Appendix F:
Noise Supporting Information

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Noise Impact Analysis Report
Moorpark Avenue Multi-family Residential Project
City of San José, Santa Clara County, California

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Date: September 6, 2022

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ACRONYMS AND ABBREVIATIONS

ADT	Average Daily Traffic
APN	Assessor's Parcel Number
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
DNL	day/night average sound level
du/acre	dwelling units per acre
EPA	United States Environmental Protection Agency
FCS	FirstCarbon Solutions
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
in/sec	inch per second
L_{eq}	equivalent sound level
L_{max}	maximum noise/sound level
MM	Mitigation Measure
PPV	peak particle velocity
rms	root mean square
TTM	Tentative Tract Map
VdB	velocity in decibels

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SECTION 1: INTRODUCTION

1.1 - Purpose of Analysis and Study Objectives

This Noise Impact Analysis Report has been prepared by FirstCarbon Solutions (FCS) to evaluate and disclose the potential off-site and on-site noise impacts associated with the proposed Moorpark Avenue Multi-family Residential Project (proposed project). The following is provided in this report:

- A description of the study area, project site, and proposed project.
- Information regarding the fundamentals of noise and vibration.
- A description of the local noise guidelines and standards.
- An analysis of the potential short-term, construction-related noise and vibration impacts from the proposed project.
- An analysis of the potential long-term, operations-related noise and vibration impacts from the proposed project.

1.2 - Project Summary

The project site is located at 2323, 2369, 2389, and 2391 Moorpark Avenue in the City of San José, in Santa Clara County, California (Exhibit 1). The approximately 2-acre project site is surrounded by a residential neighborhood to the west, Moorpark Avenue and medical facilities to the south, single-family housing and Central Way to the east, and a noise barrier and Interstate 280 (I-280) to the north (Exhibit 2).

TTLC San José-Moorpark, LLC (applicant) is seeking approval for site annexation, pre-zoning, a vesting tentative map, and a site Development Permit to demolish all existing structures including 12 existing residential buildings containing 30 multi-family units, along with several storage buildings, carports, paving, and landscaping, and construct five 3-story, multi-family buildings providing 41 attached 2- and 3-bedroom residential dwelling units. These 3-story multi-family structures would contain residential units ranging in size from approximately 1,100 to 1,800 square feet with attached two-car garages. Buildings 1 and 3 would each provide nine attached housing units. Buildings 2 and 4 would each provide eight attached housing units. Building 5 would provide seven attached housing units. The proposed project would provide parking and common areas and would install a private drive (Exhibit 3).

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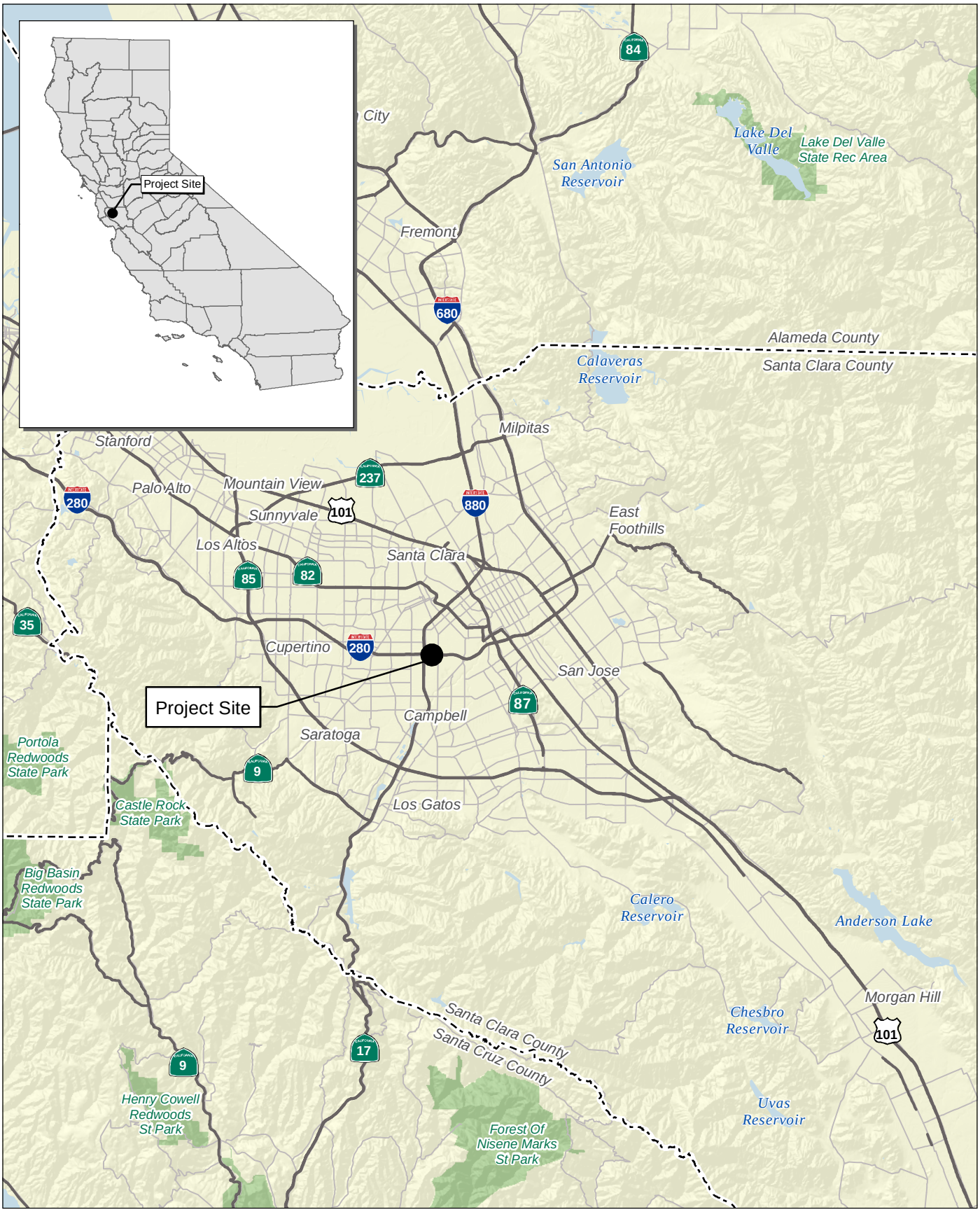

Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

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Exhibit 1
Regional Location Map

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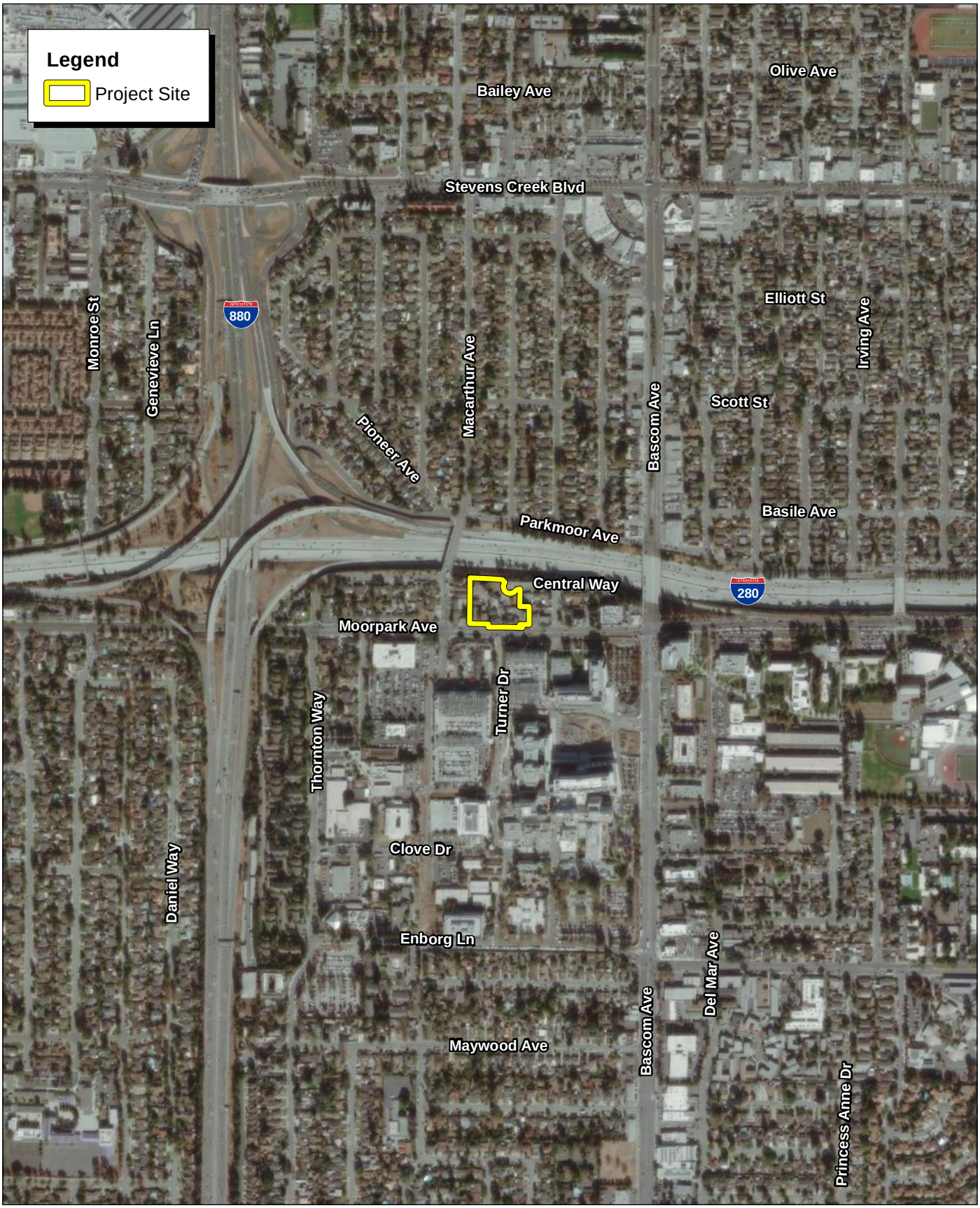

Source: ESRI Aerial Imagery.

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800 400 0 800
Feet

Exhibit 2
Local Vicinity Map

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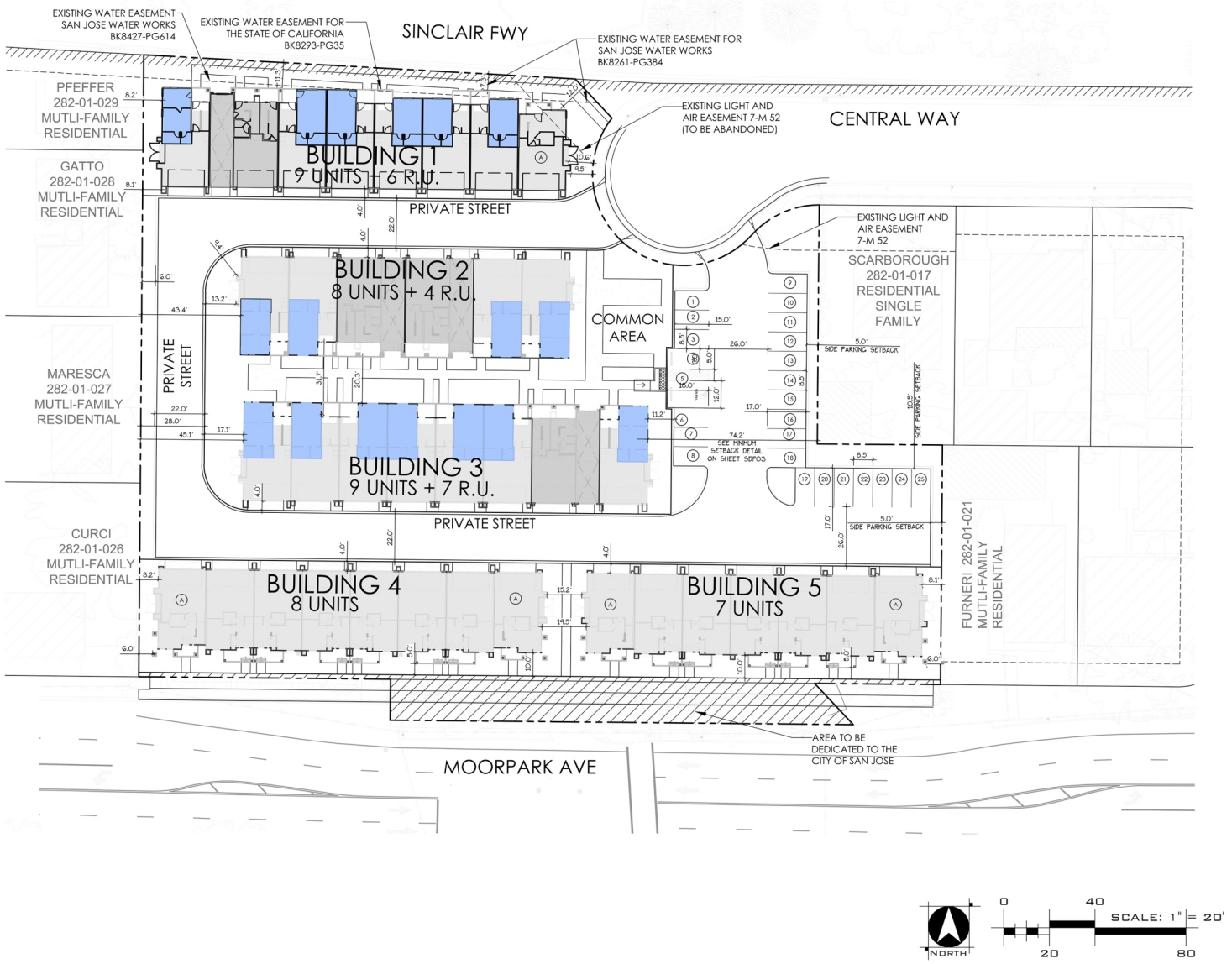

Source: The True Life Companies, March 31, 2022.

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Figure 3
Site Plan

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SECTION 2: NOISE AND VIBRATION FUNDAMENTALS

2.1 - Characteristics of Noise

Noise is generally defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

Several noise measurement scales exist which are used to describe noise in a particular location. A *decibel* (dB) is a unit of measurement that indicates the relative intensity of a sound. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness. Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive.

Noise impacts can be described in three categories. The first is audible impacts, which refers to increases in noise levels noticeable to humans. An audible increase in noise levels generally refers to a change of 3 dB or greater since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6-dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise-sensitive receptor of concern. A long, closely spaced continuous line of vehicles along a roadway becomes a line source and produces a 3 dBA decrease in sound level for each doubling of distance. However, experimental evidence has shown that where sound from a highway propagates close to “soft” ground (e.g., plowed farmland, grass, crops, etc.), the most suitable drop-off rate to use is not 3 dBA but rather 4.5 dBA per distance doubling. There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The predominant rating scales for human communities in the State of California are the equivalent continuous sound level (L_{eq}) and Community Noise Equivalent Level (CNEL) or the day/night average level (DNL) based on dBA. L_{eq} is the total sound energy of time-varying noise over a sample period. CNEL is the time-varying noise over a 24-hour period, with a 5-dBA weighting factor applied to the hourly L_{eq} for noises occurring from

7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10-dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). DNL is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and DNL are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

Common sources of noise in urban environments include mobile sources, such as traffic, and stationary sources, such as mechanical equipment or construction operations.

Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on each construction site and, therefore, would change the noise levels as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 1 shows typical noise levels of construction equipment as measured at a distance of 50 feet from the operating equipment. Construction period noise levels are higher than background ambient noise levels, but they eventually cease once construction is complete.

Table 1: Typical Construction Equipment Maximum Noise Levels, L_{max}

Category	Impact Device? (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Pickup Truck	No	55
Pumps	No	77
Air Compressors	No	80
Backhoe	No	80
Front-End Loaders	No	80
Portable Generators	No	82
Dump Truck	No	84
Tractors	No	84
Auger Drill Rig	No	85
Concrete Mixer Truck	No	85
Cranes	No	85
Bulldozers	No	85
Excavators	No	85

Category	Impact Device? (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Graders	No	85
Jackhammers	Yes	85
Man Lift	No	85
Paver	No	85
Pneumatic Tools	No	85
Rollers	No	85
Scrapers	No	85
Concrete/Industrial Saws	No	90
Impact Pile Driver	Yes	95
Vibratory Pile Driver	No	95

Notes:
dBA = A-weighted decibel
Source: Federal Highway Administration (FHWA). 2006. Highway Construction Noise Handbook. August.

2.2 - Characteristics of Groundborne Vibration

Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings.

Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. When assessing annoyance from groundborne vibration, vibration is typically expressed as root mean square (rms) velocity in units of decibels of 1 micro-inch per second. To distinguish these vibration levels referenced in decibels from noise levels referenced in decibels, the unit is written as “VdB.”

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting, pile driving, and operating heavy earthmoving equipment. However, construction vibration impacts on building structures are generally assessed in terms of peak particle velocity (PPV). For purposes of this analysis, project-related impacts are expressed in terms of PPV. Typical vibration source levels from construction equipment are shown in Table 2.

Table 2: Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	rms Velocity in Decibels (VdB) at 25 Feet
Water Trucks	0.001	57
Scraper	0.002	58
Bulldozer (Small)	0.003	58

Construction Equipment	PPV at 25 Feet (inches/second)	rms Velocity in Decibels (VdB) at 25 Feet
Jackhammer	0.035	79
Concrete Mixer	0.046	81
Concrete Pump	0.046	81
Paver	0.046	81
Pickup Truck	0.046	81
Auger Drill Rig	0.051	82
Backhoe	0.051	82
Crane (Mobile)	0.051	82
Excavator	0.051	82
Grader	0.051	82
Loader	0.051	82
Loaded Trucks	0.076	86
Bulldozer (Large)	0.089	87
Caisson drilling	0.089	87
Vibratory Roller (Small)	0.101	88
Compactor	0.138	90
Clam shovel drop	0.202	94
Vibratory Roller (Large)	0.210	94
Pile Driver (Impact: typical)	0.644	104
Pile Driver (Impact: upper range)	1.518	112

Notes:
PPV = peak particle velocity
VdB = velocity in decibels
rms = root mean square
Source: Compilation of scientific and academic literature, generated by Federal Transit Administration (FTA) and Federal Highway Administration (FHWA).

The propagation of groundborne vibration is not as simple to model as airborne noise. This is because noise in the air travels through a relatively uniform medium, while groundborne vibrations travel through the earth, which may contain significant geological differences. Factors that influence groundborne vibration include:

- **Vibration source:** Type of activity or equipment, such as impact or mobile, and depth of vibration source;
- **Vibration path:** Soil type, rock layers, soil layering, depth to water table, and frost depth; and
- **Vibration receiver:** Foundation type, building construction, and acoustical absorption.

Among these factors that influence groundborne vibration, there are significant differences in the vibration characteristics when the source is underground compared to at the ground surface. In addition, soil conditions are known to have a strong influence on the levels of groundborne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Vibration propagation is more efficient in stiff clay soils than in loose sandy soils, and shallow rock seems to concentrate the vibration energy close to the surface, and can result in groundborne vibration problems at large distance from the source. Factors such as layering of the soil and depth to the water table can have significant effects on the propagation of groundborne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils. There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil type, but it has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests. The vibration level (calculated below as PPV) at a distance from a point source can generally be calculated using the vibration reference equation:

$$PPV = PPV_{ref} * (25/D)^n \text{ (in/sec)}$$

Where:

PPV_{ref} = reference measurement at 25 feet from vibration source
D = distance from equipment to property line
n = vibration attenuation rate through ground

According to Section 7 of the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual, an "n" value of 1.5 is recommended to calculate vibration propagation through typical soil conditions.[1]

[1] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

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SECTION 3: REGULATORY SETTING

3.1 - Federal Regulations

3.1.1 - United States Environmental Protection Agency

In 1972, Congress enacted the Noise Control Act. This Act authorized the United States Environmental Protection Agency (EPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels) categories, as shown in Table 3. The EPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dBA. The "(24)" signifies an L_{eq} duration of 24 hours. The EPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

Table 3: Summary of EPA-Recommended Noise Levels to Protect Public Welfare

Effect	Level	Area
Hearing loss	$L_{eq}(24) \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq}(24) \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq}(24) \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Notes:
(24) signifies an L_{eq} duration of 24 hours.
dB = decibel
Source: United States Environmental Protection Agency (EPA). 1978. Protective Noise Levels, EPA 550/9-79-100. November.

3.1.2 - Federal Transit Administration

The FTA has established industry accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its Transit Noise and Vibration Impact Assessment

Manual.[2] The FTA Guidelines include thresholds for construction vibration impacts for various structural categories as shown in Table 4.

Table 4: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)	Approximate VdB
I. Reinforced—Concrete, Steel or Timber (no plaster)	0.5	102
II. Engineered Concrete and Masonry (no plaster)	0.3	98
III. Non-engineered Timber and Masonry Buildings	0.2	94
IV. Buildings Extremely Susceptible to Vibration Damage	0.12	90

Notes:
VdB = velocity in decibels
PPV = peak particle velocity
in/sec = inch per second
Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

3.2 - State Regulations

The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. Referred to as the "State Noise Insulation Standard," it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A. For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor-ceiling assemblies must block or absorb sound. For limiting noise from exterior noise sources, the noise insulation standards set an interior standard of 45 dBA CNEL in any habitable room with all doors and windows closed. In addition, the standards require preparation of an acoustical analysis demonstrating the manner in which dwelling units have been designed to meet this interior standard, where such units are proposed in an area with exterior noise levels greater than 60 dBA CNEL.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses. The City of San José has adopted and modified those guidelines as described as follows.

[2] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

3.3 - Local Regulations

The project site is located within the City of San José and this analysis was performed using the City's noise regulations. The City of San José addresses noise in the Noise Element of the San José General Plan 2040[3] and in the City of San José Municipal Code.[4]

City of San José General Plan 2040

The land use compatibility guidelines for Community Noise in San José are laid out in the City's General Plan. For example, new residential land uses are considered "normally acceptable" with exterior noise exposures of up to 60 dBA DNL and "conditionally compatible" where the exterior noise exposure is between 60 and 75 dBA DNL, such that the specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features are included in the design.

The General Plan includes policies for the purpose of avoiding or mitigating impacts resulting from planned development projects within the City. The following policies are specific to noise and vibration and are applicable to the proposed project.

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 DNL. Include appropriate site and building design, building construction and noise attenuation techniques in new development to meet this standard. For sites with exterior noise levels of 60 dBA DNL or more, an acoustical analysis following protocols in the City-adopted California Building Code is required to demonstrate that development projects can meet this standard. The acoustical analysis shall base required noise attenuation techniques on expected *Envision General Plan* traffic volumes to ensure land use compatibility and General Plan consistency.

Exterior Noise Levels

- The City's acceptable exterior noise level objective is 60 dBA DNL or less for residential and most institutional land uses.
- 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 the balconies and residential stoops and porches facing existing

[3] City of San José. 2018. Envision San José General Plan 2040. Website: https://www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/citywide-planning/envision-san-jos-2040-general-plan. Accessed June 16, 2021.

[4] Code of Ordinance. 2021. San José Municipal Code. Website: https://library.municode.com/ca/san_jose/codes/code_of_ordinances. Accessed June 16, 2021.

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 buildings and structures for outdoor common use areas. On sites subject to aircraft overflights or adjacent to elevated roadways, use noise attenuation techniques to achieve the 60 dBA DNL standard for noise for 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 (Land Use Categories 1, 2, 3 and 6 in Table EC-1 in the General Plan or Table 4.12-1 in this Initial Study) 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-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. 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

technial [*sic*] study by a qualified professional that verifies that there will be virtually no risk of comsetic [*sic*] 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 comsetic [*sic*] damage to sensitive buildings from the new development during demolition and construction.

City of San José Municipal Code

The Municipal Code restricts construction hours within 500 feet of a residential unit to occur only between 7:00 a.m. to 7:00 p.m. Monday through Friday, unless otherwise expressly allowed in a Development Permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence.

The Zoning Ordinance limits noise levels to 55 dBA L_{max} at any residential property line and 60 dBA L_{max} at commercial property lines, unless otherwise expressly allowed in a Development Permit or other planning approval. The City further prohibits activity on any site that causes ground vibration that is perceptible without instruments at the property line of the site.

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SECTION 4: EXISTING NOISE CONDITIONS

The project site is surrounded by a residential neighborhood to the west, Moorpark Avenue and medical facilities to the south, single-family housing and Central Way to the east, and a noise barrier and I-280 to the north.

The dominant noise sources in the project vicinity include traffic on local roadways, primarily from traffic on I-280, which runs along the northern boundary of the project site. However, this portion of I-280 is depressed below grade of the project site by more than 25 feet, and there is an existing 14-foot-high sound wall at the top of the embankment along the proposed project's northern boundary line.

Existing stationary noise sources on the project site include mechanical ventilation system operations and parking lot activity. These noise sources are similar to the noise sources that would be produced by the proposed project.

The existing noise environment in the project vicinity was documented through ambient noise monitoring. Two short-term noise measurements (15-minutes each) were taken on Wednesday, August 4, 2021, and one long-term (24-hour) noise measurement was taken from 12:30 p.m. on Wednesday, August 4, 2021, to 12:30 p.m. on Thursday, August 5, 2021. The short-term noise measurements were taken between 11:45 a.m. and 12:16 p.m., during the midday peak noise hour. These measurements provide a baseline for existing noise conditions in the project vicinity.

Short-term Noise Measurements

The short-term noise measurements taken at the project site are summarized in Table 5. The noise measurements indicate that daytime ambient noise levels range from 64.3 dBA to 68.1 dBA L_{eq} at the project's southern boundary adjacent to Moorpark Avenue. The noise technician observed that the dominant noise sources in the project vicinity are traffic noise on Moorpark Avenue. The noise monitoring survey sheet and sound level meter results, as well as setup photos are provided in Appendix A.

Long-term Noise Measurement

The long-term noise measurement (LT-1) was conducted along the northern boundary of the project site, on the southern side of the cul-de-sac circle of Central Way, at the project's northeastern property line, approximately 50-feet south of the sound wall facing I-280. The 24-hour average ambient noise levels at this location averaged 66.5 dBA CNEL, with daytime average noise levels of 63.4 dBA L_{eq}, and nighttime average noise levels of 58.2 dBA L_{eq}. Measured ambient noise levels at this location exceeded 65 dBA in only 1 hour of the 24-hour period measured. The noise monitoring survey sheet and sound level meter results are provided in Appendix A.

Table 5: Existing Ambient Noise Levels in the Project Vicinity

Site Location	Location Description	dBA	Primary Noise Sources
ST-1	On southern property line, adjacent to Moorpark Avenue. About 170 feet west of Central Avenue	64.3 L_{eq}	Traffic on Moorpark Avenue
ST-2	Southern property line, adjacent to Moorpark Avenue and Turner Avenue intersection	68.1 L_{eq}	Traffic on Moorpark Avenue
LT-1	On the southern side of the cul-de-sac circle of Central Way, at the project's northeastern property line. Approximately 50 feet south of the sound wall facing I-280	66.5 CNEL	Traffic on I-289 and Central Avenue

Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
CNEL = Community Noise Equivalent Level
Source: FCS 2021.

SECTION 5: THRESHOLDS OF SIGNIFICANCE AND IMPACT ANALYSIS

5.1 - Thresholds of Significance

According to the California Environmental Quality Act (CEQA) Guidelines updated Appendix G, to determine whether impacts related to noise and vibration are significant environmental effects, the following questions should be evaluated.

Would the proposed project:

a) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

b) 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?

c) Generate excessive groundborne vibration or groundborne noise levels?

d) 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?

5.2 - Noise Levels That Would Conflict with Any Land Use Plan, Policy, or Regulation

A significant impact would occur if the proposed multi-family residential land use development would be exposed to transportation noise levels in excess of applicable land use compatibility standards. The City considers environments with ambient noise levels of up to 60 dBA DNL to be "normally acceptable" for new residential land use development. Additionally, according to General Plan Policy EC-1.1, interior noise levels for all habitable rooms of the proposed multi-family residential development must not exceed 45 dBA DNL.

As previously discussed, the dominant noise source on the project site is traffic on I-280 to the north. According to the future noise contour map of the Noise Element of the General Plan,[5] the project site lies within the 65 dBA to 75 dBA DNL traffic noise contours of I-280. This portion of I-280 is depressed below grade of the project site by more than 20-feet, and there is an existing 14-foot-high sound wall at the top of the embankment along the project's northern boundary line.

As noted in the Section 4, Existing Noise Conditions, a long-term noise measurement (LT-1) was conducted along the northern boundary of the project site, on the southern side of the cul-de-sac circle of Central Way, at the proposed project's northeastern property line, approximately 50 feet south of the sound wall facing I-280. The documented 24-hour average ambient noise levels at this

[5] City of San José. 2010. Envision San Jose 2040 General Plan Draft Program EIR, Noise and Vibration. Figure3.3-1: Existing Citywide Traffic Noise Contours Map. Page 311.

location averaged 66.5 dBA CNEL, with daytime average noise levels of 63.4 dBA L_{eq}, and nighttime average noise levels of 58.2 dBA L_{eq}. Measured ambient noise levels at this location exceeded 65 dBA in only 1 hour of the 24-hour period measured.

These projected noise levels are within the City's "conditionally acceptable" range for new residential land use development (60 dBA to 75 dBA DNL). Therefore, noise insulation features are needed to ensure that the project would meet the interior noise level standard of 45 dBA DNL.

Based on the EPA's Protective Noise Levels, with a combination of walls, doors, and windows, standard construction in accordance with building code requirements for multi-family residential developments would provide 25 dBA in exterior-to-interior noise reduction with windows closed and 15 dBA or more with windows open.[6] With windows open, the interior noise levels of the proposed units exposed to the highest traffic noise levels that are projected to be experienced on the project site would not meet the interior noise standard of 45 dBA DNL for indoor sleeping areas (i.e., 66.5 dBA - 15 dBA = 51.5 dBA). However, the proposed residential buildings would include mechanical ventilation, which would allow windows to remain closed for prolonged periods of time, sufficiently reducing traffic noise levels to meet the interior noise level standard of 45 dBA DNL (i.e., 66.5 dBA – 25 dBA = 41.5 dBA). With implementation of the proposed mechanical ventilation systems the projected future traffic noise levels on the project site would be reduced to ensure that the interior noise level standard is met.

Therefore, the proposed project will not conflict with the City's normally acceptable land use compatibility standard for this type of land use development. Therefore, implementation of the proposed project would not result in a conflict with applicable land use compatibility standards, and this impact would be less than significant.

5.3 - Substantial Noise Increase in Excess of Standards

A significant impact would occur if the proposed project would generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

5.3.1 - Construction Noise Impacts

Short-term Construction Impacts

For purposes of this analysis, a significant impact would occur if construction activities would result in a substantial temporary increase in ambient noise levels outside of the City's permissible hours for construction that would result in annoyance or sleep disturbance of nearby sensitive receptors. The City's permissible hours for construction activity are between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday. No construction is permitted on Saturdays, Sundays, or federal holidays.

Construction-related Traffic Noise

Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land

[6] United States Environmental Protection Agency (EPA). Protective Noise Levels. EPA 550/9-79-100, November 1978

uses, and the timing and duration of the construction activities. One type of short-term noise impacts that could occur during project construction would result from the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the project site.

The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from passing trucks would be similar to existing vehicle-generated noise on these local roadways. Typically, a doubling of the Average Daily Traffic (ADT) hourly volumes on a roadway segment is required in order to result in an increase of 3 dBA in traffic noise levels, which, as discussed in the characteristics of nose discussion above, is the lowest change that can be perceptible to the human ear in outdoor environments. Project-related construction trips would not be expected to double the hourly traffic volumes along any roadway segment in the project vicinity. For this reason, short-term intermittent noise from construction trips would be minor when averaged over a longer time period and would not result in a perceptible increase in hourly- or daily average traffic noise levels in the project vicinity. Therefore, short-term construction-related noise impacts associated with the transportation of workers and equipment to the project site would be less than significant.

Construction Equipment Operational Noise

The second type of short-term noise impact is related to noise generated during construction on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings. Impact equipment, such as impact pile drivers, are not expected to be used during construction of this project.

The loudest phase of construction is typically the site preparation and grading phase, as that is when the loudest pieces of heavy construction equipment would operate. For example, the maximum noise level generated by each scraper is assumed to be 85 dBA L_{max} at 50 feet from this equipment. Each bulldozer would also generate 85 dBA L_{max} at 50 feet. The maximum noise level generated by graders is approximately 85 dBA L_{max} at 50 feet.

A conservative but reasonable assumption is that this equipment would operate simultaneously and continuously over at least a 1-hour period in the vicinity of the closest existing residential receptors, but would move linearly over the project site as they perform their earth moving operations, spending a relatively short amount of time adjacent to any one receptor. A characteristic of sound is that each doubling of sound sources with equal strength increases a sound level by 3 dBA. Assuming that each piece of construction equipment operates at some distance from the other equipment, a reasonable worst-case combined noise level during this phase of construction would be 90 dBA L_{max} at a distance of 50 feet from the acoustic center of a construction area. The acoustical center

reference is used because construction equipment must operate at some distance from one another on a project site, and the combined noise level as measured at a point equidistant from the sources (acoustic center) would be the worst-case maximum noise level. These operations would be expected to result in a reasonable worst-case hourly average of 86 dBA L_{eq} at a distance of 50 feet from the acoustic center of a construction area. These worst-case construction noise levels would only occur during the site preparation phase of development.

The closest noise-sensitive receptors to the proposed project site are single-family residences located directly east of the project site. The closest residence would be located approximately 40 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would potentially operate at the project site. At this distance, worst-case construction noise levels could range up to approximately 92 dBA L_{max}, intermittently, and could have an hourly average of up to 88 dBA L_{eq}, at the façade of the nearest single-family residential home.

The proposed project would be required to comply with the City of San José Municipal Code, which limits noise generating construction activities to daytime hours, and requires the implementation of measures that avoid or minimize significant noise impacts from construction activities.

Although there could be a relatively high single-event noise exposure potential causing an intermittent noise nuisance, the effect of construction activities on longer-term (hourly or daily) ambient noise levels would be small. However, construction activities could result in a temporary increase in ambient noise levels in the project vicinity that could result in annoyance or sleep disturbance of nearby sensitive receptors. Therefore, limiting construction activities to the daytime hours would reduce the effects of noise levels produced by these activities on longer-term (hourly or daily) ambient noise levels and would reduce the potential for noise-related annoyance or sleep disturbances at nearby sensitive receptors. The City of San José Municipal Code limits construction activities to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday. The proposed project would be required to comply with the following Conditions of Approval related to noise. With implementation of the Municipal Code and the Conditions of Approval listed below, the project would not result in substantial temporary increases at the off-site sensitive receptors above standards established in the General Plan, and construction noise impacts on sensitive receptors in the project vicinity would be considered less than significant with mitigation incorporated.

Conditions of Approval

In compliance with the City of San José's General Plan and Municipal Code, implementation of the following Conditions of Approval is required to reduce potential construction period noise impacts:

- Construction activities shall be limited to daytime hours between 7:00 a.m. and 7 :00 p.m. on weekdays.
- 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 shall be available to all residents. Use noise attenuation techniques such as shielding by buildings and structures for outdoor common use

areas. On sites subject to aircraft overflights or adjacent to elevated roadways, use noise attenuation techniques to achieve the 60 dBA DNL standard for noise from sources other than aircraft and elevated roadway segments.

- 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

- 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.

5.3.2 - Mobile Source Operational Noise Impacts

A significant impact would occur if project-generated traffic would result in a substantial increase in ambient noise levels compared with those that would exist without the project. The City considers a significant noise impact to occur if a project would cause the DNL at noise-sensitive receptors to increase by 5 dBA DNL or more where the noise levels would remain "normally acceptable"; or where it would cause the DNL at noise-sensitive receptors to increase by 3 dBA DNL or more where noise levels would equal or exceed the "normally acceptable" level.

Typically, a doubling of the ADT hourly volumes on a roadway segment is required in order to result in an increase of 3 dBA in traffic noise levels, which, as discussed in the characteristics of nose discussion above, is the lowest change that can be perceptible to the human ear in outdoor environments. Therefore, for purposes of this analysis, a doubling of the existing ADT volumes would result in a substantial permanent increase in traffic noise levels.

Based on the traffic analysis prepared for the project by TJKM traffic consultants,[7] the proposed project is calculated to generate 302 daily trips, with 20 trips generated during the AM peak-hour and 25 trips generated during the PM peak-hour. The existing land uses on-site generate a total of 234 daily trips, with 15 trips generated during the AM peak-hour and 20 trips generated during the PM peak-hour. Thus, the proposed project would generate 68 net new daily trips, with 5 net new AM peak-hour trips, and 5 net new PM peak hour trips. These net new trips would not double existing traffic trips on any roadway segment in the project vicinity. Furthermore, this percent increase in trips would result in a less than 1 dBA increase in traffic noise levels along any roadway segment in the project vicinity. This increase is below a level that would be a perceptible increase and well below a level that would be considered a substantial increase in traffic noise levels. Therefore, implementation of the proposed project would not result in a substantial increase in traffic noise levels compared with traffic noise levels existing without the project.

5.3.3 - Stationary Source Operational Noise Impacts

A significant impact would occur if operational noise levels generated by stationary noise sources at the proposed project site would result in a substantial permanent increase in ambient noise levels in excess of any of the noise performance thresholds established by the City of San José. The Zoning Ordinance limits operational noise levels to 55 dBA L_{max} as measured at any receiving residential property.

The primary new stationary noise source associated with implementation of the project would be the new mechanical ventilation systems associated with the proposed residential uses. Potential impacts associated with this new noise source are analyzed below.

Mechanical Equipment Operations

At the time of this analysis, details were not available pertaining to proposed mechanical ventilation systems for the project; therefore, a reference noise level for typical mechanical ventilation systems was used. Noise levels from typical residential mechanical ventilation equipment range from 50 dBA to 70 dBA L_{eq} at a distance of approximately 5 feet. Proposed mechanical ventilation systems could be located as close as approximately 30 feet from the nearest off-site receptors. At this distance, noise generated by mechanical ventilation equipment would attenuate to below 55 dBA L_{eq} at the nearest off-site residential receptors. These operational noise levels would not exceed the City's noise performance threshold of 55 dBA L_{max} as measured at the nearest residential property.

Therefore, mechanical ventilation system operational noise levels would not result in a substantial permanent increase in noise levels in excess of established standards. The impact of mechanical ventilation equipment operational noise levels on sensitive off-site receptors would be less than significant.

5.4 - Groundborne Vibration/Noise Levels

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting,

[7] TJKM. 2022. Transportation Analysis Report, 2323-2391 Moorpark Avenue. June 19.

pile driving, and operating heavy earthmoving equipment. In general, if groundborne vibration levels do not exceed levels considered perceptible, then groundborne noise levels would not be perceptible in most interior environments. Therefore, this analysis focuses on determining exceedances of groundborne vibration levels.

5.4.1 - Short-term Construction Vibration Impacts

A significant impact would occur if the proposed project would generate excessive groundborne vibration or groundborne noise levels. According to Policy EC-2.3 of the City's General Plan, a vibration limit of 0.08 in/sec PPV shall be used to minimize the potential for cosmetic damage to sensitive historical structures, and a vibration limit of 0.20 in/sec PPV shall be used to minimize damage at buildings of normal conventional construction.

Of the variety of equipment used during construction, the small vibratory rollers anticipated to be used in the site preparation phase of construction would produce the greatest groundborne vibration levels. Small vibratory rollers produce groundborne vibration levels ranging up to 0.101 inch per second (in/sec) PPV at 25 feet from the operating equipment.

The nearest off-site structure is a commercial building located east of the project site, approximately 40 feet from the nearest construction footprint where small vibratory rollers would potentially operate. At this distance, groundborne vibration levels could range up to 0.05 PPV from operation of a small vibratory roller. This is well below the FTA's Construction Vibration Impact Criteria[8] of 0.2 in/sec PPV for this type of structure, a building of non-engineered timber and masonry construction, and the vibration limit of 0.08 in/sec PPV that would cause cosmetic damage to sensitive historic structures.

Therefore, construction-related groundborne vibration would not continually disturb adjacent properties or impact the general public's health, comfort, and convenience, nor would these vibration levels exceed the FTA's Construction Vibration Impact Criteria as measured at the nearest receiving structures in the project vicinity. Project construction-related groundborne vibration impacts would be less than significant.

5.4.2 - Operational Vibration Impacts

A significant impact would occur if the proposed project would generate excessive groundborne vibration or groundborne noise levels. The City of San José Municipal Code 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.

Implementation of the proposed project would not include any permanent sources that would expose persons in the project vicinity to groundborne vibration levels that could be noticeable without instruments at the lot line of the project. In addition, there are no existing significant permanent sources of groundborne vibration in the project vicinity. Therefore, project operations

[8] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

would not generate excessive groundborne vibration levels or expose proposed uses to excessive groundborne vibration levels, and groundborne vibration impacts would be less than significant.

5.5 - Excessive Noise Levels from Airport Activity

A significant impact would occur if the proposed project would expose people residing or working in the project area to excessive noise levels for a project located within the vicinity of a private airstrip or an Airport Land Use Compatibility Plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

The nearest airport to the project site is the Norman Y. Mineta San José Airport located 3.25 miles northwest of the project site. Because of the distance from and orientation of the airport runways, the project site is located well outside of the 65 dBA CNEL airport noise contours. While aircraft noise is occasionally audible on the project site from aircraft flyovers, aircraft noise associated with nearby airport activity would not expose people residing or working near the project site to excessive noise levels. Therefore, implementation of the proposed project would not expose persons residing or working in the project vicinity to noise levels from airport activity that would be in excess of normally acceptable standards for residential land use development, and there would be no project impact associated with airport noise.

Appendix A:
Noise Monitoring Data

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Project Number: 5491.0001 Sheet ___of ____
Project Name: Moorpark Project
Test Personnel: Spencer Pignotti

Noise Measurement Survey

Site Number: ST-1 Date: August 4, 2021 Time: From 11:44 am To 11:59 am

Site Location: On southern property line, adjacent to Moorpark Avenue. About 170-feet west of Central Avenue.

Primary Noise Sources: Automobile traffic on Moorpark Avenue

Measurement Results

	dBA
Leq	64.3
Lmax	72.6
Lmin	54.8
L5	69.3
L10	68.3
L50	61.7
L90	56.4
Ldn	
CNEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

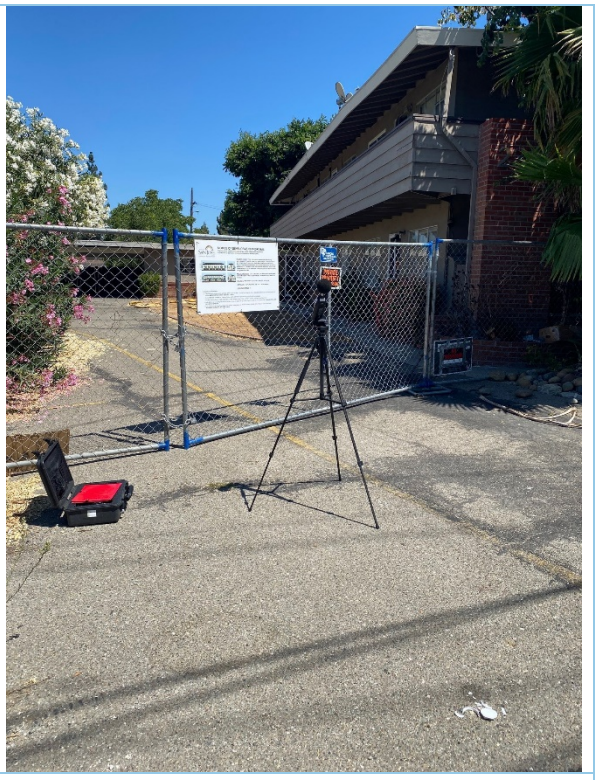
Comments: _____

Equipment: LXT-1_____ Measured Difference: -0.56dBA
Settings: A-Weighted■ Other☐_____ Slow■ Fast☐ Windscreen■

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
	4.0	72.0		
Comments:	Very Sunny day with slight winds and little humidity			

Photograph 1: View from ST-1 facing north



Photograph 2: View from ST-1 facing east

Photograph 7: View from ST-1 facing south

Photograph 8: View from ST-1 facing west

Summary

File Name on Meter	LxT_Data.156.s
File Name on PC	LxT_0004397-20210804 114431-LxT_Data.156.ldbin
Serial Number	0004397
Model	SoundTrack LxT®
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement

Description		
Start	2021-08-04	11:44:31
Stop	2021-08-04	11:59:31
Duration		00:15:00.5
Run Time		00:15:00.5
Pause		00:00:00.0
Pre-Calibration	2021-08-04	11:44:09
Post-Calibration		None
Calibration Deviation		---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT2L
Microphone Correction	Off
Integration Method	Exponential
Overload	125.5 dB

	A	C	Z
Under Range Peak	**81.7**	78.7	83.7 dB
Under Range Limit	**26.9**	26.9	31.9 dB
Noise Floor	17.6	17.7	22.7 dB

Results

LA_{Seq}	64.3	
LASE	93.8	
EAS	267.353	µPa²h
EAS8	8.551	mPa²h
EAS40	42.753	mPa²h
$LAS_{peak\ (max)}$	2021-08-04 11:44:56	102.4 dB
LAS_{max}	2021-08-04 11:51:39	72.6 dB
LAS_{min}	2021-08-04 11:53:53	54.8 dB
SEA	-99.9	dB

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	64.3	64.3	-99.9	64.3	64.3	-99.9	-99.9

LC_{Seq}	72.5	dB
LA_{Seq}	64.3	dB
LC_{Seq} - LA_{Seq}	8.3	dB
LAI_{eq}	65.6	dB
LA_{eq}	64.3	dB
LAI_{eq} - LA_{eq}	1.3	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	64.3					
$L_{S(max)}$	72.6	2021/08/04 11:51:39				
$L_{S(min)}$	54.8	2021/08/04 11:53:53				
$L_{Peak(max)}$	102.4	2021/08/04 11:44:56				

Overload Count	0	
Overload Duration	0.0	s

Dose Settings

Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results

Dose	-99.94	-99.94	%
Projected Dose	-99.94	-99.94	%
TWA (Projected)	-99.9	-99.9	dB

TWA (t)	-99.9	-99.9 dB
Lep (t)	49.2	49.2 dB

Statistics	
LAS5.00	69.3 dB
LAS10.00	68.3 dB
LAS33.30	64.6 dB
LAS50.00	61.7 dB
LAS66.60	58.9 dB
LAS90.00	56.4 dB

Project Number: 5491.0001 Sheet ___of ____
Project Name: Moorpark Project
Test Personnel: Spencer Pignotti

Noise Measurement Survey

Site Number: ST-2 Date: August 4, 2021 Time: From 12:01 pm To 12:16 pm

Site Location: On southern property line, adjacent to Moorpark Avenue and Turner Avenue. About 40-feet from center of Moorpark Avenue.

Primary Noise Sources: Automobile traffic on Moorpark Avenue

Measurement Results

	dBA
Leq	68.1
Lmax	81.9
Lmin	52.6
L5	73.4
L10	71.9
L50	65.0
L90	56.1
Ldn	
CNEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

Comments: _____

Equipment: LXT-1_____ Measured Difference: -0.56dBA
Settings: A-Weighted■ Other☐_____ Slow■ Fast☐ Windscreen■

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
	4.0	72.0		
Comments:	Very Sunny day with slight winds and little humidity			

	
Photograph 1: View from ST-2 facing north	Photograph 2: View from ST-2 facing east
	N/A

Summary

File Name on Meter	LxT_Data.157.s
File Name on PC	LxT_0004397-20210804 120114-LxT_Data.157.ldbin
Serial Number	0004397
Model	SoundTrack LxT®
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2021-08-04 12:01:14
Stop	2021-08-04 12:16:15
Duration	00:15:01.0
Run Time	00:15:01.0
Pause	00:00:00.0
Pre-Calibration	2021-08-04 11:44:06
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT2L
Microphone Correction	Off
Integration Method	Exponential
Overload	125.5 dB

	A	C	Z
Under Range Peak	**81.7**	78.7	83.7 dB
Under Range Limit	**26.9**	26.9	31.9 dB
Noise Floor	17.6	17.7	22.7 dB

Results

LA_{eq}	68.1	
LASE	97.6	
EAS	645.438 µPa²h	
EAS8	20.631 mPa²h	
EAS40	103.155 mPa²h	
$LAS_{peak\ (max)}$	2021-08-04 12:11:22	97.2 dB
LAS_{max}	2021-08-04 12:11:23	81.9 dB
LAS_{min}	2021-08-04 12:13:12	52.6 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	68.1	68.1	-99.9	68.1	68.1	-99.9	-99.9

LCS_{eq}	74.9 dB
LAS_{eq}	68.1 dB
LCS_{eq} - LAS_{eq}	6.8 dB
LAI_{eq}	69.6 dB
LA_{eq}	68.1 dB
LAI_{eq} - LA_{eq}	1.5 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	68.1					
$L_{S(max)}$	81.9	2021/08/04 12:11:23				
$L_{S(min)}$	52.6	2021/08/04 12:13:12				
$L_{Peak(max)}$	97.2	2021/08/04 12:11:22				

Overload Count	0
Overload Duration	0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results

Dose	-99.94	0.00 %
Projected Dose	-99.94	0.07 %
TWA (Projected)	-99.9	37.5 dB

TWA (t)	-99.9	12.5 dB
Lep (t)	53.0	53.0 dB

Statistics	
LAS5.00	73.4 dB
LAS10.00	71.9 dB
LAS33.30	67.7 dB
LAS50.00	65.0 dB
LAS66.60	61.8 dB
LAS90.00	56.1 dB

Project Number: 5491.0001 Sheet ___of ____
Project Name: Moorpark Project
Test Personnel: Spencer Pignotti

Noise Measurement Survey

Site Number: LT-1 Date: August 4 to 5, 2021 Time: From 12:29 pm (8/4/2021) To 12:30 pm (8/5/2021)

Site Location: On the southern side of the cul-de-sac circle of Central Way, at the project's northeastern property line. Approximately 50-feet south of the soundwall facing I-280.

Primary Noise Sources: Automobile traffic on I-280 and Central Way.

Measurement Results

	dBA
Leq	62.1
Lmax	93.7
Lmin	43.4
L5	65.3
L10	64.5
L50	61.7
L90	52.2
Ldn	65.9
CNEL	66.5

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

Comments: _____

Equipment: LXT-1_____ Measured Difference: -0.56dBA
Settings: A-Weighted■ Other☐_____ Slow■ Fast☐ Windscreen■

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
	4.0	72.0		
Comments:	Very Sunny day with slight winds and little humidity			

Summary

File Name on Meter	LxT_Data.158.s
File Name on PC	LxT_0004397-20210804 122948-LxT_Data.158.ldbin
Serial Number	0004397
Model	SoundTrack LxT®
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2021-08-04 12:29:48
Stop	2021-08-05 12:29:54
Duration	24:00:05.203
Run Time	24:00:05.203
Pause	00:00:00.0
Pre-Calibration	2021-08-04 12:27:04
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT2L
Microphone Correction	Off
Integration Method	Exponential
Overload	125.6 dB

	A	C	Z
Under Range Peak	**81.8**	78.8	83.8 dB
Under Range Limit	**26.9**	26.9	31.9 dB
Noise Floor	17.6	17.8	22.8 dB

Results

LA_{Seq}	62.1	
LASE	111.5	
EAS	15.588	mPa^2h
EAS8	5.196	mPa^2h
EAS40	25.979	mPa^2h
$LAS_{peak\ (max)}$	2021-08-05 09:08:25	126.2 dB
LAS_{max}	2021-08-05 09:08:25	93.7 dB
LAS_{min}	2021-08-05 01:52:15	43.4 dB
SEA	136.2 dB	

LAS > 85.0 dB (Exceedance Counts / Duration)	2	7.5 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS_{peak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	65.9	63.4	58.2	66.5	63.4	63.4	58.2

LCS_{eq}	69.5 dB
LAS_{eq}	62.1 dB
LCS_{eq} - LAS_{eq}	7.4 dB
LAI_{eq}	64.6 dB
LA_{eq}	62.1 dB
LAI_{eq} - LA_{eq}	2.5 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	62.1					
$L_{S(max)}$	93.7	2021/08/05 9:08:25				
$L_{S(min)}$	43.4	2021/08/05 1:52:15				
$L_{Peak(max)}$	126.2	2021/08/05 9:08:25				

Overload Count	1
Overload Duration	2.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results

Dose	0.00	0.03 %
Projected Dose	0.00	0.01 %
TWA (Projected)	9.8	23.8 dB

TWA (t)	17.8	31.7 dB
Lep (t)	66.9	66.9 dB

Statistics	
LAS5.00	65.3 dB
LAS10.00	64.5 dB
LAS33.30	62.9 dB
LAS50.00	61.7 dB
LAS66.60	60.1 dB
LAS90.00	52.2 dB

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