady state sound level that in a stated period of time would contain the same acoustical energy.
Percentile-Exceeded Sound Level (Lxx)	The sound level exceeded xx % of a specific time period. L10 is the sound level exceeded 10% of the time. L90 is the sound level exceeded 90% of the time. L90 is often considered to be representative of the background noise level in a given area.
Day-Night Level (Ldn)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Peak Particle Velocity (Peak Velocity or PPV)	A measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches/second.
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.

Source: Federal Highway Administration Construction Noise Handbook, 2006[1]

With respect to how humans perceive and react to changes in noise levels, a 1 dB(A) increase is imperceptible, a 3 dB(A) increase is barely perceptible, a 5 dB(A) increase is clearly noticeable, and a 10 dB(A) increase is subjectively perceived as approximately twice as loud[2]. These subjective reactions to changes in noise levels were developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broadband noise and to changes in levels of a given noise source. These statistical indicators are thought to be most applicable to noise levels in the range of 50 to 70 dB(A), as this is the usual range of voice and interior noise levels. Numbers of agencies and municipalities have developed or adopted noise level standards, consistent with these and other similar studies to help prevent annoyance and to protect against the degradation of the existing noise environment.

For a point source such as a stationary compressor or construction equipment, sound attenuates based on geometry at a rate of 6 dB per doubling of distance. For a line source such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance. Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive

[1] https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook02.cfm, Last Accessed September 1, 2020.
[2] Egan, David M. Architectural Acoustics. J. Ross Pub., Pub 2007

surface, such as grass, attenuates at a slightly greater rate than sound that travels over a hard surface, such as pavement. The increased attenuation is typically in the range of 1–2 dB per doubling of distance. Barriers, such as buildings and topography that block the line of sight between a source and receiver, also increase the attenuation of sound over distance.

2.2 DECIBEL ADDITION

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted through ordinary arithmetic. On the dB scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, their combined sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one source produces a sound pressure level of 70 dB(A), two identical sources would combine to produce 73 dB(A). The cumulative sound level of any number of sources can be determined using decibel addition.

2.3 VIBRATION STANDARDS

Vibration is like noise such that noise involves a source, a transmission path, and a receiver. While related to noise, vibration differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person’s perception to vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system that is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of peak particle velocity in inches per second (in/sec PPV). Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of in/sec PPV.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 3 notes the general threshold at which human annoyance could occur is 0.1 in/sec PPV. Table 4 indicates the threshold for damage to typical residential and commercial structures ranges from 0.3 to 0.5 in/sec PPV.

Table 3: Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Barely perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe	2.0	0.40

Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seal equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual, April 2020[3]

Table 4: Guideline Vibration Damage Potential Criteria

Structure and Condition	Maximum PPV (in/sec)	Transient Sources Continuous/Frequent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.30	0.12
Historic and some old buildings	0.50	0.20
Older residential structure	0.70	0.30
New residential structures	1.2	0.50
Modern industrial/commercial buildings	2.0	0.50

Notes: Transient sources again create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seal equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual, April 2020

Operation of heavy construction equipment, particularly pile driving and other impact devices, such as pavement breakers, create seismic waves that radiate along the surface of the ground and downward into the earth. These surface waves can be felt as ground vibration. Vibration from the operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance. Perceptible groundborne vibration is generally limited to areas within a few hundred feet of construction activities. Table 5 summarizes typical reference vibration levels generated by select construction equipment.

[3] https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf, Last Accessed August 27, 2020.

Table 5: Reference Vibration Source Levels for Construction Equipment

Equipment	PPVref at 25 Feet
Vibratory roller	0.210
Large bulldozer	0.089
Loaded trucks	0.076
Small bulldozer	0.003

Source: Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual, September 2018[4]

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. The following equation can be used to estimate the vibration level at a given distance for typical soil conditions (Federal Transit Administration 2018). "PPVref" is the reference PPV from Table 5 and "Distance" is the distance between the source and the receptor:

PPV = PPVref x (25/Distance)^1.5

3.0 REGULATORY SETTING

Federal, state, and local agencies regulate different aspects of environmental noise. Generally, the federal government sets standards for transportation-related noise sources closely linked to interstate commerce. These include aircraft, locomotives, and trucks. No federal noise standards are directly applicable to this Project. The state government sets standards for transportation noise sources such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies. Local general plans identify general principles intended to guide and influence development plans.

3.1 STATE REGULATIONS

3.1.1 California Building Code (CBC)

Part 2, Title 24 of the California Code of Regulations California Noise Insulation Standards establishes minimum noise insulation standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings other than single-family residences. Under Section 1207.11 "Exterior Sound Transmission Control", interior noise levels attributable to exterior noise sources cannot exceed 45 Ldn in any habitable room. Where such residences are located in an environment where exterior noise is 60 Ldn or greater, an acoustical analysis is required to ensure interior levels do not exceed the 45 Ldn interior standard. If the interior allowable noise levels are met by requiring that

[4] 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, Last Accessed August 27, 2020.

windows be kept closed, the design for the building must also specify a ventilation or air conditioning system to provide a habitable interior environment.

3.1.2 California Green Building Standards (CalGreen)

The California Green Building Standards Code (CalGreen) establishes interior noise insulation standards for non-residential occupied buildings. The CalGreen code also applies to occupied non-guestroom spaces within a hotel, such as meeting rooms, offices, etc. CalGreen Section 5.507 “Environmental Comfort”, states the following:

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

1. *Within the 65 CNEL noise contour of an airport*

Exceptions:

1. *Ldn or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.*
2. *Ldn or CNEL for other airports and heliports for which a land use plan that has not been developed shall be determined by the local general plan noise element.*
3. *Within the 65 CNEL or Ldn noise contour of a freeway or expressway, railroad, industrial source or fxed-guideway notice source as determined by the Noise Element of the General Plan.*

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB Leq-1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq -1Hr) of 50 dBA in occupied areas during any hours of operations

5.507.4.2.1 Site features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition, or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

3.1.3 California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines, Appendix G, indicates a significant noise impact may occur if a project exposes persons to noise or vibration levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels. CEQA standards are discussed more below under Section 5.0, Environmental Analysis.

3.2 LOCAL REGULATIONS

3.2.1 Envision San Jose 2040 General Plan[5]

Chapter 3 "Environmental Leadership" of the December 18, 2018 Envision San Jose 2040 General Plan document identifies land use compatibility noise standards for noise-sensitive land uses affected by transportation and non-transportation noise sources. As shown in Figure 1, the ranges for noise-sensitive hotel and motel land uses that are affected by transportation noise sources are as follows:

Hotel and Motel Land Uses

- "Normally Acceptable" – 50-60 dB(A) Ldn
- "Conditionally Acceptable" – 60-75 dB(A) Ldn
- "Unacceptable" – Higher than 75 dB(A) Ldn

Sites with ambient noise at "conditionally acceptable" levels may be permitted only after a detailed analysis of the noise reduction requirements and needed noise insulation features included in the design. New construction with exterior noise levels in the "Unacceptable" range are discouraged because mitigation is usually not feasible to comply with the noise element policies.

[5] https://www.sanjoseca.gov/home/showdocument?id=22359, last accessed September 1, 2020.

Figure 1: City of San Jose Land Use Compatibility Standards

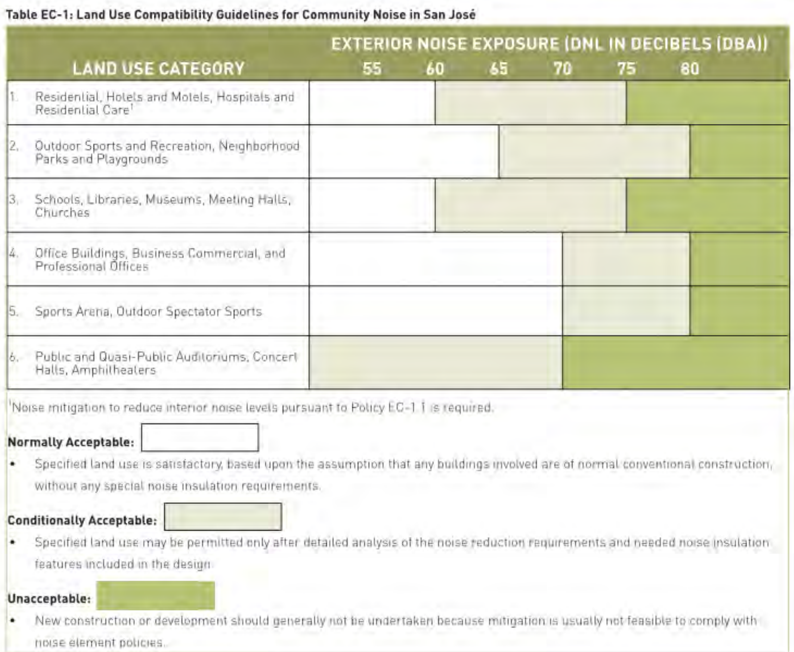


Table EC-1: Land Use Compatibility Guidelines for Community Noise in San José

LAND USE CATEGORY	EXTERIOR NOISE EXPOSURE (DNL IN DECIBELS (DBA)) 55	60	65	70	75	80
1. Residential, Hotels and Motels, Hospitals and Residential Care[1]						
2. Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds						
3. Schools, Libraries, Museums, Meeting Halls, Churches						
4. Office Buildings, Business Commercial, and Professional Offices						
5. Sports Arena, Outdoor Spectator Sports						
6. Public and Quasi-Public Auditoriums, Concert Halls, Amphitheaters						

[1]Noise mitigation to reduce interior noise levels pursuant to Policy EC-1.1 is required.

Normally Acceptable:
- Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable:
- Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.

Unacceptable:
- New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

The Envision San Jose 2040 General Plan also lists several policies relating to noise including the following:

- *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.*
- *EC-1.2: Minimize the noise impacts of new development on land uses sensitive to increased noise levels 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:*
    - o *Cause the Ldn at noise sensitive receptors to increase by five (5) dB(A) Ldn or more where the noise levels would remain "Normally Acceptable"; or*
    - o *Cause the Ldn at noise sensitive receptors to increase by three (3) dB(A) Ldn or more where noise levels would equal or exceed the "Normally Acceptable" level.*
- *EC-1.3: Mitigate noise generation of new non-residential land uses to 55 dB(A) Ldn at the property line when located adjacent to existing or planned noise sensitive residential and public/quasi-public land uses.*
- *EC-1.6: Regulate the effects of operational noise from existing and new industrial and commercial development on adjacent uses through noise standards in the City's Municipal Code.*
- *EC-1.7: Require construction operations within San Jose 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 is located within 500 feet of residential uses or 200 feet of commercial or offices would:

- o *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 residential and other uses.

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

3.2.2 City of San Jose Municipal Code[6]

Paragraph 20.40.600.B “Performance Standards”, Table 20-105 “Noise Standards” in the City of San Jose Municipal Code sets criteria for noise generated by commercially-zoned properties that is received by other adjacent properties. The table lists a maximum noise level of 55 dB(A) at the property line of all adjacent residentially zoned properties and a maximum noise level of 60 dB(A) at the property line of all commercially zoned or other non-residential uses.

Paragraph 20.40.600.C states there shall be no activity on any site that causes ground vibration that is perceptible without instruments at the property line of the site.

[6] https://library.municode.com/ca/san_jose/codes/code_of_ordinances, last accessed September 1, 2020.

4.0 EXISTING NOISE ENVIRONMENT

4.1 SENSITIVE RECEPTORS

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are considered to be more sensitive to noise intrusion than are commercial or industrial activities. Ambient noise levels can also affect the perceived desirability or livability of a development. As shown in Figure 2, the Project site (within the yellow polygon) is surrounded by a mix of land uses, including the South Bay Mobile Home Park to the northwest and northeast (within the aqua-hatched area in Figure 2) and commercial buildings to the southwest and southeast across Oakland Road and Faulstich Court. The closest noise-sensitive receptors (red pins in Figure 2) are the mobile homes within the South Bay Mobile Home Park at 1350 Oakland Road directly adjacent to the northwest and northeast edges of the Project site.

4.2 EXISTING AMBIENT NOISE LEVELS

The existing or ambient, noise environment in a project area is characterized by the area's general level of development. Areas which are not urbanized are relatively quiet, while areas which are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities.

The City of San Jose is exposed to several sources of noise, including traffic on major highways, such as US-101 and Interstate 880, noise from traffic on busy arterial roads, such as Oakland Road, noise from railways, and noise from the Norman Y. Mineta San Jose International Airport. Traffic noise depends primarily on traffic speed (tire noise increases with speed), proportion of medium and large truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise), and number of speed control devices, such as traffic lights (accelerating and decelerating vehicles and trucks can generate more noise).

Changes in traffic volumes can also have an impact on overall traffic noise levels. For example, it takes 25 percent more traffic volume to produce an increase of only 1 dB(A) in the ambient noise level. For roads already heavy with traffic volume, an increase in traffic numbers could even reduce noise because the heavier volumes could slow down the average speed of the vehicles. A doubling of traffic volume results in a 3 dB(A) increase in noise levels.

Typically, the existing ambient noise environment at a project site would be determined through a noise measurement survey consisting of long term (24-hour) measurement locations to calculate day-night noise levels (Ldn) and additional short term (15-minute) measurements to extrapolate the noise levels across the project site and at the closest noise-sensitive receptors. Due to current conditions in California associated with closures and modified work conditions from the COVID-19 pandemic, traffic volumes on the roadways are currently much lower than is experienced during normal times. If ambient noise level measurements were taken at the Project site now, the noise levels measured would be less than what is anticipated to be present during normal conditions.

Therefore, a multi-step approach was taken to determine the ambient noise levels at the Oakland Road Comfort Suites Hotel site and the surrounding area. First, 2035 future traffic noise contours for the neighborhoods within San Jose are shown in Appendix C "Environmental Noise Assessments" in the

December 7, 2010 “Envision San Jose 2040 General Plan Comprehensive Update Environmental Noise Assessment” document[7]. Figure 8 “Berryessa 2035 Noise Contour Map” shows future noise contours along Oakland Road, including the Project site. From Figure 8, noise levels at the edge of the hotel site along Oakland Road are shown to be between 70-75 dB(A) Ldn. The other facades of the hotel site (i.e. along Faulstitch Court) are shown to be between 65-70 dB(A) Ldn.

Second, noise levels at the Project site and surrounding properties was projected using measured and estimated ambient noise levels from the September 3, 2017 “Oakland Road Rotten Robbie” document prepared by J.C. Brennan & Associates, Inc. The ambient noise levels from this Project were referenced because of the more recent timing of the measurements, the proximity to the Oakland Road Comfort Suites site (approximately 0.34 miles south of the Project site) and the distance between the measurements/analysis points and Oakland Road.

The September 2017 J.C. Brennan & Associates, Inc. document states the existing noise environment along Oakland Road includes roadway traffic on Oakland Road, some noise from industrial and commercial uses, and to a lesser extent, distant aircraft noise from the San Jose Airport.

A noise monitoring survey at the corner of Oakland Road and Commercial Street was conducted between Tuesday, February 14 and Wednesday, February 15, 2017. The ambient noise measured approximately 85’ from the centerline of Oakland Road was 65 dB(A) during both daytime and nighttime hours and the day-night average noise level extrapolated at the measurement location was 68 dB(A) Ldn.

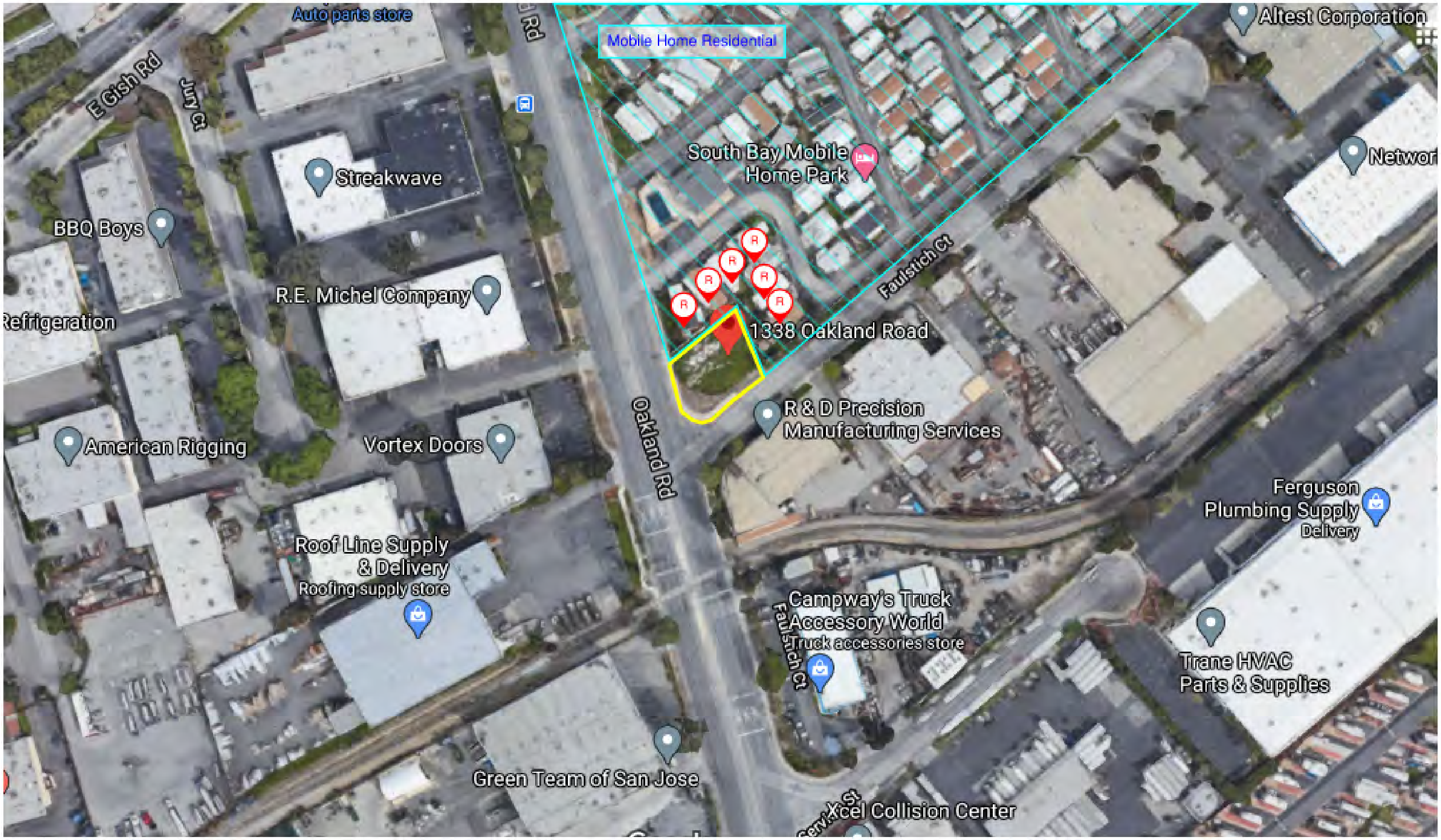
The edge of the Oakland Road Comfort Suites Project site is approximately 62’ from the centerline of Oakland Road. Accounting for distance attenuation from a line source, expected ambient noise levels at the hotel would be approximately 69 dB(A) during both daytime and nighttime hours with a day-night noise level of 72 dB(A) Ldn. This estimate also matches well with the data presented in the General Plan Comprehensive Update Environmental Noise Assessment document.

The closest noise-sensitive receptor in the South Bay Mobile Home Park is about 80 feet from the centerline of Oakland Road. Again, accounting for distance attenuation from a line source, expected ambient noise levels at the mobile home would also be about 69 dB(A) during both daytime and nighttime hours with a day-night noise level of 72 dB(A) Ldn.

Therefore, the estimated ambient noise levels at the Project site and at the closest residential receptor are already within the “Conditionally Acceptable” range for both hotel and residential uses according to the City of San Jose Land Use Compatibility Standards (Figure 1).

[7] https://www.sanjoseca.gov/home/showdocument?id=22053, Last Accessed September 2, 2020.

Figure 2: Project Site and Neighboring Sensitive Receptors Locations



5.0 METHODOLOGY FOR ANALYSIS

Appendix C “Environmental Noise Assessments” in the December 7, 2010 “Envision San Jose 2040 General Plan Comprehensive Update Environmental Noise Assessment” document and the September 3, 2017 “Oakland Road Rotten Robbie” document prepared by J.C. Brennan & Associates, Inc were used to provide baseline noise conditions at nearby sensitive receptors and within the Project site vicinity. For the purpose of this analysis, potential sensitive receptors were determined by reviewing current aerial photography.

Impacts from future Project-related traffic were estimated using predicted peak hour volumes from the traffic report, prepared by Stantec.

Noise from the Project’s mechanical systems would operate regularly and are therefore required to comply with the policies in the Envision San Jose 2040 General Plan and Paragraph 20.40.600.B “Performance Standards”, Table 20-105 “Noise Standards” in the City of San Jose Municipal Code.

The Project would not include sources of vibration during operations. Therefore, no operational vibration assessment is required.

The FHWA Roadway Construction Noise Model (RCNM) was used to estimate the impact from short-term construction activities. The RCNM is used as the FHWA’s national standard for predicting noise generated from construction activities. The RCNM analysis includes the calculation of noise levels at a defined distance for a variety of construction equipment. The spreadsheet inputs include acoustical use factors and distance to receptors and calculates the expected Lmax values and Leq values at a selected receptor.

5.1 EPA GUIDELINES

The EPA has established guidelines (Environmental Protection Agency Region 10 Environmental Impact Statement Guidelines, April 1973[8]) for assessing the impact of an increase in noise levels. These guidelines have been used as industry standard for several years to determine the potential impact of noise increases on communities. Most people will tolerate a small increase in background noise (up to about 5 dB(A)) without complaint, especially if the increase is gradual over a period of years (such as from gradually increasing traffic volumes). Increases greater than 5 dB(A) may cause complaints and interference with sleep. Increases above 10 dB(A) (heard as a doubling of judged loudness) are likely to cause complaints and should be considered a serious increase. Table 6 defines each of the traditional impact descriptions, their quantitative range, and the qualitative human response to changes in noise levels.

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8 https://nepis.epa.gov/Exe/ZyNET.exe/2000RZBX.TXT?ZyActionD=ZyDocument&Client=EPA&Index=Prior+to+1976&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C70thru75%5CTxt%5C00000002%5C2000RZBX.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL, Last Accessed September 2, 2020

Table 6: EPA Impact Guidelines

Increase over Existing or Baseline Sound Levels	Impact Per EPA Region Guidelines	Qualitative Human Perception of Difference in Sound Levels
0 dB to 5 dB	Minimum Impact	Imperceivable or Slight Difference
6 dB to 10 dB	Significant Impact	Significant Noticeable Difference – Complaints Possible
Over 10 dB	Serious Impact	Loudness Changes by a Factor of Two or Greater. Clearly Audible Difference – Complaints Likely

6.0 ENVIRONMENTAL ANALYSIS

6.1 EXTERIOR TRAFFIC NOISE

To describe future noise levels due to traffic added from the Project, AM and PM peak hour traffic counts (with and without the Project) listed in the traffic study provided by Stantec were used to determine the percentage increase of traffic on the roads adjacent to the Project site and nearby sensitive receptors.

Table 7 shows the peak hour counts associated with traffic on the local roadway network under the baseline and baseline plus Project traffic conditions. The last columns in the table show the overall percentage change and the estimated difference in peak hour noise level.

Table 7: Traffic Peak Hour Counts and Estimated Noise Increase

Roadway Intersection	Baseline Peak Hour Traffic Count	Peak Hour Traffic Count with Project	Percentage Change	Estimated dB Change
N 10h Street and Old Bayshore Highway	2,774 (3,478)	2,776 (3,480)	0.07% (0.06%	0.004 (0.004)
Oakland Road and E. Gish Road	2,424 (2,645)	2,433 (2,653)	0.37% (0.30%)	0.016 (0.012)
Oakland Road and Commercial Street	4,631 (4,228)	4,635 (4,232)	0.09% (0.09%)	0.004 (0.004)
Oakland Road and US 101 NB	4,448 (3,761)	4,452 (3,765)	0.09% (0.11%)	0.004 (0.004)
Oakland Road and US 101 SB	3,045 (3,937)	3,048 (3,940)	0.10% (0.08%)	0.004 (0.004)

Notes:

1. Numbers in parenthesis are PM peak hour traffic volumes.

The Project is expected to minimally increase traffic counts along Oakland Road and the surrounding roadways. There will essentially be no change in traffic noise (below 1 dB(A)) expected along these streets. Therefore, the Project should not cause increased traffic noise levels over the baseline conditions at the neighboring sensitive receptors and this would be a less than significant impact relative to this topic.

6.2 INTERIOR TRAFFIC NOISE LEVEL IMPACTS

6.2.1 Interior Traffic Noise Level Impacts – Guestrooms

The California Building Code states the interior noise levels attributable to exterior sources shall not exceed 45 dB(A) in any habitable room within new hotels and motels. The needed sound isolation requirements of a building's exterior façade will be dependent on the following conditions:

- The dimension of the rooms with exterior windows;
- The finishes within the rooms;
- The ratio of clear glass to solid wall in the exterior wall assembly; and
- The exterior solid wall construction.

Modern construction with punch windows typically provides a 25 dB(A) exterior-to-interior noise level reduction with windows closed. Therefore, generally-speaking, sensitive receptors exposed to exterior noise of 70 dB(A) Ldn or less will typically comply with the code-required interior noise level standard. Modern construction utilizing window walls, curtainwalls, or a high ratio of exterior clear glass will provide less reduction with the windows closed. Buildings using a high amount of glass will typically comply with the code-required interior noise level standard if exposed to exterior noise levels of 67 dB(A) Ldn or less.

Noise levels experienced at the Project site (at 72 dB(A) Ldn) are expected to exceed 67 dB(A) Ldn. Assuming the hotel guestrooms have a carpeted floor and hard-surfaced ceiling, additional noise reduction measures, such as acoustically treated windows would be required to help achieve the code-dictated 45 dB(A) Ldn interior noise level. This would include the use of a window system with a minimum Outside-Inside Transmission Class (OITC) rating of OITC 29 for all hotel guestrooms with a glass curtainwall. All hotel guestrooms with punch windows would need a glass system with a minimum OITC 23 rating to help achieve the 45 dB(A) Ldn interior noise level.

As an alternative, the Applicant may submit a detailed interior noise analysis outlining alternative noise control measures that would ensure compliance with the code-required 45 dB(A) Ldn interior noise level standard. This analysis should specify required sound ratings for glazing as well as any other modifications to the building envelope used to meet the interior noise level standard. This analysis shall be prepared by a qualified acoustical consultant. Implementation of this measure would reduce this potentially significant impact to a less than significant level.

6.2.2 Interior Traffic Noise Level Impacts – Occupied Non-Guestroom Spaces

CalGreen states if an occupied non-guestroom space (i.e. lobby, meeting rooms, dining area) is exposed to a noise level of 65 dB(A) Leq 1-hour during any hour of operation, the exterior façade design shall incorporate features to reduce noise inside the spaces to a maximum of 50 dB(A) Leq 1-hour. Given the Project site will be exposed to noise levels up to 72 dB(A) Ldn, a one-hour noise level of 65 dB(A) or greater is possible and the building would be subject to the CalGreen requirements.

Assuming a worst case condition of the cafeteria/breakfast seating area with a hard-surfaced floor, hard ceiling, and a curtainwall system, windows with a minimum rating of OITC 25 would be required to help achieve the code-dictated maximum 50 dB(A) 1-hour Leq noise level. A typical 1" thick insulating glass unit constructed of ¼" glass – ½" airspace – ¼" glass has an expected rating of OITC 26. Therefore, standard construction should be acceptable for the non-guestroom hotel areas to achieve the CalGreen code requirement and traffic noise levels would have a less than significant impact.

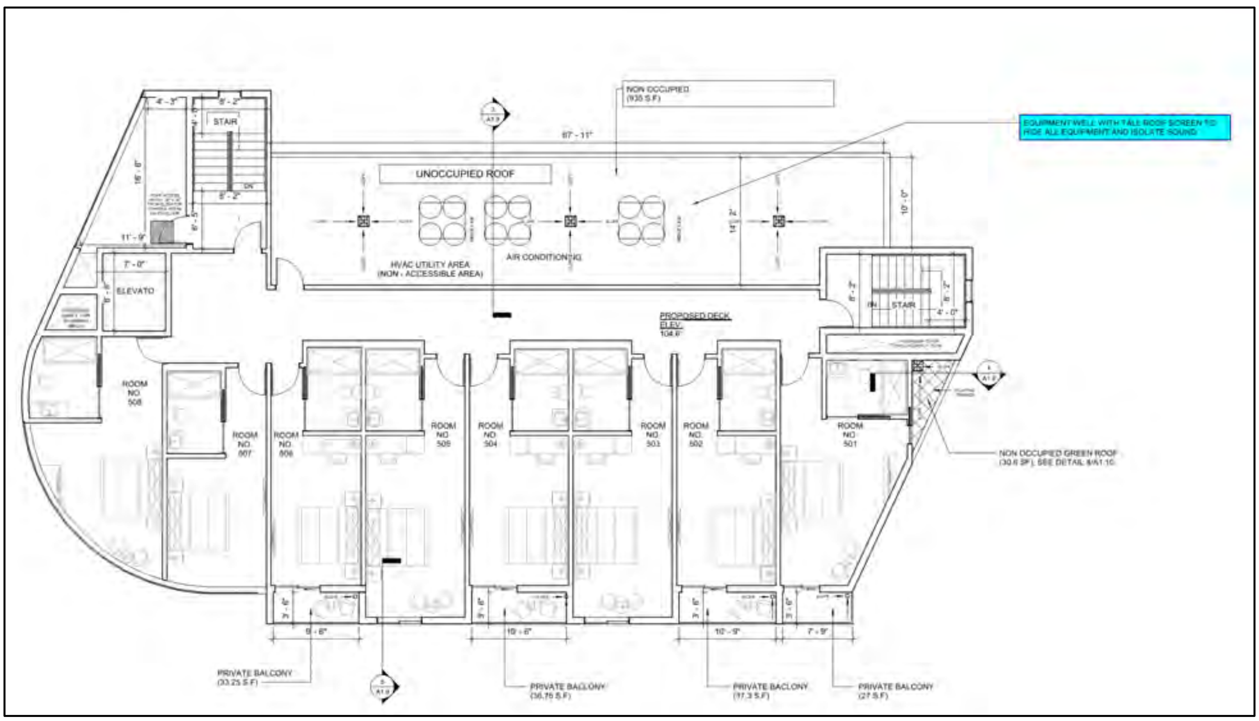
6.3 PROJECT FIXED-SOURCE AND OPERATIONAL NOISE

6.3.1 Fixed-Source Noise

Typical hotel/commercial construction will often involve new rooftop mechanical equipment. This equipment will generate noise that will radiate to the neighboring properties. The noise from this equipment will be required to comply with Policies EC-1.2, EC-1.3, and EC-1.6 in the Envision San Jose 2040 General Plan and with the maximum noise levels listed in Paragraph 20.40.600.B "Performance Standards", Table 20-105 "Noise Standards" in the City of San Jose Municipal Code. Considering the worst-case of these standards, mechanical noise from the hotel would be limited to 55 dB(A) at the neighboring property lines.

Noise from HVAC equipment can vary greatly, depending on the size of the equipment and the type of equipment used. While the Applicant has not designed and selected the actual mechanical systems for the Project, the schematic Project drawings do show mechanical equipment (assumed to be condensing units) on the 5th Floor in an "equipment well with a tall roof screen to hide all equipment and isolate sound" as shown in Figure 3 below.

Figure 3: Rooftop Mechanical Equipment and Equipment Well



Assuming there are three large or six medium-sized condensing units on the 5th Floor and the solid screen is the same height as the condensing units, each condensing unit could have a maximum sound power level of 95 dB(A) and still achieve the 55 dB(A) code requirement at the neighboring property lines. Typical sound power levels from a medium-sized condensing unit are approximately 77.0 dB(A)[9] and should achieve the code requirement at the neighboring property lines.

When the actual on-site equipment is selected, the equipment would be designed to incorporate measures as needed, such as shielding, barriers, and/or attenuators, to reduce noise levels that may affect nearby properties. Therefore, the impact of fixed-source noise to the neighboring properties would be less than significant.

6.3.2 Trash Enclosure

The Oakland Road Comfort Suites Project will have a trash enclosure situated on the southeast side of the building facing Faulstitch Court. The trash enclosure will not face any noise-sensitive receptors and will be well-shielded to the mobile home park by the hotel building itself. Activity from garbage truck traffic and trash pickup would remain similar as currently experienced with the commercial uses already around the site and noise from trash pickup would have a less than significant impact.

6.4 SHORT TERM CONSTRUCTION NOISE

Construction activities would include site preparation, grading, building construction, and paving. Each construction stage has its own mix of equipment, and consequently, its own noise characteristics. The various construction operations would change the character of the noise generated at the Project site and therefore, the noise level as construction progresses. The loudest stages of construction include the building construction and grading stages, as the noisiest construction equipment is typically earthmoving and grading equipment. The construction of the Project would be conducted in five stages and each stage will use different construction equipment. The main types of noise-producing equipment for each construction stage are shown in Table 8.

Table 8: Construction Stage Equipment

Construction Stage	Construction Equipment	
Site Preparation	• Grader	• Tractor
Grading	• Concrete Saw • Rubber-Tired Dozer • Sump Pumps (2)	• Tractor • Front-End Loader
Building Construction	• Crane • Backhoe • Tower Crane	• Forklifts (2) • Tractor • Construction Elevator
Paving	• Paver • Roller	• Cement and Mortar Mixers (4) • Tractor
Architectural Coating	• Air Compressor	

[9] Noise level based on an Aermec Model ANL 150 HA outdoor condensing unit, https://aeroventic.com/attachment/download/316.

Table 9 lists the types of construction equipment and the maximum and average operational noise level as measured at 20 feet from the operating equipment. The 20-foot distance represents the approximate distance between the Project and the closest noise-sensitive receptor within the South Bay Mobile Home Park.

Table 9: Summary of Federal Highway Administration Roadway Construction Noise Model

Construction Equipment Source at the Project Site	Distance to Nearest Sensitive Receptor	Sound Level at Residence		
		Lmax, dB(A)	Acoustical Use Factor (%)	Leq, dB(A)
Backhoe	20 feet	85.5	40	81.5
Concrete Saw	20 feet	97.5	20	90.5
Crane, Tower Crane	20 feet	88.5	16	80.6
Concrete Mixer Truck	20 feet	86.8	40	82.8
Compressor (air)	20 feet	85.6	40	81.6
Dozer	20 feet	89.6	40	85.6
Forklift[1]	20 feet	87.1	40	83.1
Front End Loader	20 feet	87.1	40	83.1
Grader	20 feet	93.0	40	89.0
Paver	20 feet	85.2	50	82.2
Roller	20 feet	88.0	20	81.0
Tractor	20 feet	92.0	40	88.0
Pumps (Sump Pump)	20 feet	88.9	50	85.9
Man Lift (Construction Elevator)	20 feet	82.7	20	75.7

Notes:
1. The RCNM program does not have sound levels for a forklift. Therefore, the noise levels from a front-end loader were used in the analysis to simulate the forklift.
2. Source: Stantec 2020, Federal Highway Administration RCNM v1.1 2008

A worst-case condition for construction activity would assume all noise-generating equipment were operating at the same time and at the same distance from the closest noise-sensitive receptor. Using this assumption, the RCNM program calculated the following combined Leq and Lmax noise levels from each stage of construction as shown in Table 10:

Table 10: Calculated Noise Level from Each Construction Stage

Construction Phase	Distance to Closest Noise Sensitive Receptor, ft	Calculated Lmax, dB(A)	Calculated Leq, dB(A)
Site Preparation	20	95.5	91.5
Grading	20	100.1	94.9
Building Construction	20	96.6	91.6
Paving	20	96.5	92.2
Architectural Coating	20	85.6	81.6

Although noise levels from construction could fall into the "Unacceptable" range as defined in Figure 1, increases in noise levels from construction activities would be temporary and construction activities would be limited to the restrictions set by the Envision San Jose 2040 General Plan. To recap, Policy EC-1.7 in the Envision San Jose 2040 General Plan states the following:

- *EC-1.7: Require construction operations within San Jose 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 is located within 500 feet of residential uses or 200 feet of commercial or offices 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 residential and other uses.

The Project will also conform to the following Standard Permit Conditions approved for this development:

44. Construction-Related Noise. Noise minimization measures include, but are not limited to, the following:

    a. 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.

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

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

    d. Prohibit unnecessary idling of internal combustion engines.

e. 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.

f. Utilize “quiet” air compressors and other stationary noise sources where technology exists.

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

h. 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.

i. 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.

j. 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.

k. 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.

In addition to the restrictions listed in the City of San Jose documents, the Federal Transit Administration offers the following construction noise reduction measures listed in Section 7 “Noise and Vibration During Construction” in the Transit Noise and Vibration Impact Assessment Manual document (FTA Report No. 0123 September 2018):

“Design Considerations and Project Layout:

- Construct noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
- Re-route truck traffic away from residential streets, if possible. Select streets with fewest homes, if no alternatives are available.
- Site equipment on the construction lot as far away from noise-sensitive sites as possible.

- Construct walled enclosures around especially noisy activities, or clusters of noisy equipment. For example, shields can be used around pavement breakers, loaded vinyl curtains can be draped under elevated structures.

Sequence of Operations:

- Combine noisy operations to occur in the same time period. The total noise level produced will not be significantly greater than the level produced if the operations were performed separately.
- Avoid nighttime activities. Sensitivity to noise increases during the nighttime hours in residential neighborhoods.

Alternative Construction Methods:

- Use specially quieted equipment, such as quieted and enclosed air compressors, mufflers, on all engines.
- Select quieter demolition methods, where possible."

In conclusion, construction noise would be short-term and intermittent. Furthermore, construction noise would comply with the City's construction noise standards; therefore, impacts would be less than significant with the City's construction noise measures incorporated.

6.5 GROUNDBORNE VIBRATION

During construction of the proposed Project, equipment such as trucks, bulldozers, and rollers may be used as close as 20 feet from the nearest sensitive receptors in the South Bay Mobile Home Park. Equipment used during Project construction could generate vibration levels between 0.0042 PPV and 0.2935 PPV at 20 feet, as shown below in Table 11. The groundborne vibration levels for a large bulldozer, loaded truck, and roller could be at or above the FTA vibration threshold at which human annoyance could occur of 0.10 PPV. All vibration levels should, however, be below the threshold for potential building damage as defined in Table 4.

Table 11: Vibration Source Levels for Construction Equipment

Type of Equipment	Peak Particle Velocity at 20 Feet	Threshold at which Human Annoyance Could Occur	Potential for Proposed Project to Exceed Threshold
Large Bulldozer	0.1244	0.10	Yes
Loaded Trucks	0.1062	0.10	Yes
Small Bulldozer	0.0042	0.10	None
Vibratory Roller	0.2935	0.10	Yes

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

Although vibration levels from construction could exceed the threshold at which human annoyance could occur, construction activities would be temporary and construction activities would be limited to the vibration restrictions set by the Envision San Jose 2040 General Plan. To recap, Policy EC-2.3 in the Envision San Jose 2040 General Plan states the following:

- *EC-2.3: Require new development to minimize continuous vibration impacts to adjacent uses during demolition and construction…A continuous vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction. Equipment or activities typical of generating continuous vibration include but are not limited to excavation equipment; static compaction equipment; vibratory pile drivers; pile-extraction equipment; and vibratory compaction equipment… Transient vibration impacts may exceed a vibration limit of 0.08 in/sec PPV only when and where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction.*

In addition to the restrictions listed in the City of San Jose documents, the FTA Transit Noise and Vibration Impact Assessment Manual document also offers the following construction vibration reduction measures listed in Section 7 "Noise and Vibration During Construction":

Design Considerations and Project Layout

- Route heavily loaded trucks away from residential streets. Select streets with the fewest homes if no alternatives are available.
- Operate earth-moving equipment on the construction lot as far away from vibration-sensitive sites as possible.

Sequence of operations

- Phase demolition, earth-moving, and ground-impacting operations so as not to occur in the same time period. Unlike noise, the total vibration level produced could be substantially less when each vibration source operates separately.
- Avoid nighttime activities. Sensitivity to vibration increases during the nighttime hours in residential neighborhoods.

Alternative construction methods

- Select demolition methods involving little to no impact, where possible.
- Avoid vibratory rollers and packers near sensitive areas.

To summarize, vibration associated with construction activities would be short-term and intermittent and would comply with the City's construction standards. Therefore, impacts from construction vibration would be less than significant with the City's measures incorporated.

7.0 CONCLUSION

Noise and vibration associated with the proposed Project is primarily generated by construction activities. Operational noise can be attributed to the very slight increase in traffic volumes, as well as from typical fixed mechanical equipment.

Based on the FHWA RCNM, the Project can generate high levels of construction noise which are temporary and would not result in long-term noise increases. While the noise levels presented are a "worst-case" scenario and may at times be audible over traffic-related noise levels surrounding the area, these high levels are not expected to be continuous. Moreover, the highest noise and vibration levels would occur only during the hours allowed by the City of San Jose restrictions and should be reduced by the application of measures to control construction noise and vibration at the Project site. Noise and vibration control techniques would be implemented to ensure noise generated from temporary construction activities would not be substantial at nearby sensitive receptors.

Operational noise from fixed mechanical equipment will incorporate measures as needed, such as shielding, barriers, and/or attenuators, to reduce noise levels that may affect nearby properties to the limits set forth in the Envision San Jose 2040 General Plan and the City of San Jose Municipal Code.

Therefore, the Oakland Road Comfort Suites Project would follow all requirements of the Envision San Jose 2040 General Plan and the City of San Jose Municipal Code. The noise generated from the operation of the hotel, with appropriate mitigation, would not significantly alter the existing acoustic environment in the area. Therefore, the Project would have a less than significant impact on the neighboring receptors.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/2/2020
Case Description: Oakland Road Comfort Suites - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South Bay Mobile Home Park	Residential	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		20	0
Tractor	No	40	84		20	0

Calculated (dBA)

Equipment	Lmax	Leq
Grader	93	89
Tractor	92	88
Total	**95.5**	**91.5**

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/2/2020
Case Description: Oakland Road Comfort Suites - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South Bay Mobile Home Park	Residential	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	20	0
Dozer	No	40		81.7	20	0
Tractor	No	40	84		20	0
Front End Loader	No	40		79.1	20	0
Pumps	No	50		80.9	20	0
Pumps	No	50		80.9	20	0

Calculated (dBA)

Equipment	Lmax	Leq
Concrete Saw	97.5	90.5
Dozer	89.6	85.6
Tractor	92	88
Front End Loader	87.1	83.1
Pumps	88.9	85.9
Pumps	88.9	85.9
Total	**100.1**	**94.9**

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/2/2020
Case Description: Oakland Road Comfort Suites - Building Construction

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
South Bay Mobile Home Park	Residential	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	20	0
Forklift (Front End Loader)	No	40		79.1	20	0
Forklift (Front End Loader)	No	40		79.1	20	0
Tractor	No	40	84		20	0
Backhoe	No	40		77.6	20	0
Crane	No	16		80.6	20	0
Construction Elevator (Man Lift)	No	20		74.7	20	0

Calculated (dBA)

Equipment		Lmax	Leq
Crane		88.5	80.6
Forklift (Front End Loader)		87.1	83.1
Forklift (Front End Loader)		87.1	83.1
Tractor		92	88
Backhoe		85.5	81.5
Crane		88.5	80.6
Construction Elevator (Man Lift)		82.7	75.7
	Total	**96.6**	**91.6**

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/2/2020
Case Description: Oakland Road Comfort Suites - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South Bay Mobile Home Park	Residential	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	20	0
Concrete Mixer Truck	No	40		78.8	20	0
Concrete Mixer Truck	No	40		78.8	20	0
Concrete Mixer Truck	No	40		78.8	20	0
Paver	No	50		77.2	20	0
Roller	No	20		80	20	0
Tractor	No	40	84		20	0

Calculated (dBA)

Equipment		Lmax	Leq
Concrete Mixer Truck		86.8	82.8
Concrete Mixer Truck		86.8	82.8
Concrete Mixer Truck		86.8	82.8
Concrete Mixer Truck		86.8	82.8
Paver		85.2	82.2
Roller		88	81
Tractor		92	88
	Total	**96.5**	**92.2**

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/2/2020

Case Description: Oakland Road Comfort Suites - Architectural Coating

---- Receptor #1 ----

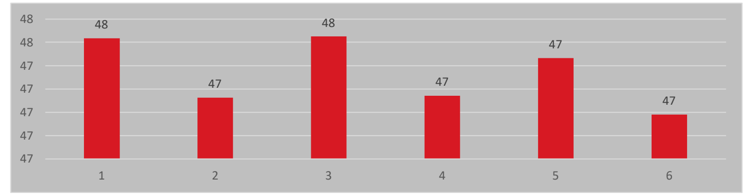
Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South Bay Mobile Home Park	Residential	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	20	0

Calculated (dBA)

Equipment		Lmax	Leq
Compressor (air)		85.6	81.6
	Total	**85.6**	**81.6**

Project Name: Oakland Road Comfort Suites
Proj. Num: 185704714
Created by: Tracie Ferguson
Date: 9/2/2020
Notes: Calculating Maximum Lw from Outdoor Units
Assuming Six Medium Condensing Units with a Screen
Calculation Point at Closest Property Line Shared with Mobile Home Park



Noise to Neighboring Property Line
Source Zoning: Commercial
Receiver Zoning: Residential
Ordinance Level: 55 dB(A)

Calculated Noise Level:

55	49	47	49	52	51	48	40	28

If No Barrier, Enter "0"

Wave, λ

63	125	250	500	1000	2000	4000	8000
17.89	9.02	4.51	2.25	1.13	0.56	0.28	0.14

Equipment Noise Levels:

Tag	Model	Lw Or Meas. Dist	dBA	63	125	250	500	1000	2000	4000	8000	Elevation of source:	Elevation of barrier:	Elevation of receiver:	Horizontal distance from source to barrier:	Horizontal distance from barrier to receiver:	Horizontal distance from source to receiver:	Path-Length (DIRECT), r_d	Path-Length (BARRIER), r_b	Distance Atten.
Condensing Unit 1	Maximum Lw Calc	Lw	95	81	81	86	91	92	89	81	69	44	44	6	5	40	46	59.3	60.6	33
Condensing Unit 2	Maximum Lw Calc	Lw	95	81	81	86	91	92	89	81	69	44	44	6	7	40	47	60.8	62.5	33
Condensing Unit 3	Maximum Lw Calc	Lw	95	81	81	86	91	92	89	81	69	44	44	6	5	40	45	59.1	60.4	33
Condensing Unit 4	Maximum Lw Calc	Lw	95	81	81	86	91	92	89	81	69	44	44	6	7	40	47	60.6	62.3	33
Condensing Unit 5	Maximum Lw Calc	Lw	95	81	81	86	91	92	89	81	69	44	44	6	5	42	47	60.5	61.8	33
Condensing Unit 6	Maximum Lw Calc	Lw	95	81	81	86	91	92	89	81	69	44	44	6	7	42	49	61.9	63.6	33

Tag	Barrier Attenuation Per Octave Band: 63	125	250	500	1k	2k	4k	8k	Resulting Level, dBA	Resulting Level Per Octave Band: 63	125	250	500	1k	2k	4k	8k
Condensing Unit 1	7	9	11	14	15	15	15	15	48	41	40	42	45	44	41	33	21
Condensing Unit 2	8	10	12	15	15	15	15	15	47	40	39	41	43	44	41	32	20
Condensing Unit 3	7	9	11	14	15	15	15	15	48	41	40	42	45	44	41	33	21
Condensing Unit 4	8	10	12	15	15	15	15	15	47	40	39	41	43	44	41	32	20
Condensing Unit 5	7	9	11	14	15	15	15	15	47	41	40	42	44	44	41	32	20
Condensing Unit 6	8	10	12	15	15	15	15	15	47	40	39	41	43	43	40	32	20
									55	49	47	49	52	51	48	40	28