IV. Environmental Impact Analysis
G. Noise

1. Introduction

This section of the Draft EIR analyzes potential noise and vibration impacts of the Project. Included in this section is a description of the existing noise environment within the Project Site area, an estimation of future noise and vibration levels at surrounding sensitive land uses associated with construction and operation of the Project, a description of the potential significant impacts, and the inclusion of mitigation measures to address any identified potential significant impacts. Additionally, this section of the Draft EIR evaluates the Project's incremental contribution to potential cumulative noise and vibration impacts resulting from past, present, and probable future projects. This section summarizes the noise and vibration information analyses provided in the Noise Calculation Worksheets included in Appendix O to this Draft EIR.

2. Environmental Setting

Due to the technical nature of noise and vibration impacts, a brief overview of basic noise principles and descriptors is provided below.

a. Noise and Vibration Fundamentals

(1) Noise Principles and Descriptors

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as undesirable (i.e., loud, unexpected, or annoying) sound. Acoustics is defined as the physics of sound and addresses its propagation and control.[1] In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver.

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[1] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, September 2013.*

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement and reflects the way people perceive changes in sound amplitude.[2] The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 and 140 dB corresponding to the thresholds of feeling and pain, respectively. Pressure waves traveling through air exert a force registered by the human ear as sound.[3]

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all of the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.[4]

The typical human ear is not equally sensitive to the frequency range from 20 to 20,000 Hz. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to these extremely low and extremely high frequencies. This method of frequency filtering or weighting is referred to as A-weighting, expressed in units of A-weighted decibels (dBA), which is typically applied to community noise measurements.[5] Examples of various sound levels in different environments are shown in Table IV.G-1 on page IV.G-3.

(2) Noise Exposure and Community Noise

Community noise exposure is typically measured over a period of time; a noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the sound sources contributing to the community noise environment. Community noise is primarily the product of many distant noise sources,

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[2] *All sound levels measured in decibel (dB), as identified in the noise calculation worksheets included in Appendix O to this Draft EIR and in this section of the Draft EIR, are relative to $2x10^{-5}$ N/m^2.*

[3] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.3, September 2013.*

[4] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.3, September 2013.*

[5] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.3, September 2013.*

Table IV.G-1
Typical Noise Levels

Common Outdoor Activities	Noise Levels (dBA)	Common Indoor Activities
	110	Rock Band
Jet Fly-Over at 1000 feet		
	100	
Gas Lawn Mower at 3 feet		
	90	
Diesel Truck at 50 feet at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
Gas Lawn Mower at 100 feet	**70**	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	**60**	
		Large Business Office
Quiet Urban Daytime	**50**	Dishwasher Next Room
Quiet Urban Nighttime	**40**	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
	0	

Source: Caltrans, Technical Noise Supplement (TeNS), Table 2-5, 2009.

which constitute a relatively stable background noise exposure, with many unidentifiable individual contributors. Single-event noise sources, such as aircraft flyovers, sirens, etc., may cause sudden changes in background noise level.[6] However, generally, background noise levels change gradually throughout the day, corresponding with the addition and subtraction of distant noise sources, such as changes in traffic volume.

In an outdoor environment, sound energy attenuates through the air as a function of distance. Such attenuation is called "distance loss" or "geometric spreading" and is based on the type of source configuration (i.e., a point source or a line source). The rate of sound attenuation for a point source, such as a piece of mechanical or electrical equipment (e.g.,

6 *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, September 2013.*

air conditioner or bulldozer), is 6 dBA per doubling of distance from the noise source to the receptor over acoustically "hard" sites (e.g., asphalt and concrete surfaces) and 7.5 dBA per doubling of distance from the noise source to the receptor over acoustically "soft" sites (e.g., soft dirt, grass or scattered bushes and trees).[7] For example, an outdoor condenser fan that generates a sound level of 60 dBA at a distance of 50 feet from a point source at an acoustically hard site would attenuate to 54 dBA at a distance of 100 feet from the point source and attenuate to 48 dBA at 200 feet from the point source. The rate of sound attenuation for a line source, such as a constant flow of traffic on a roadway, is 3 dBA per doubling of distance from the point source to the receptor for hard sites and 4.5 dBA per doubling of distance for soft sites.[8]

Structures (e.g., buildings and solid walls) and natural topography (e.g., hills and berms) that obstruct the line-of-sight between a noise source and a receptor further reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as "barrier insertion loss." If a receptor is located behind the wall but still has a view of the source (i.e., the line-of-sight is not fully blocked), barrier insertion loss would still occur but to a lesser extent. Additionally, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall can reflect noise back to the receptor, thereby compounding the noise. Noise barriers can provide noise level reductions ranging from approximately 5 dBA (where the barrier just breaks the line-of-sight between the source and receiver) to an upper range of 20 dBA with a larger barrier.[9] Additionally, structures with closed windows can further attenuate exterior noise by a minimum of 20 dBA to 30 dBA.[10]

These successive additions of sound to the community noise environment change the community noise level from moment to moment, requiring the noise exposure to be measured over periods of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. The following noise descriptors are used to characterize environmental noise levels over time.[11]

L_{eq}: The equivalent sound level over a specified period of time, typically, 1 hour (L_{eq}). The L_{eq} may also be referred to as the energy-average sound level.

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[7] *Caltrans, Technical Noise Supplement (TeNS), 2009, Chapter 2.1.4.2.*

[8] *Caltrans, Technical Noise Supplement (TeNS), 2009, Chapter 2.1.4.2.*

[9] *Caltrans, Technical Noise Supplement (TeNS), 2009, Chapter 2.1.4.2.*

[10] *Caltrans, Technical Noise Supplement (TeNS), 2009, Chapter 2.1.4.2.*

[11] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.2, September 2013.*

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_{min}: The minimum, instantaneous noise level experienced during a given period of time.

L_x: The noise level exceeded a percentage of a specified time period. For instance, L_{50} and L_{90} represent the noise levels that are exceeded 50 percent and 90 percent of the time, respectively.

L_{dn}: The average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dBA to measured noise levels between the hours of 10:00 P.M. and 7:00 A.M. to account for nighttime noise sensitivity. The L_{dn} is also termed the day-night average noise level (DNL).

CNEL: The Community Noise Equivalent Level (CNEL) is the time average A-weighted noise level during a 24-hour day that includes an addition of 5 dBA to measured noise levels between the hours of 7:00 P.M. and 10:00 P.M. and an addition of 10 dBA to noise levels between the hours of 10:00 P.M. and 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively.

(3) Effects of Noise on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., startle response); and
- Physical effects (e.g., hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep.[12]

The World Health Organization's Guidelines for Community Noise details the adverse health effects of noise, which include hearing impairment, speech intelligibility, sleep disturbance, physiological functions (e.g. hypertension and cardiovascular effects), mental illness, performance of cognitive tasks, social and behavioral effects (e.g. feelings of helplessness, aggressive behavior), and annoyance.[13]

With regard to the subjective effects, an individuals' responses to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity. Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:[14]

- Except in carefully controlled laboratory experiments, a change of 1 dBA in ambient noise levels generally cannot be perceived.
- Outside of the laboratory, a 3 dBA change in ambient noise levels is considered to be a barely perceivable difference.
- A change in ambient noise levels of 5 dBA is considered to be a readily perceivable difference.

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[12] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, September 2013.*

[13] *Berglund, Birgitta; Lindvall, Thomas; Schwela, Dietrich H.; & World Health Organization, Occupational and Environmental Health Team, Guidelines for community noise, 1999, https://apps.who.int/iris/handle/10665/66217, accessed February 26, 2021.*

[14] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, September 2013.*

- A change in ambient noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

These relationships between change in noise level and human hearing response occur in part because of the logarithmic nature of sound and the dB scale. Because the dBA scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. Under the dBA scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and ten sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.[15]

(4) Noise Attenuation

When noise propagates over a distance, the noise level reduces with distance depending on the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, referred to as "spherical spreading." Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (i.e., reduce) at a rate between 6 dBA for acoustically "hard" sites and 7.5 dBA for "soft" sites for each doubling of distance from the reference measurement, as their energy is continuously spread out over a spherical surface (e.g., for hard surfaces, 80 dBA at 50 feet attenuates to 74 dBA at 100 feet, 68 dBA at 200 feet).[16] Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water.[17] No excess ground attenuation is assumed for hard sites and the reduction in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source.[18] Soft sites are those that have an absorptive ground surface, such as soft dirt, grass, or scattered

[15] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1.1, September 2013.*

[16] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.2, September 2013.*

[17] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.2, September 2013.*

[18] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.2, September 2013.*

bushes and trees, which in addition to geometric spreading, provides an excess ground attenuation value of 1.5 dBA (per doubling distance).[19]

Roadways and highways consist of several localized noise sources on a defined path, and hence are treated as "line" sources, which approximate the effect of several point sources.[20] Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading."[21] Line sources (e.g., traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[22] Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

Receptors located downwind from a noise source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels.[23] Atmospheric temperature inversion (i.e., increasing temperature with elevation) can increase sound levels at long distances. Other factors such as air temperature, humidity, and turbulence can, under the right conditions, also have substantial effects on noise levels.[24]

(5) Vibration Fundamentals

Vibration can be interpreted as energy transmitted in waves through the ground or man-made structures, which generally dissipate with distance from the vibration source. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Since energy is lost during its transfer from one particle to another, vibration becomes less perceptible with increasing distance from the source.

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[19] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.2, September 2013.*

[20] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.1, September 2013.*

[21] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.1, September 2013.*

[22] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.1, September 2013.*

[23] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.3, September 2013.*

[24] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.3, September 2013.*

As described in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual*, groundborne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard.[25] In contrast to airborne noise, groundborne vibration is not a common environmental problem, as it is unusual for vibration from sources such as rubber-tired buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, heavy trucks traveling on rough roads, and certain construction activities, such as blasting, pile-driving, and operation of heavy earth-moving equipment.[26] Groundborne vibration generated by man-made activities (e.g., road traffic, construction operations) typically weakens with greater horizontal distance from the source of the vibration.

Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec), and is most frequently used to describe vibration impacts to buildings.[27] The root mean square (RMS) amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body.[28] Decibel notation (VdB) is commonly used to express RMS vibration velocity amplitude. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. PPV is typically a factor of 1.7 to 6 times greater than RMS vibration velocity; FTA uses a crest factor of 4. [29] The decibel notation VdB acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include buildings where vibration would interfere with operations within the building or cause damage (especially older masonry structures), locations where people sleep, and locations with vibration sensitive equipment.[30]

Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to the vibration of floors and walls; it is perceptible

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

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

[27] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[28] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[29] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[30] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 6.1, 6.2, and 6.3.*

only inside buildings.[31] The relationship between groundborne vibration and groundborne noise depends on the frequency of the vibration and the acoustical absorption characteristics of the receiving room. For typical buildings, groundborne vibration that causes low frequency noise (i.e., the vibration spectrum peak is less than 30 Hz) results in a groundborne noise level that is approximately 50 decibels lower than the velocity level. For groundborne vibration that causes mid-frequency noise (i.e., the vibration spectrum peak is 30 to 60 Hz), the groundborne noise level will be approximately 35 to 37 decibels lower than the velocity level.[32] Therefore, for typical buildings, the groundborne noise decibel level is lower than the groundborne vibration velocity level.

b. Regulatory Framework

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding Noise at the federal, state, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Noise Control Act of 1972
- Federal Transportation Administration Vibration Standards
- Occupational Safety and Health Act of 1970
- California Office of Planning and Research Guidelines for Noise Compatible Land Use
- California Vibration/Ground-borne Noise Standards
- Los Angeles County Airport Land Use Commission Comprehensive Land Use Plan
- City of Los Angeles Municipal Code
- City of Los Angeles General Plan Noise Element

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[31] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.4.*

[32] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 6-3 and Table 6-14, pp. 126 and 146.*

(1) Federal

(a) Noise Control Act of 1972

Under the authority of the Noise Control Act of 1972, the United States Environmental Protection Agency (USEPA) established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the Code of Federal Regulations that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, the USEPA issued guidance levels for the protection of public health and welfare in residential land use areas[33] of an outdoor L_{dn} of 55 dBA and an indoor L_{dn} of 45 dBA. These guidance levels are not considered as standards or regulations and were developed without consideration of technical or economic feasibility. There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Project. Moreover, the federal noise standards are not reflective of urban environments that range by land use, density, proximity to commercial or industrial centers, etc. As such, for purposes of determining acceptable sound levels to determine and evaluate intrusive noise sources and increases, this document utilizes the City of Los Angeles Noise Regulations, discussed below.

(b) Federal Transit Administration Vibration Standards

There are no federal vibration standards or regulations adopted by any agency that are applicable to evaluating vibration impacts from land use development projects such as the proposed Project. However, the FTA has adopted vibration criteria for use in evaluating vibration impacts from construction activities.[34] The vibration damage criteria adopted by the FTA are shown in Table IV.G-2 on page IV.G-12 provides the FTA vibration criteria applicable to construction activities. According to FTA guidelines, a vibration criterion of 0.20 PPV should be considered as the significant impact level for non-engineered timber and masonry buildings. Structures or buildings constructed of reinforced concrete, steel, or timber, have a vibration damage criterion of 0.50 PPV pursuant to the FTA guidelines.

The FTA has also adopted standards associated with human annoyance for determining the groundborne vibration and noise impacts from ground-borne noise on the following three off-site land-use categories: Vibration Category 1—High Sensitivity,

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[33] *United States Environmental Protection Agency, EPA Identifies Noise Levels Affecting Health and Welfare, April 1974.*

[34] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 7-5, p. 186.*

Table IV.G-2
FTA Construction Vibration Impact Criteria for Building Damage

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.50
II. Engineered concrete and masonry (no plaster)	0.30
III. Non-engineered timber and masonry buildings	0.20
IV. Buildings extremely susceptible to vibration damage	0.12

Source: Federal Transit Administration, 2018.

Vibration Category 2—Residential, and Vibration Category 3—Institutional.[35] The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but that still potentially involve activities that could be disturbed by vibration. The vibration thresholds associated with human annoyance for these three land-use categories are shown in Table IV.G-3 on page IV.G-13. No thresholds have been adopted or recommended for commercial or office uses.

(c) Occupational Safety and Health Act of 1970

Under the Occupational Safety and Health Act of 1970 (29 United States Code Sections 1919 et seq.), the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring noise to which workers are exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.[36]

[35] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 6-1, p 124.*

[36] *U.S. Department of Labor. Occupational Safety and Health Act of 1970, www.osha.gov/laws-regs/oshact/completeoshact, accessed February 26, 2021*

Table IV.G-3
FTA Vibration Impact Criteria for Human Annoyance

Land Use Category	Ground-Borne Vibration Impacts Levels (VdB)		
	Frequent Events[a]	**Occasional Events**[b]	**Infrequent Events**[c]
Category 1: Building where vibration would interfere with interior operations	65[d]	65[d]	65[d]
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

[a] *"Frequent Events" are defined as more than 70 vibration events of the same source per day.*
[b] *"Occasional Events" are defined as between 30 and 70 vibration events of the same source per day.*
[c] *"Infrequent Events" are defined as fewer than 30 vibration events of the same source per day.*
[d] *This criterion limit is based on the levels that are acceptable for most moderately sensitive equipment such as optical microscopes.*
Source: Federal Transit Administration, 2018.

(2) State

(a) Office of Planning and Research Guidelines for Noise Compatible Land Use

The State of California has not adopted statewide standards for environmental noise, but the Governor's Office of Planning and Research (OPR) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as presented in Table IV.G-4 on page IV.G-14, *Guidelines for Noise Compatible Land Use*. The purpose of these guidelines is to maintain acceptable noise levels in a community setting for different land use types. Noise levels are divided into four general categories, which vary in range according to land use type: "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable." The City has developed its own compatibility guidelines in the Noise Element of the General Plan based in part on OPR Guidelines. California Government Code Section 65302 requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(f) requiring a noise element to be included in the general plan. The noise element must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels. These requirements are collectively known as the

Table IV.G-4
Guidelines for Noise Compatible Land Use

Land Use	Community Noise Exposure: Day-Night Average Exterior Sound Level (CNEL dB)						
	50	**55**	**60**	**65**	**70**	**75**	**80**
Residential Single-Family, Duplex, Mobile Home	A	C	C	C	N	U	U
Residential Multi-Family	A	A	C	C	N	U	U
Transient Lodging, Motel, Hotel	A	A	C	C	N	U	U
School, Library, Church, Hospital, Nursing Home	A	A	C	C	N	N	U
Auditoriums, Concert Hall, Amphitheater	C	C	C	C/N	U	U	U
Sports Arena, Outdoor Spectator Sports	C	C	C	C	C/U	U	U
Playgrounds, Neighborhood Park	A	A	A	A/N	N	N/U	U
Golf Course, Riding Stable, Water Recreation, Cemetery	A	A	A	A	N	A/N	U
Office Buildings, Business, Commercial, Professional	A	A	A	A/C	C	C/N	N
Agriculture, Industrial, Manufacturing, Utilities	A	A	A	A	A/C	C/N	N

A = Normally Acceptable: Specified land use is satisfactory, based upon assumption buildings involved are conventional construction, without any special noise insulation.

C = Conditionally Acceptable: New construction or development only after a detailed analysis of the noise mitigation is made and needed noise insulation features included in project design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

N = Normally Unacceptable: New construction or development generally should be discouraged. A detailed analysis of the noise reduction requirements must be made and noise insulation features included in the design of a project.

U = Clearly Unacceptable: New construction or development generally should not be undertaken.

Source: California Department of Health Services (DHS).

California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of 45 dBA CNEL in any habitable room. The standards require an acoustical analysis demonstrating that dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to exterior noise levels greater than 60 dBA CNEL. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

(b) Caltrans Vibration/Groundborne Noise Standards

The State of California has not adopted Statewide standards or regulations for evaluating vibration or groundborne noise impacts from land use development projects such as the proposed Project. Although the State has not adopted any vibration standard, Caltrans in its 2013 *Transportation and Construction Vibration Guidance Manual* recommends the vibration thresholds shown in Table IV.G-5 on page IV.G-16 that are more practical than those provided by the FTA.

(3) Regional

(a) Los Angeles County Airport Land Use Commission Comprehensive Land Use Plan

In Los Angeles County the Regional Planning Commission has the responsibility for acting as the Airport Land Use Commission (ALUC) and for coordinating the airport planning of public agencies within the county. The ALUC coordinates planning for the areas surrounding public use airports. The Comprehensive Land Use Plan provides for the orderly expansion of Los Angeles County's public use airports and the area surrounding them. It is intended to provide for the adoption of land use measures that will minimize the public's exposure to excessive noise and safety hazards. In formulating the Comprehensive Land Use Plan, the Los Angeles County ALUC has established provisions for safety, noise insulation, and the regulation of building height within areas adjacent to each of the public airports in the County.

(4) Local

(a) Los Angeles Municipal Code

The City of Los Angeles Noise Regulations are provided in Chapter XI of the Los Angeles Municipal Code (LAMC). LAMC Section 111.02 provides procedures and criteria for the measurement of the sound level of "offending" noise sources. In accordance with the LAMC, a noise source that causes a noise level increase of 5 dBA over the existing average ambient noise level as measured at an adjacent property line creates a noise violation. This standard applies to radios, television sets, air conditioning, refrigeration, heating, pumping and filtering equipment, powered equipment intended for repetitive use in residential areas, and motor vehicles driven on-site. To account for people's increased tolerance for short-duration noise events, the Noise Regulations provide a 5 dBA allowance for a noise source that causes noise lasting more than 5 but less than 15 minutes in any one-hour period, and an additional 5 dBA allowance (for a total of 10 dBA) for a noise source that causes noise lasting 5 minutes or less in any one-hour period.[37]

The LAMC provides that in cases where the actual ambient conditions are not known, the City's presumed daytime (7:00 A.M. to 10:00 P.M.) and nighttime (10:00 P.M. to 7:00 A.M.) minimum ambient noise levels as defined in LAMC Section 111.03 should be

[37] *Los Angeles Municipal Code, Chapter XI, Article I, Section 111.02-(b).*

Table IV.G-5
Caltrans Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: 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-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans, 2013.

used. The presumed ambient noise levels for these areas where the actual ambient conditions are not known as set forth in the LAMC Sections 111.03 are provided in Table IV.G-6 on page IV.G-17. For example, for residential-zoned areas, the presumed ambient noise level is 50 dBA during the daytime and 40 dBA during the nighttime.

LAMC Section 112.02 limits increases in noise levels from air conditioning, refrigeration, heating, pumping and filtering equipment. Such equipment may not be operated in such manner as to create any noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than 5 dB.

LAMC Section 112.05 sets a maximum noise level for construction equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. Compliance with this standard shall not apply where compliance therewith is technically infeasible.[38] LAMC Section 41.40 prohibits construction between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, 6:00 P.M. and 8:00 A.M. on Saturday, and at any time on Sunday (i.e., construction is allowed Monday through Friday between 7:00 A.M. to

[38] *In accordance with the City's Noise Ordinances, "technically feasible" means that the established noise limitations can be complied with at a project site, with the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques employed during the operation of equipment.*

Table IV.G-6
City of Los Angeles Presumed Ambient Noise Levels

Zone	Daytime (7:00 A.M. to 10:00 P.M.) dBA (L_{eq})	Nighttime (10:00 P.M. to 7:00 A.M.) dBA (L_{eq})
Residential, School, Hospitals, Hotels	50	40
Commercial	60	55
Manufacturing (M1, MR1, and MR2)	60	55
Heavy Manufacturing (M2 and M3)	65	65

Source: LAMC Section 111.03.

9:00 P.M.; and Saturdays and National Holidays between 8:00 A.M. to 6:00 P.M.). In general, the City's Department of Building and Safety enforces Noise Ordinance provisions relative to equipment and the Los Angeles Police Department (LAPD) enforces provisions relative to noise generated by people.

LAMC Section 113.01 prohibits collecting or disposing of rubbish or garbage, operating any refuse disposal truck, or collecting, loading, picking up, transferring, unloading, dumping, discarding, or disposing of any rubbish or garbage, as such terms are defined in LAMC Section 66.00, within 200 feet of any residential building between the hours of 9:00 P.M. and 6:00 A.M. of the following day, unless a permit therefore has been duly obtained beforehand from the Board of Police Commissioners.

Section 91.1207.14.2 prohibits interior noise levels attributable to exterior sources from exceeding 45 dBA in any habitable room. The noise metric shall be either the day-night average sound level (L_{dn}) or the CNEL, consistent with the noise element of the local general plan.

(b) City of Los Angeles General Plan Noise Element

The Noise Element of the City's General Plan policies include the CNEL guidelines for land use compatibility as shown in Table IV.G-4 on page IV.G-14 and includes a number of goals, objectives, and policies for land use planning purposes. The overall purpose of the Noise Element is to guide policymakers in making land use determinations and in preparing noise ordinances that would limit exposure of citizens to excessive noise levels.[39] The following policies and objectives from the Noise Element apply to the Project.

[39] *City of Los Angeles, General Plan, Noise Element adopted February 3, 1999, pp. 1.1–2.4.*

Objective 2 (Non-airport): Reduce or eliminate non-airport related intrusive noise, especially relative to noise sensitive uses.

Policy 2.2: Enforce and/or implement applicable city, state, and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.

Objective 3 (Land Use Development): Reduce or eliminate noise impact associated with proposed development of land and changes in land use.

Policy 3.1: Develop land use policies and programs that will reduce or eliminate potential and existing noise impacts.

Exhibit I of the Noise Element also contains guidelines for noise compatible land uses.[40] Figure IV.G-1 on page IV.G-19 summarizes these guidelines, which are based on OPR guidelines from 1990.

c. Existing Conditions

As discussed in Section II, Project Description, of this Draft EIR, the Project Site is located in a highly urbanized area. The predominant source of noise in the vicinity of the Project Site is vehicular traffic on adjacent roadways, particularly along San Vicente Boulevard and La Cienega Boulevard, which have high volumes of traffic. Other ambient noise sources in the vicinity of the Project Site include truck traffic, landscaping activities, operational activities at the church, including, but not limited to, loading and unloading for events, church gatherings, and other miscellaneous noise sources associated with typical urban activities.

(1) Noise-Sensitive Receptors

Some land uses are considered more sensitive to intrusive noise than others based on the types of activities typically involved at the receptor location. The *L.A. CEQA Thresholds Guide* states that noise-sensitive uses include residences, transient lodgings (hotels), schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks.[41] Similarly, the Noise Element defines noise-sensitive land uses as single-family and multi-unit dwellings, long-term care facilities (including convalescent and retirement facilities), dormitories, motels, hotels, transient lodging, and other residential uses; houses of worship; hospitals; libraries; schools;

40 City of Los Angeles, General Plan, Noise Element adopted February 3, 1999, p. I-1.

41 City of Los Angeles, L.A. CEQA Thresholds Guide, p. I.1-3.

Exhibit I: Guidelines for Noise Compatible Land Use

(Based on the Governor's Office of Planning and Research, "General Plan Guidelines", 1990. To help guide determination of appropriate land use and mitigation measures vis-a-vis existing or anticipated ambient noise levels)

Land Use Category	Day-Night Average Exterior Sound Level (CNEL dB) 50	55	60	65	70	75	80
Residential Single Family, Duplex, Mobile Home	A	C	C	C	N	U	U
Residential Multi-Family	A	A	C	C	N	U	U
Transient Lodging, Motel, Hotel	A	A	C	C	N	U	U
School, Library, Church, Hospital, Nursing Home	A	A	C	C	N	N	U
Auditorium, Concert Hall, Ampitheater	C	C	C	C/N	U	U	U
Sports Arena, Outdoor Spectator Sports	C	C	C	C	C/U	U	U
Playground, Neighborhood Park	A	A	A	A/N	N	N/U	U
Golf Course, Riding Stable, Water Recreation, Cemetery	A	A	A	A	N	A/N	U
Office Building, Business, Commercial, Professional	A	A	A	A/C	C	C/N	N
Agriculture, Industrial, Manufacturing, Utilities	A	A	A	A	A/C	C/N	N

A = Normally acceptable. Specified land use is satisfactory, based upon assumption buildings involved are conventional construction, without any special noise insulation.

C = Conditionally acceptable. New construction or development only after a detailed analysis of noise mitigation is made and needed noise insulation features are included in project design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning normally will suffice.

N = Normally unacceptable. New construction or development generally should be discouraged. A detailed analysis of noise reduction requirements must be made and noise insulation features included in the design of a project.

U = Clearly unacceptable. New construction or development generally should not be undertaken.

Figure IV.G-1

General Plan Guidelines for Noise Compatible Land Uses

Source: City of Los Angeles, General Plan Noise Element, February 3, 1999.

auditoriums; concert halls; outdoor theaters; nature and wildlife preserves; and parks.[42] These uses are generally considered more sensitive to noise than commercial and industrial land uses.

Based on a review of the land uses in the vicinity of the Project Site, four noise receptor locations were selected to represent noise-sensitive uses within 500 feet of the Project Site. These locations represent areas with land uses that could qualify as noise-sensitive uses according to the definition of such uses in the *L.A. CEQA Thresholds Guide* and the General Plan. As discussed below, noise measurements were conducted at one onsite location and four offsite locations around the Project Site to establish baseline noise conditions in the vicinity of the Project Site. The monitoring locations essentially surround the Project Site and thereby provide representative baseline measurements for uses in all directions. In addition, the monitoring locations provide an adequate basis to evaluate potential impacts at the monitoring locations and receptors beyond in the same direction. The noise measurement locations are shown in Figure IV.G-2 on page IV.G-21 and described in Table IV.G-7 on page IV.G-22.

(2) Ambient Noise Levels

To establish baseline noise conditions, existing ambient noise levels were monitored at four offsite receptor locations (identified as receptor locations R1 to R4) that are representative of sensitive uses in the vicinity of the Project Site. The baseline noise monitoring program was conducted on September 12, 2019 using a Quest Technologies Model 2900 Integrating/Logging Sound Level Meter.[43] A 24-hour measurement was conducted at the nearest offsite receptor location (R1). Two 15-minute measurements were conducted at the remaining three offsite receptor locations (receptor locations R2 to R4) during daytime and nighttime hours. The daytime ambient noise levels were measured between 10:00 A.M. and 1:00 P.M., and the nighttime ambient noise levels were measured between 10:00 P.M. and 12:00 A.M. The ambient noise measurements were recorded in accordance with the City's standards, which require ambient noise to be measured over a period of at least 15 minutes.[44]

Table IV.G-8 on page IV.G-23 provides a summary of the ambient noise measurements conducted at the four offsite noise receptor locations. Based on field

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[42] *City of Los Angeles, Noise Element of the City of Los Angeles General Plan, Chapter IV, p. 4-1.*

[43] *This sound meter meets and exceeds the minimum industry standard performance requirements for "Type 2" standard instruments as defined in the American National Standard Institute (ANSI) S1.4. It also meets the requirement specified in Section 111.01(l) of the LAMC that instruments be "Type S2A" standard instruments or better. The sound meter was calibrated and operated according to the manufacturer's written specifications.*

[44] *LAMC Section 111.01.*

Figure IV.G-2
Noise Measurement Locations

Source: AES, 2020.

Table IV.G-7
Description of Noise Measurement Locations

Receptor Location	Description	Approximate Distance from Measurement Location to Nearest Project Site Boundary (feet)[a]	Nearest Noise-Sensitive Land Use(s)
R1	Multi-family residential use on the north side of the Project Site.	30	Residential
R2	Multi-family residential use on the west side of Holt Avenue, west of the Project Site	65	Residential
R3	Multi-family residential use on the south side of Burton Way, south of the Project Site	175	Residential
R4	Multi-family residential use on the north side of 4th Street, southeast of the Project Site	535	Residential

[a] *Distances are estimated using Google Earth.*

Source: Acoustical Engineering Services (AES), 2020. See Appendix O to this Draft EIR.

observations, the ambient noise at the Project measurement locations is dominated by local traffic (i.e., Burton Way, San Vicente Boulevard, and La Cienega Boulevard) and, to a lesser extent, helicopter flyovers and other typical urban noises. As indicated in Table IV.G-8, the existing daytime ambient noise levels at the offsite noise receptor locations ranged from 60.3 dBA (L_{eq}) at receptor location R4 to 64.8 dBA (L_{eq}) at receptor location R3. The measured nighttime ambient noise levels ranged from 57.0 dBA (L_{eq}) at receptor location R1 to 61.1 dBA (L_{eq}) at receptor location R3. Thus, the existing ambient noise levels at all offsite locations are above the City's presumed daytime and nighttime ambient noise levels of 50 dBA (L_{eq}) and 40 dBA (L_{eq}), respectively, for residential and hotel uses, as presented above in Table IV.G-6 on page IV.G-17.

In addition to the ambient noise measurements in the vicinity of the Project Site, the existing traffic noise on local roadways in the surrounding area was calculated to quantify the 24-hour CNEL noise levels using information provided by the Transportation Study and Transportation Addendum prepared for the Project and included as Appendices T and U to this Draft EIR. Eleven (11) roadway segments were selected for the existing offsite traffic noise analysis included in this section based on proximity to noise-sensitive uses along the roadway segments and potential increases in traffic volumes from the Project. Traffic noise levels were calculated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) and traffic volume data from the Transportation Study and Transportation Addendum prepared for the Project. The TNM calculates the hourly L_{eq} noise levels based on specific information including the hourly traffic volume, vehicle type mix, vehicle speed, and lateral distance between the noise receptor and the roadway. To calculate the 24-hour

Table IV.G-8
Existing Ambient Noise Levels

Receptor Location	Noise-Sensitive Land Use	Measured Noise Levels, L_{eq} (dBA)		CNEL (24-hour)
		Daytime Hours (7:00 A.M.–10:00 P.M.)	Nighttime Hours (10:00 P.M.–7:00 A.M.)	
R1	Residential	61.5[b]	57.0[b]	64.7
R2	Residential	61.0	58.4	61.0[a]
R3	Residential	64.8	61.1	64.8[a]
R4	Residential	60.3	57.6	60.3[a]

[a] *Estimated based on short-term (15-minute) noise measurement based on FTA procedures.*
[b] *Levels shown for R1 represent the average for the entire daytime and nighttime periods.*
Source: AES, 2020. See Appendix O to this Draft EIR.

CNEL levels, the hourly L_{eq} levels were calculated during daytime hours (7:00 A.M. to 7:00 P.M.), evening hours (7:00 P.M. to 10:00 P.M.), and nighttime hours (10:00 P.M. to 7:00 A.M.). The TNM calculates the 24-hour CNEL noise levels based on specific information, including Average Daily Traffic (ADT); percentages of day, evening, and nighttime traffic volumes relative to ADT; vehicle speed; and distance between the noise receptor and the roadway. Vehicle mix/distribution information used in the noise calculations is shown in Table IV.G-9 on page IV.G-24.

Table IV.G-10 on page IV.G-25 provides the calculated CNEL for the analyzed local roadway segments based on existing traffic volumes for typical weekday and weekend.[45] As shown therein, the existing weekday CNEL due to surface street traffic volumes ranges from 62.2 dBA CNEL along San Vicente Boulevard (between 3rd Street and Burton Way) to 68.9 dBA CNEL along La Cienega Boulevard (between Melrose Avenue and Beverly Boulevard, and Beverly Boulevard and 3rd Street). The existing weekend traffic noise levels range from 60.6 dBA CNEL along San Vicente Boulevard (between 3rd Street to Burton Way) to 67.3 dBA CNEL along La Cienega Boulevard (between Melrose Avenue and 3rd Street). Currently, the existing traffic-related noise levels along the analyzed roadway segments fall within the conditionally acceptable noise levels for residential uses (i.e., between 60 and 70 dBA CNEL), which are considered conditionally acceptable for residential uses.

[45] *Weekend traffic volumes were based on recent weekday and Saturday traffic for the intersection of Doheny Drive and Wilshire Boulevard, which is in the vicinity of the Project Site. The total weekday P.M. peak hour volume was 4,406 vehicles and the total Saturday midday peak hour volume was 3,025 vehicles. Therefore, the weekend midday peak hour traffic was about 69 percent of the weekday P.M. peak hour volumes. Linscott, Law & Greenspan, Engineers email dated January 27, 2020.*

Table IV.G-9
Vehicle Mix for Traffic Noise Model

Vehicle Type	Percent of Average Daily Traffic (ADT)			Total Percent of ADT per Vehicle Type
	Daytime Hours (7 A.M.–7 P.M.)	Evening Hours (7 P.M.–10 P.M.)	Nighttime Hours (10 P.M.–7 A.M.)	
Automobile	77.6	9.7	9.7	97.0
Medium Truck[a]	1.6	0.2	0.2	2.0
Heavy Truck[b]	0.8	0.1	0.1	1.0
Total	80.0	10.0	10.0	100.0

[a] *Medium Truck—Trucks with 2 axles.*
[b] *Heavy Truck—Trucks with 3 or more axles.*
Source: AES, 2020. See Appendix O to this Draft EIR.

(3) Existing Ground-Borne Vibration Levels

Based on field observations, the primary source of existing ground-borne vibration in the vicinity of the Project Site is vehicular travel (e.g., standard cars, refuse trucks, delivery trucks, construction trucks, school buses, and buses) on local roadways. According to the FTA technical study "Federal Transit Administration: Transit Noise and Vibration Impacts Assessments," typical road traffic-induced vibration levels are unlikely to be perceptible by people. Specifically, the FTA study reports that "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads."[46] Trucks and buses typically generate ground-borne vibration velocity levels of around 63 VdB (at 50 feet distance), and these levels could reach 72 VdB when trucks and buses pass over bumps in the road. Per the FTA, 75 VdB is the dividing line between barely perceptible (with regard to ground vibration) and distinctly perceptible.[47] Therefore, existing ground vibration in the vicinity of the Project Site is generally below the perceptible level. However, ground vibration associated with heavy trucks traveling on road surfaces with irregularities, such as speed bumps and potholes, could reach the perceptible threshold.

[46] *FTA, Transit Noise and Vibration Impact Assessment, September 2018, p. 112.*

[47] *FTA, Transit Noise and Vibration Impact Assessment, September 2018, Table 5-5.*

Table IV.G-10
Existing Roadway Traffic Noise Levels

Roadway Segment	Adjacent Sensitive Land Use	Approximate Distance to Roadway Center Line (feet)	Calculated Traffic Noise Levels, CNEL (dBA)[a] (Weekday/Weekend)	Noise-Sensitive Land Uses	Existing Noise Exposure Compatibility Category[b]
Robertson Boulevard					
Between 3rd St. and Burton Way	Residential	35	67.2/65.6	Yes	Conditionally Acceptable
Between Burton Way and Wilshire Blvd.	Residential	35	67.7/66.1	Yes	Conditionally Acceptable
San Vicente Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential	50	63.4/61.8	Yes	Conditionally Acceptable
Between Beverly Blvd. and 3rd St.	Hospital	50	63.8/62.2	Yes	Conditionally Acceptable
Between 3rd St. and Burton Way	Residential	50	62.2/60.6	Yes	Conditionally Acceptable
La Cienega Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential, School	45	68.9/67.3	Yes	Conditionally Acceptable
Between Beverly Blvd. and 3rd St.	Commercial	50	68.9/67.3	No	Conditionally Acceptable
Between 3rd St. and San Vicente Blvd.	Commercial	50	68.8/67.2	No	Conditionally Acceptable
Between San Vicente Blvd. and Wilshire Blvd.	Hotel	45	68.8/67.2	Yes	Conditionally Acceptable
3rd Street					
Between Robertson Blvd. and San Vicente Blvd.	Residential	35	68.4/66.8	Yes	Conditionally Acceptable
Burton Way					
Between Robertson Blvd. and San Vicente Blvd.	Residential	80	66.7/65.1	Yes	Conditionally Acceptable

[a] *Detailed calculation worksheets are included in Appendix O to this Draft EIR.*
[b] *Noise compatibility is based on the most stringent land use, per City's land use compatibility as provided in Table IV.G-4 on page IV.G-14.*
Source: AES, 2020.

3. Project Impacts

a. Thresholds of Significance

In accordance with the State CEQA Guidelines Appendix G, the Project would have a significant impact related to noise if it would result in the:

Threshold (a): Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

Threshold (b): Generation of excessive ground-borne vibration or ground-borne noise levels;

Threshold (c): For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

For this analysis, the Appendix G Thresholds described above are relied upon. The analysis utilizes factors and considerations identified in the City's 2006 *L.A. CEQA Thresholds Guide*, as appropriate, to assist in answering the Appendix G Threshold questions.

The *L.A. CEQA Thresholds Guide* identifies the following criteria to evaluate noise impacts:

(1) Construction Noise

A project would normally have a significant impact on noise levels from construction if:

- Construction activities lasting more than one day would exceed existing ambient exterior sound levels by 10 dBA (hourly L_{eq}) or more at a noise-sensitive use;
- Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use; or
- Construction activities of any duration would exceed the ambient noise level by 5 dBA (hourly L_{eq}) at a noise-sensitive use between the hours of 9:00 P.M. and

7:00 A.M. Monday through Friday, before 8:00 A.M. or after 6:00 P.M. on Saturday, or at any time on Sunday.

As discussed in Section II, Project Description, of this Draft EIR, construction of the Project is anticipated to begin in 2021 and be completed in 2024. Therefore, since construction activities would occur over a period longer than 10 days for all phases, the corresponding significance criteria used in the construction noise analysis presented in this section of the Draft EIR is an increase in the ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use.

(2) Operational Noise

A project would normally have a significant impact on noise levels from operation if:

- The Project causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 3 dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” category (see Table IV.G-4 on page IV.G-14 for a description of these categories); or
- The Project causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 5 dBA in CNEL or greater; or
- Project-related operational onsite (i.e., non-roadway) noise sources, such as outdoor building mechanical/electrical equipment, outdoor activities, loading, trash compactor, or parking facilities, increase the ambient noise level (hourly L_{eq}) at noise-sensitive uses by 5 dBA.

The significance criteria used in the noise analysis for onsite operations presented below is an increase in the ambient noise level of 5 dBA (hourly L_{eq}) at the noise-sensitive uses, in accordance with the LAMC. The LAMC does not apply to offsite traffic (i.e., vehicles traveling on public roadways). Therefore, based on the *L.A. CEQA Thresholds Guide*, the significance criteria for offsite traffic noise associated with Project operations is an increase in the ambient noise level by 3 dBA or 5 dBA in CNEL (depending on the land use category) at noise-sensitive uses. In addition, the significance for composite noise levels (onsite and offsite sources) is also based on the *L.A. CEQA Thresholds Guide*, which is an increase in the ambient noise level of 3 dBA or 5 dBA in CNEL (depending on the land use category) for the Project’s composite noise (both Project-related onsite and offsite sources) at noise-sensitive uses.

(3) Airport Noise

A project would normally have a significant impact on noise levels from airport noise if:

- Noise levels at a noise sensitive use attributable to airport operations exceed 65 dB CNEL and the project increases ambient noise levels by 1.5 dB CNEL or greater.

(4) FTA Ground-Borne Vibration Standards and Guidelines

The City currently does not have significance criteria to assess vibration impacts during construction. Thus, FTA guidelines set forth in FTA's *Transit Noise and Vibration Assessment*, dated September 2018, are used to evaluate potential impacts related to construction vibration for both potential building damage and human annoyance. The FTA guidelines regarding construction vibration are the most current guidelines and are commonly used in evaluating construction vibration impacts.

Based on this FTA guidance, impacts relative to ground-borne vibration associated with potential building damage would be considered significant if any of the following future events were to occur:

- Project construction activities cause ground-borne vibration levels to exceed 0.5 PPV at the nearest offsite reinforced-concrete, steel, or timber building.
- Project construction activities cause ground-borne vibration levels to exceed 0.3 PPV at the nearest offsite engineered concrete and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.2 PPV at the nearest offsite non-engineered timber and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.12 PPV at buildings extremely susceptible to vibration damage, such as historic buildings.

Based on FTA guidance, construction vibration impacts associated with human annoyance would be significant if the following were to occur (applicable to frequent events; 70 or more vibration events per day):

- Project construction activities cause ground-borne vibration levels to exceed 72 VdB at offsite residential uses.

b. Methodology

(1) On-Site Construction Activities

Construction noise impacts due to onsite construction activities associated with the Project were evaluated by calculating the construction-related noise levels at representative sensitive receptor locations and comparing these estimated construction-related noise levels associated with construction of the Project to the existing ambient noise levels (i.e., noise levels without construction noise from the Project). Construction noise associated with the Project was analyzed based on the Project's potential construction equipment inventory, construction durations, and construction schedule. The construction noise model for the Project is based on construction equipment noise levels as published by the FHWA's "Roadway Construction Noise Model (FHWA 2006)."[48] The ambient noise levels at surrounding sensitive receptor locations were based on field measurement data (see Table IV.G-8 on page IV.G-23). The construction noise levels were then calculated for sensitive receptor locations based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance (as described above in Subsection 2.a(1)(b), Outdoor Sound Propagation). Additional noise attenuation was assigned to receptor locations where the line of sight to the Project Site was interrupted by the presence of intervening structures.

(2) Off-Site Construction Haul Trucks

Off-site construction noise impacts from haul trucks associated with the Project were analyzed using the FHWA's TNM. The TNM is the current Caltrans standard computer noise model for traffic noise studies. The model allows for the input of roadway, noise receivers, and sound barriers, if applicable. The construction-related offsite truck volumes were obtained from the Transportation Study and Transportation Addendum prepared for the Project, which are included in Appendices T and U to this Draft EIR. The TNM calculates the hourly L_{eq} noise levels generated by construction-related haul trucks. Noise impacts were determined by comparing the predicted noise level plus ambient with that of the existing ambient noise levels along the Project's anticipated haul route(s).

(3) On-Site Stationary Noise Sources (Operation)

On-site stationary point-source noise impacts were evaluated by: (1) identifying the noise levels that would be generated by the Project's stationary noise sources, such as rooftop mechanical equipment, outdoor activities (e.g., use of the outdoor courtyard), parking facilities, loading areas, and trash compactor; (2) calculating the noise level from each noise source at surrounding sensitive receptor property line locations; and (3) comparing such noise levels to ambient noise levels to determine significance. The onsite stationary noise sources were calculated using the SoundPLAN (version 8.1) computer

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48 *The reference noise levels for construction equipment from the FHWA are based on measurements of newer construction equipment (published in 2006), rather than the noise levels from the Environmental Protection Agency report referenced in the L.A. CEQA Thresholds Guide (published in 1971).*

noise prediction model.[49] SoundPLAN is widely used by acoustical engineers as a noise modeling tool for environmental noise analysis.

(4) Off-Site Roadway Noise (Operation)

As discussed in Subsection 2.c, Existing Conditions, above, offsite roadway noise was analyzed using the FHWA TNM and traffic data from the Project's Transportation Study and Transportation Addendum. Roadway noise levels were calculated for various roadway segments, based on the intersection traffic volumes. Roadway noise conditions without the Project were compared to noise levels that would occur with implementation of the Project to determine Project-related noise impacts for operational offsite roadway noise.

(5) Construction Vibration

Ground-borne vibration impacts due to the Project's construction activities were evaluated by identifying potential vibration sources (i.e., construction equipment), estimating the vibration levels at the potentially affected receptor, and comparing the Project's activities to the applicable vibration significance thresholds, as described below.

(6) Operational Vibration

The primary source of vibration related to operation of the Project would include vehicle circulation within the proposed subterranean parking garage and offsite vehicular trips. However, as discussed above, vehicular-induced vibration is unlikely to be perceptible by people. The Project would also include typical commercial-grade stationary mechanical equipment, such as air-condenser units (mounted at the roof level), that would include vibration-attenuation mounts to reduce the vibration transmission. The Project does not include land uses that would generate high levels of vibration. In addition, ground-borne vibration attenuates rapidly as a function of distance from the vibration source.

c. Project Design Features

The following project design features are proposed with regard to noise and vibration:

Project Design Feature NOI-PDF-1: Power construction equipment (including combustion engines), fixed or mobile, will be equipped with state-of-the-art noise shielding and muffling devices (consistent with

[49] *SoundPLAN GmbH, SoundPLAN version 8.0, 2017.*

manufacturers' standards). All equipment will be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated.

Project Design Feature NOI-PDF-2: All outdoor mounted mechanical equipment will be screened from offsite noise-sensitive receptors. The equipment screen will be impermeable (i.e., solid material with minimum weight of 2 pounds per square feet) and break the line of sight from the equipment to the offsite noise-sensitive receptors.

Project Design Feature NOI-PDF-3: A 6-foot wall will be provided along the west and north side of the west loading dock and along the north side of the east loading dock to acoustically screen the loading dock from offsite noise-sensitive receptors.

Project Design Feature NOI-PDF-4: Project construction will not include the use of driven (impact) pile systems.

Project Design Feature NOI-PDF-5: Outdoor amplified sound systems, if any, will be designed so as not to exceed a maximum noise level of 75 dBA (L_{eq-1hr}) at a distance of 15 feet from the amplified speaker sound systems at the Level 1 exterior courtyard and at the Level 4 outdoor recreation and pool decks. A qualified noise consultant will provide written documentation that the design of the system complies with this maximum noise level.

d. Analysis of Project Impacts

Threshold (a): Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

(1) Impact Analysis

(a) Construction Noise

Construction of the Project would commence with demolition of the existing buildings and parking/paved areas to be removed, as well as deconstruction of the cathedral building, followed by grading and excavation for the subterranean parking. Building foundations would then be constructed, followed by building construction, paving/concrete installation, and landscape installation. It is estimated that approximately 110,000 cubic yards of export material would be hauled from the Project Site during the demolition and excavation phase. Construction delivery/haul trucks would travel on approved truck routes between the Project Site and the Santa Monica Freeway (I-10). Incoming haul trucks are anticipated to access the Project Site from I-10 (westbound) via Venice Boulevard, Cadillac Avenue, La Cienega Boulevard, South San Vicente Boulevard, and Burton Way. Outgoing trucks would utilize Burton Way, Holt Avenue, 3rd Street, and La Cienega Boulevard to the I-10 on-ramps.

(i) On-Site Construction Noise

Noise impacts from Project-related construction activities occurring within or adjacent to the Project Site would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noise-generating construction activities, and the relative distance to noise-sensitive receptors. Construction activities for the Project would generally include demolition, site grading and excavation for the subterranean parking garage, and building construction. Each stage of construction would involve the use of various types of construction equipment and would, therefore, have its own distinct noise characteristics. Demolition generally involves the use of backhoes, front-end loaders, and heavy-duty trucks. Grading and excavation typically require the use of earth-moving equipment, such as excavators, front-end loaders, and heavy-duty trucks. Building construction typically involves the use of cranes, forklifts, concrete trucks, pumps, and delivery trucks. Noise from construction equipment would generate both steady-state and episodic noise that could be heard within and adjacent to the Project Site.

As provided in Project Design Feature NOI-PDF-1 above, construction equipment will have proper noise muffling devices per the manufacturer's standards. Individual pieces of construction equipment anticipated to be used during construction of the Project could produce maximum noise levels (L_{max}) of 74 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in Table IV.G-11 on page IV.G-33. These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites often operates under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (hourly L_{eq}) noise level associated with each construction phase is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction phase.[50] These noise levels are typically associated with multiple pieces of equipment operating on part power, simultaneously.

Table IV.G-12 on page IV.G-34 provides the estimated construction noise levels for various construction phases at the four offsite noise-sensitive receptor locations. To present a conservative impact analysis, the estimated noise levels were calculated for a

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[50] *Pursuant to the FHWA Roadway Construction Noise Model User's Guide, 2006, the usage factor is the percentage of time during a construction noise operation that a piece of construction is operating at full power.*

Table IV.G-11
Construction Equipment Noise Levels

Equipment	Estimated Usage Factor[a] (%)	Typical Noise Level at 50 feet from Equipment, dBA (L_{max})
Air Compressor	40	78
Cement and Mortar Mixer	50	80
Concrete Mixer Truck	40	79
Concrete Saw	20	90
Crane	16	81
Drill Rig	20	84
Forklift	20	75
Generator	50	81
Grader	40	85
Dump/Haul Truck	40	76
Excavator	40	81
Paver	50	77
Pump	50	81
Roller	20	80
Rubber Tired Loader	40	79
Tractor/Loader/Backhoe	40	80
Delivery Truck	40	74
Welders	40	74

[a] *Usage factor represents the percentage of time the equipment would be operating at full speed.*
Source: FHWA Roadway Construction Noise Model User's Guide, 2006.

scenario in which all pieces of construction equipment were assumed to operate simultaneously and be located at the construction area nearest to the affected receptors. These assumptions represent the worst-case noise scenario because construction activities would typically be spread out throughout the Project Site, and, thus, some equipment would be farther away from the affected receptors. In addition, the noise modeling assumes that construction noise is constant, when, in fact, construction activities and associated noise levels are periodic and fluctuate based on the construction activities.

As discussed above, since construction activities would occur over a period longer than 10 days for all phases combined, the corresponding significance criteria used in the construction noise analysis is when the construction-related noise exceeds the ambient L_{eq} noise level of 5 dBA at a noise-sensitive use. As indicated in Table IV.G-12 on page IV.G-34, the estimated noise levels during all stages of Project construction combined would exceed the significance criteria at all the representative offsite receptor locations,

Table IV.G-12
Construction Noise Impacts

Off-Site Receptor Location	Approximate Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))						Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact Without Mitigation?
		Demo/ Decon-struction of Cathedral	Grading	Mat Foundation	Foundation/ Concrete	Building Construc-tion/Reas-sembly of Cathedral	Paving/ Landscape				
R1	30	85.2	87.3	81.2	85.4	85.4	82.7	61.5	66.5	20.8	**Yes**
R2	65	80.0	83.6	78.1	80.8	80.6	81.6	61.0	66.0	17.6	**Yes**
R3	175	71.6	75.8	70.8	73.1	73.1	67.6	64.8	69.8	6.0	**Yes**
R4	535	52.0	56.8	51.8	54.1	54.3	48.1	60.3	65.3	0.0	No

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.G-8 on page IV.G-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance criteria, a construction-related noise impact is identified.*

Source: AES, 2020. See Appendix O to this Draft EIR.

except at receptor location R4. The estimated construction-related noise would exceed the significance threshold by a range of 6.0 dBA at receptor location R3 to up to 20.8 dBA at receptor location R1, without implementation of mitigation. In addition, the concrete mat foundation pour would extend over a 16-hour period (over two days), which could extend into the nighttime hours. The concrete mat foundation pour occurring during the nighttime hours, if permitted by the Executive Director of the Board of Police Commissioners, would exceed the nighttime ambient noise levels by 5 dBA or more at offsite noise sensitive receptor locations R1 through R3. **Therefore, the Project's temporary noise impact associated with the Project's onsite construction would be significant without mitigation measures.**

(ii) Off-Site Construction Noise

In addition to onsite construction noise sources, other noise sources may include materials delivery, concrete mixing, and haul trucks (construction trucks), as well as construction worker vehicles accessing the Project Site during construction. Typically, construction trucks generate higher noise levels than construction worker vehicles. The major noise sources associated with offsite construction trucks would be from the delivery/concrete/haul trucks. As described above, construction delivery/haul trucks would travel between the Project Site and I-10 via Burton Way, Holt Avenue, 3rd Street, La Cienega Boulevard, Cadillac Avenue, and San Vicente Boulevard.

As discussed in Section IV.I, Transportation, to this Draft EIR, the peak period of construction with the highest number of construction trucks would occur during the concrete mat foundation phase, which would include 348 concrete trucks (696 truck trips) per day for two days. To provide a conservative analysis, haul truck trips during the grading phase are based on 6 hours of hauling per day. Table IV.G-13 on page IV.G-36 provides the estimated number of construction-related truck trips for the various construction phases, including haul/concrete/material delivery trucks and worker vehicles, and the estimated noise levels along the anticipated truck route(s). As indicated in Table IV.G-13, the hourly noise levels generated by construction trucks during all stages of Project construction, with the exception of the mat foundation phase, would be consistent with the existing daytime ambient noise levels along the anticipated truck routes, including Burton Way, Holt Avenue, 3rd Street, La Cienega Boulevard, Cadillac Avenue, and San Vicente Boulevard and, therefore, would be below the significance criteria of 5-dBA increase over the ambient noise level. During the mat foundation phase, however, the estimated construction traffic noise would increase the ambient noise level along Holt Avenue (by 7.9 dBA), 3rd Street (by 5.5 dBA), La Cienega Boulevard (by 6.5 dBA), and Cadillac Avenue (by 8.3 dBA), which would exceed the 5-dBA significance criteria. In addition, the estimated noise levels associated with the concrete mat foundation pour during the nighttime hours, if permitted by the Executive Director of the Board of Police

Table IV.G-13
Off-Site Construction Truck Noise Levels

Construction Phase	Estimated Number of Construction Truck/Worker Trips per Day	Estimated Number of Construction Truck/Worker Trips per Hour[b]	Estimated Truck Noise Levels Plus Ambient Along the Project Truck Routes,[a] (L_{eq} (dBA)) (Project/Project + Ambient)					
			Burton Way	Holt Ave.	3rd St.	La Cienega Blvd.	Cadillac Ave.	San Vicente Blvd.
Demolition	40/50	3/20	52.1/65.0	57.7/62.7	56.5/63.7	58.2/65.3	58.5/63.1	52.1/59.4
Grading	136/60	12/24	57.2/65.5	62.8/65	61.6/65.0	64.2/67.3	63.6/65.6	57.2/62.9
Mat Foundation	696/60	44/24	62.5/66.8	68.1/68.9	66.9/68.3	69.8/70.9	68.9/69.6	62.5/64.0
Foundation/Concrete	40/60	3/24	52.3/65.0	57.9/62.7	56.7/63.8	58.4/65.4	58.7/63.2	52.3/59.4
Building Construction	128/350	8/140	57.9/65.6	63.5/65.4	62.4/65.6	64.1/67.3	64.3/66.1	57.9/61.2
Paving/Landscaping	10/20	1/8	47.5/64.9	53.1/61.7	52.0/63.1	54.2/64.8	53.9/62.0	47.5/58.8
Existing Ambient Noise Levels Along the Project Haul Routes, L_{eq} (dBA)[c]			64.8	61.0	62.8	64.4	61.3	61.5
Significance Criteria, L_{eq} (dBA)[d]			69.8	66.0	67.8	69.4	66.3	66.5
Significant Impact?			No	**Yes**	**Yes**	**Yes**	**Yes**	No

[a] *Noise levels include Project-related truck trips plus ambient.*

[b] *For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over an 6-hour work day and divided by two, as incoming and leaving trucks would be on different roadways, except for La Cienega Boulevard (which includes roundtrip of trucks). Haul truck trips during grading phase were conservatively based on a 6-hour hauling period per day. For worker vehicles, the number of hourly trips is based on 40 percent of the worker trips that would arrive in one hour to represent a conservative analysis.*

[c] *Ambient noise levels along the truck routes are based on measurements at receptor locations R2 along Holt Avenue and R3 along Burton Way. Ambient noise levels along 3rd Street, La Cienega Boulevard, Cadillac Avenue, and San Vicente Boulevard are based on measured ambient at receptor location R3, adjusted for the existing traffic volumes along the roadway segments.*

[d] *Significance criteria are equivalent to the ambient noise levels plus 5 dBA.*

Source: AES, 2020. See Appendix O to this Draft EIR.

Commissioners, would exceed the 5-dBA significance threshold. **Therefore, the Project's noise impact from offsite construction traffic would be significant prior to mitigation.**

(iii) Summary of Construction Noise Impacts

As discussed above, temporary noise impacts associated with the Project's onsite and offsite construction activities would be significant. **Therefore, without mitigation measures, Project construction activities would result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of significance criteria established by the City.**

(b) Operational Noise

This section provides a discussion of potential operational noise impacts on nearby noise-sensitive receptors. Specific operational noise sources addressed herein include: (1) onsite stationary noise sources, including outdoor mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] equipment), activities within the proposed outdoor spaces (e.g., outdoor courtyard and outdoor decks), parking facilities, loading dock, and trash compactor; and (2) offsite mobile (roadway traffic) noise sources.

(i) On-Site Stationary Noise Sources

<u>Mechanical Equipment</u>

As part of the Project, new mechanical equipment (e.g., air ventilation equipment) would be located at the roof level and within the building structure (e.g., garage exhaust fans). Although operation of this equipment would generate noise, Project-related outdoor mechanical equipment would be designed so as not to increase the existing ambient noise levels by 5 dBA in accordance with the City's Noise Regulations. Specifically, the Project would comply with LAMC Section 112.02, which prohibits noise from air conditioning, refrigeration, heating, pumping, and filtering equipment from exceeding the ambient noise levels on the premises of other occupied properties by more than 5 dBA. In addition, as provided above in Project Design Feature NOI-PDF-2, all outdoor mounted mechanical equipment will be screened from offsite noise-sensitive receptors. Table IV.G-14 on page IV.G-38 presents the estimated noise levels at the offsite receptor locations from operation of the Project mechanical equipment.

As indicated in Table IV.G-14, the estimated noise levels from the mechanical equipment would range from 32.2 dBA (L_{eq}) at the uses represented by receptor location R4 to 49.1 dBA (L_{eq}) at the uses represented by receptor location R1, which would be consistent with the existing ambient noise levels. As such, the estimated ambient noise levels at all offsite receptor locations with the addition of the Project's mechanical equipment would be below the significance criteria of 5 dBA (L_{eq}) above ambient noise

Table IV.G-14
Estimated Noise Levels from Mechanical Equipment

Receptor Location	Existing Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Mechanical Equipment, dBA (L_{eq})	Ambient + Project Noise Levels, dBA (L_{eq})	Significance Criteria, dBA (L_{eq})[a]	Exceedance over Significance Criteria	Significant Impact?
R1	57.0	49.1	57.7	62.0	0.0	No
R2	58.4	46.9	58.7	63.4	0.0	No
R3	61.1	46.3	61.2	66.1	0.0	No
R4	57.6	32.2	57.6	62.6	0.0	No

[a] *Significance criteria are equivalent to the measured daytime or nighttime ambient noise levels, whichever is lower (see Table IV.G-8 on page IV.G-23) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those significance criteria, a noise impact is identified.*

Source: AES, 2020. See Appendix O to this Draft EIR.

levels (based on the lowest measured ambient). **Therefore, the Project's noise impact from mechanical equipment would be less than significant.**

Outdoor Spaces

As discussed in Section II, Project Description, of this Draft EIR, the Project would include several outdoor spaces, including the church exterior courtyard at Level 1, church office decks at Level 2, and residential outdoor recreation and pool decks at Level 4. Noise sources associated with outdoor uses typically include noise from people gathering and conversing. For this operational noise analysis, reference noise levels of 65 dBA for a male and 62 dBA for a female speaking in a raised voice were used for analyzing potential noise impacts from people gathering at the outdoor spaces.[51] In order to analyze a typical noise scenario, it was assumed that up to 50 percent of the people (half of which would be male and the other half female) would be talking at the same time. In addition, the hours of operation for use of the outdoor areas were assumed to be from 7:00 A.M. to 12:00 A.M. Table IV.G-15 on page IV.G-39 presents the anticipated number of people at each of the outdoor spaces.

An additional potential noise source associated with outdoor uses would be the use of an outdoor sound system (e.g., music or other sounds broadcast through an outdoor mounted speaker system) at the Level 1 courtyard and Level 4 outdoor decks. As set forth

[51] *Harris, Cyril M., Handbook of Acoustical Measurements and Noise Control, Third Edition, 1991, Table 16.1.*

Table IV.G-15
Outdoor Use Analysis Assumptions

Outdoor Space	Approximate Area (sf)	Estimated Total Number of People[a]
Level 1 - Church Exterior Courtyard	2,930	475[b]
Level 2—Church Office Decks	2,060	137
Level 4 - Outdoor Recreation Deck	5,242	134
Outdoor Pool Deck	2,016	349

sf = square feet
[a] *Based on maximum 15 square feet per person, per the Building Code.*
[b] *Based on maximum 475 people (capacity from the Multi-purpose room).*
Source: Nadel, 2019; AES, 2020

in Project Design Feature NOI-PDF-5, if an amplified sound system is used in outdoor areas, it would be designed so as not to exceed the maximum noise level of 75 dBA L_{eq} at a distance of 15 feet from the amplified speaker sound system, thereby ensuring that the amplified sound system would not exceed the significance criteria (i.e., an increase of 5 dBA L_{eq}) at any offsite noise-sensitive receptor location.

Table IV.G-16 on page IV.G-40 presents the estimated noise levels at the offsite sensitive receptors resulting from the use of outdoor areas. The estimated noise levels were calculated with the assumption that all of the outdoor spaces would be fully occupied and operating concurrently to represent a worst-case noise analysis. As presented in Table IV.G-16, the estimated noise levels from the outdoor spaces would range from 34.2 dBA (L_{eq}) at the uses represented by receptor location R4 to 61.3 dBA (L_{eq}) at the uses represented by receptor location R2. The estimated ambient noise levels with the addition of the noise levels generated by the Project's outdoor spaces would be below the significance criteria of 5 dBA (L_{eq}) above ambient noise levels (based on the measured daytime ambient noise level) at all offsite receptor locations. **As such, the Project's noise impact from the use of the outdoor spaces would be less than significant.**

Parking Facilities

As discussed in Section II, Project Description, of this Draft EIR, the Project would provide 397 vehicular parking spaces, within five subterranean parking levels. Sources of noise within the parking garage would primarily include vehicular movements and engine noise, doors opening and closing, and intermittent car alarms. Since the subterranean parking levels would be fully enclosed on all sides, noise generated within the subterranean parking garage would be effectively shielded from offsite sensitive receptor locations in the immediate vicinity of the Project Site. In addition, noise levels associated with vehicle

Table IV.G-16
Estimated Noise Levels from Outdoor Uses

Receptor Location	Existing Ambient Noise Levels (dBA (L_{eq}))	Estimated Noise Levels from Outdoor Uses (dBA (L_{eq}))	Ambient + Project Noise Levels (dBA (L_{eq}))	Significance Criteria[a]	Exceedance over Significance Criteria	Significant Impact?
R1	57.0	59.5	61.4	62.0	0.0	No
R2	58.4	61.3	63.1	63.4	0.0	No
R3	61.1	57.3	62.6	66.1	0.0	No
R4	57.6	34.2	57.6	62.6	0.0	No

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels, whichever is lower (see Table IV.G-8 on page IV.G-23) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those significance criteria, a noise impact is identified.*

Source: AES, 2020. See Appendix O to this Draft EIR.

parking inside the subterranean parking structure would be less than the existing onsite surface parking lot. **Therefore, the Project's noise impact from the parking facilities would be less than significant.**

Loading and Trash Collection Areas

The Project includes two loading areas at the north side of the new building. The loading area on the northwestern side of the Project Site would service the residential portion of the Project, while the loading area on the northeastern side of the site would service the church portion of the Project. There is one loading area along the north side of an existing building that currently services the church. That loading area generates noise that contributes to the existing ambient noise levels in the vicinity. The new trash compactor would be located inside the building and shielded to the exterior. Noise sources associated with the new loading areas and trash collection area would include delivery/trash collection trucks and operation of the trash compactor. Based on measured noise levels from typical loading dock facilities and trash compactors, delivery/trash collection trucks and trash compactors could generate noise levels of approximately 71 dBA (L_{eq}) and 66 dBA (L_{eq}), respectively, at a distance of 50 feet.[52] However, the trash compactors would be located in an enclosed room, which would be effectively shielded to the offsite sensitive receptors. Table IV.G-17 on page IV.G-41 presents the estimated noise levels at the offsite receptor locations from operation of the loading areas and trash compactor. It should be noted that the estimated noise levels shown in Table IV.G-17 are

[52] *RK Engineering Group, Inc., Wal-Mart/Sam's Club Reference Noise Level Study, 2003.*

Table IV.G-17
Estimated Noise Levels from Loading Dock and Trash Compactor

Receptor Location	Existing Ambient Noise Levels (dBA (L_{eq}))	Estimated Noise Levels from Loading Dock and Trash Compactor (dBA (L_{eq}))	Ambient + Project Noise Levels (dBA (L_{eq}))	Significance Criteria[a]	Exceedance over Significance Criteria	Significant Impact?
R1	61.5	68.8	69.5	66.5	3.0	**Yes**
R2	61.0	35.6	61.0	66.0	0.0	No
R3	64.8	37.0	64.8	69.8	0.0	No
R4	60.3	26.5	60.3	65.3	0.0	No

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.G-8 on page IV.G-23) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those significance criteria, a noise impact is identified.*

Source: AES, 2020. See Appendix O to this Draft EIR.

mainly due to the loading areas operation, since the trash compactor is located inside the building and the noise levels associated with the trash compactor would be more than 17 dBA lower than operation of the loading docks. As indicated in Table IV.G-17, the estimated noise from the loading areas and trash compactor would be below the significance criteria of 5 dBA (L_{eq}) above ambient noise levels at all offsite sensitive receptors, with the exception of receptor location R1. As shown in Table IV.G-17, the noise level at R1 would exceed the applicable threshold by 3 dBA. The noise modeling conservatively assumed that both loading areas would be operating concurrently to analyze the highest potential levels of noise that could occur. In reality, both loading areas would be used infrequently, and it is unlikely that both loading areas would be used simultaneously. Nonetheless, this Draft EIR discloses the most conservative noise scenario to inform the public and decision makers. Also note that, as identified in Table IV.G-20 on page IV.G-49 further below, when all noise sources are modeled in the aggregate (i.e., a composite noise level), the operational impacts of the Project do not exceed the applicable thresholds of significance at any sensitive receptor location because composite noise levels are analyzed using the 24-hour CNEL noise level.

In addition, the loading areas include noise attenuating walls to reduce noise levels from loading activities pursuant to Project Design Feature NOI-PDF-3. Loading dock area noise would be less than significant for receptor location R1 at grade level because the walls break the line of sight (and thereby attenuate noise) between the loading areas and the grade-level receptors. However, there are residential receptors on higher floors of the building located at receptor location R1. The noise from the loading area activities would dissipate as the distance between the loading area and the higher floors in the building increases. However, it is considered infeasible for the 6-foot walls to block the line of sight to all of the upper floors, which results in the conservative conclusion that some receptors on floors above grade at receptor location R1 could be exposed to a perceptible increase in noise levels that exceeds the applicable threshold.

Because the estimated noise levels at the upper levels at receptor location R1 would exceed the 5-dBA threshold by up to 3 dBA, this Draft EIR discloses a significant impact **Therefore, the Project's noise impact from loading area operation would be significant (at a single receptor location) prior to mitigation measures, while the Project's noise impact from trash compactor operation would be less than significant.**

(ii) Off-Site Mobile Noise Sources

As discussed in the Transportation Study and Transportation Addendum, the Project is expected to generate a net increase of 651 vehicle daily trips. As such, Project-related traffic would increase the existing traffic volumes along the roadway segments in the study area when compared with Future without Project conditions. This increase in roadway traffic volumes was analyzed to determine if any traffic-related noise impacts would result from operation of the Project. Table IV.G-18 and Table IV.G-19 on pages IV.G-43 and IV.G-44, respectively, provide a summary of the roadway noise impact analysis for both weekday and weekend, under future plus project conditions (impact evaluated against the future baseline condition) and under the existing project conditions (impacts evaluated against the existing baseline condition). The calculated CNEL levels are conservatively calculated in front of the roadways and do not account for the presence of any physical sound barriers or intervening structures. As shown in Table IV.G-18 and Table IV.G-19, the Project would not result in any measurable increase. Therefore, the Project's traffic noise impacts under both Future Plus Project and Existing Plus Project conditions would be less than significant.

(iii) Composite Noise Level Impacts from Project Operations

In addition to considering the potential noise impacts to neighboring noise-sensitive receptors from each specific onsite and offsite noise source (e.g., mechanical equipment, outdoor areas, loading and trash compactor, and offsite traffic), an evaluation of potential composite noise level increases (i.e., noise levels from all onsite and offsite noise sources combined) at the analyzed sensitive receptor locations was also performed. The composite noise analysis uses the 24-hour CNEL noise metric rather than the hourly L_{eq} noise metric to determine the contributions at the noise-sensitive receptor locations in the vicinity of the Project Site and thus may result in a different significance conclusion than the individual source noise analysis.

Table IV.G-18
Roadway Traffic Noise Impacts—Future Plus Project

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] (CNEL (dBA)) (Weekday/Weekend)		Increase in Noise Levels due to Project (CNEL (dBA))	Significant Impact?
		Future Without Project	Future Plus Project		
Robertson Boulevard					
Between 3rd St. and Burton Way	Residential	67.6/66.0	67.6/66.0	0.0/0.0	No
Between Burton Way and Wilshire Blvd.	Residential	68.0/66.4	68.0/66.4	0.0/0.0	No
San Vicente Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential	63.8/62.1	63.8/62.2	0.0/0.1	No
Between Beverly Blvd. and 3rd St.	Hospital	64.3/62.7	64.3/62.7	0.0/0.0	No
Between 3rd St. and Burton Way	Residential	62.6/61.0	62.7/61.1	0.1/0.1	No
La Cienega Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential, School	69.4/67.8	69.4/67.8	0.0/0.0	No
Between Beverly Blvd. and 3rd St.	Commercial	69.3/67.6	69.3/67.7	0.0/0.1	No
Between 3rd St. and San Vicente Blvd.	Commercial	69.3/67.7	69.3/67.7	0.0/0.0	
Between San Vicente Blvd. and Wilshire Blvd.	Hotel	69.3/67.6	69.3/67.7	0.0/0.1	No
3rd Street					
Between Robertson Blvd. and San Vicente Blvd.	Residential	68.7/67.1	68.7/67.1	0.0/0.0	No
Burton Way					
Between Robertson Blvd. and San Vicente Blvd.	Residential	67.0/65.4	67.0/65.4	0.0/0.0	No

[a] *Detailed calculation worksheets are included in Appendix O to this Draft EIR.*
Source: AES, 2020.

Table IV.G-19
Roadway Traffic Noise Impacts—Existing Plus Project

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] (CNEL (dBA)) (Weekday/Weekend)		Increase in Noise Levels due to Project (CNEL (dBA))	Significant Impact?
		Existing Without Project	Existing Plus Project		
Robertson Boulevard					
Between 3rd St. and Burton Way	Residential	67.2/65.6	67.2/65.6	0.0/0.0	No
Between Burton Way and Wilshire Blvd.	Residential	67.7/66.1	67.7/66.1	0.0/0.0	No
San Vicente Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential	63.4/61.8	63.4/61.8	0.0/0.0	No
Between Beverly Blvd. and 3rd St.	Hospital	63.8/62.2	63.8/62.2	0.0/0.0	No
Between 3rd St. and Burton Way	Residential	62.2/60.6	62.2/60.6	0.0/0.0	No
La Cienega Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential, School	68.9/67.3	68.9/67.3	0.0/0.0	No
Between Beverly Blvd. and 3rd St.	Commercial	68.9/67.3	68.9/67.3	0.0/0.0	No
Between 3rd St. and San Vicente Blvd.	Commercial	68.8/67.2	68.8/67.2	0.0/0.0	
Between San Vicente Blvd. and Wilshire Blvd.	Hotel	68.8/67.2	68.8/67.2	0.0/0.0	No
3rd Street					
Between Robertson Blvd. and San Vicente Blvd.	Residential	68.4/66.8	68.4/66.8	0.0/0.0	No
Burton Way					
Between Robertson Blvd. and San Vicente Blvd.	Residential	66.7/65.1	66.8/65.2	0.1/0.1	No

[a] *Detailed calculation worksheets are included in Appendix O to this Draft EIR.*

Source: AES, 2020.

Table IV.G-20 on page IV.G-46 presents the estimated composite noise levels in terms of CNEL at the offsite sensitive receptor locations from the Project-related noise sources. As indicated in Table IV.G-20, the Project would result in an increase (relative to the existing ambient) in composite noise levels ranging from 0.1 dBA at the uses represented by receptor location R4 to 3.1 dBA at the uses represented by receptor locations R1 and R2. The composite noise level from Project operation at all offsite receptor locations would be below the 5-dBA significance criteria as the ambient plus Project composite noise level falls within the normally and conditionally acceptable (less than 70 CNEL) range for the residential and hotel land use categories. **As such, composite noise level impacts due to Project operations would be less than significant.**

Based on the above, only certain Project operations would result in the generation of a substantial permanent increase in ambient noise levels only at the upper floors of receptor location R1 (due to periodic truck loading activities) in excess of standards established in the City's general plan or noise ordinance, or applicable standards of other agencies. Therefore, the Project's operational noise impact from onsite sources would be significant prior to mitigation.

Table IV.G-20
Composite Noise Impacts

Receptor Location	Existing Ambient Noise Levels (CNEL (dBA)) (A)	Calculated Project-Related Noise Sources (CNEL (dBA))				Project Composite Noise Levels (CNEL (dBA)) (F=B+C+D+E)[b]	Ambient Plus Project Composite Noise Levels (CNEL (dBA)) (G=A+F)[b]	Increase in Noise Levels due to Project (CNEL (dBA)) (G-A)	Sig. Criteria[a] (CNEL (dBA))	Sig. Impact?
		Traffic (B)	Mechanical (C)	Loading/ Trash Compactor (D)	Outdoor Spaces (E)					
R1	64.7	35.8	55.8	61.2	61.5	64.9	67.8	3.1	69.7	No
R2	63.7	38.9	53.6	27.7	63.3	63.8	66.8	3.1	68.7	No
R3	66.8	43.8	52.0	29.4	59.3	60.2	67.6	0.8	71.8	No
R4	62.9	35.8	38.9	19.3	36.2	42.0	63.0	0.1	67.9	No

[a] *Significance criteria are equivalent to the existing ambient plus 3 dBA if the estimated noise levels (ambient plus Project) fall within the "normally unacceptable" or "clearly unacceptable" land use categories or ambient plus 5 dBA if the estimated noise levels fall within the "normally acceptable" or "conditionally acceptable" land use categories, per the City of Los Angeles Noise Element. If the estimated noise levels exceed those significance criteria, a noise impact is identified.*

[b] *Adding sound levels in dB are calculated based on energy basis.*

Source: AES, 2020. See Appendix O to this Draft EIR.

(2) Mitigation Measures

(a) On-Site Construction Noise

As analyzed above, construction of the Project would have the potential to result in significant noise impacts at the offsite sensitive receptor locations from onsite construction activities. Therefore, the following mitigation measure is provided to reduce construction-related noise impacts:

Mitigation Measure NOI-MM-1: Temporary and impermeable sound barriers shall be erected at the locations listed below. At plan check, building plans shall include documentation prepared by a noise consultant verifying compliance with this measure.

- Along the northern property line of the Project Site between the construction areas and the residential use across the alley (receptor location R1). The temporary sound barrier shall be designed to provide a minimum 15-dBA noise reduction at the ground level of the residential use (receptor location R1).
- Along the western property line of the Project Site between the construction areas and residential use at the west side of Holt Avenue (receptor location R2). The temporary sound barrier shall be designed to provide a minimum 15-dBA noise reduction at the ground level of receptor location R2.
- Along the southern property line of the Project Site between the construction areas and residential use on the south side of Burton Way (receptor location R3). The temporary sound barrier shall be designed to provide a minimum 7-dBA noise reduction at the ground level of receptor location R3.

(b) Operational Noise

As analyzed above, operation of the loading dock would have the potential to result in significant noise impacts at offsite receptor location R1 (upper levels). Receptor location R1 is a multi-family residential building with numerous levels above grade. In order to fully mitigate the loading dock operation noise, a wall or an enclosure would be required to break the line of sight (and attenuate noise levels) between all floors of receptor location R1 and the loading dock areas on the Project Site. That would require a noise barrier wall in excess of 10 stories, which would not be feasible for several reasons, including lack of compliance with the City's Building Code. It should be noted that the analysis in this Draft EIR (regarding this single operational noise impact at receptor location R1) is based on conservative assumptions, as discussed above. Nonetheless, to inform the public and decisionmakers of this potential scenario, it has been determined that this noise impact would be significant and unavoidable, as no feasible mitigation measures are available to reduce the operational noise impact.

(3) Level of Significance After Mitigation

(a) On-Site Construction Noise

Implementation of Mitigation Measure NOI-MM-1 provided above would reduce the Project's construction noise levels to the extent feasible. Specifically, implementation of Mitigation Measure NOI-MM-1 (installation of temporary sound barrier) would reduce the noise generated by onsite construction activities at the offsite sensitive uses, by a minimum 15 dBA at the residential use adjacent to the Project Site to the north (receptor location R1), 15 dBA at the residential uses on the west side of Holt Avenue (receptor location R2), and 7 dBA at the residential uses on the south side of Burton Way (receptor location R3). As presented in Table IV.G-21 on page IV.G-49, the estimated construction-related noise levels at offsite sensitive receptor location R3 would be reduced to below a level of significance with implementation of Mitigation Measure NOI-MM-1. However, the estimated construction-related noise levels would still exceed the significance thresholds at receptor locations R1 and R2 with the implementation of NOI-MM-1. It is noted, however, that the maximum exceedance for receptor locator R1 would be significantly reduced from 20.8 to 5.8 L_{eq} (dBA) and the maximum exceedance for receptor locator R2 would be significantly reduced from 17.6 to 2.6 L_{eq} (dBA). There are no other feasible mitigation measures that could be implemented to reduce the temporary noise impacts from onsite construction at receptor locations R1 and R2. **Therefore, the Project's construction noise impact associated with onsite noise sources would be significant and unavoidable.**

(b) Off-Site Construction Noise

As discussed above, the short-term noise impacts associated with offsite construction traffic would be significant along the anticipated haul routes along Holt Avenue, 3rd Street, La Cienega Boulevard, Cadillac Avenue, and San Vicente Boulevard, during the mat foundation phase. There are no other feasible mitigation measures that could be implemented to reduce this short-term impact because conventional mitigation measures, such as providing temporary noise barrier walls to reduce the offsite construction truck traffic noise impacts, would not be feasible as the barriers would obstruct the access and visibility to the properties along the anticipated haul routes. **Therefore, the Project's construction noise impact associated with offsite construction traffic would significant and unavoidable.**

Table IV.G-21
Construction Noise Impacts With Mitigation Measures

Off-Site Receptor Location	Minimum Noise Reduction Provided by Mitigation Measures[b] (dBA)	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))						Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significant Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact With Mitigation?
		Demo/ Deconstruction of Cathedral	Grading	Mat Foundation	Foundation/ Concrete	Building Construction	Paving/ Landscape				
R1	15	30	70.2	72.3	66.2	70.4	70.4	67.7	66.5	5.8[c]	**Yes**
R2	15	65	65.0	68.6	63.1	65.8	65.6	66.6	66.0	2.6[c]	**Yes**
R3	7	175	64.6	68.8	63.8	66.1	66.1	60.6	69.8	0.0	No
R4	0	535	52.0	56.8	51.8	54.1	54.3	48.1	65.3	0.0	No

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.G-8 on page IV.G-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance criteria, a construction-related noise impact is identified.*

[b] *Noise reduction provided by temporary noise barrier along the Project boundaries.*

[c] *Noise barriers would not be effective in reducing the onsite construction noise at the upper levels of receptors R1 and R2. Therefore, onsite construction noise impacts would remain significant and unavoidable. On-site construction noise levels shown for R1 and R2 are for the ground level of the building only*

Source: AES, 2020. See Appendix O to this Draft EIR.

(c) Operational Noise

Noise impacts associated with offsite traffic during Project operations would be less than significant without mitigation. However, noise impacts associated with the onsite loading activities would be significant without mitigation measures. Noise mitigation measures, such as tall noise barrier wall or enclosure, were evaluated. However, as discussed above, a noise barrier wall or enclosure would not be feasible. There are no other feasible mitigation measures that could be implemented to reduce the impact to less than significant. **As such, the Project's noise impact associated with the intermittent loading dock operation would be significant and unavoidable.**

Threshold (b): Would the Project result in the generation of excessive ground-borne vibration or ground-borne noise levels?

(1) Impact Analysis

(a) Construction

Construction activities can generate varying degrees of ground vibration, depending on the construction procedures and the type of construction equipment used. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies, depending on soil type, ground strata, and construction characteristics of the receptor buildings. The results from vibration can range from no perceptible effects at the lowest vibration levels to low rumbling sounds and perceptible vibration at moderate levels. However, ground-borne vibrations from construction activities rarely reach levels that damage structures.

(i) Building Damage Impacts from On-Site Construction

With regard to potential building damage, the Project would generate ground-borne construction vibration during building demolition and site excavation/grading activities when heavy construction equipment, such as large bulldozers, drill rigs, and loaded trucks, would be used. The FTA has published standard vibration velocities for various construction equipment operations. Table IV.G-22 on page IV.G-51 provides the estimated ground vibration velocity levels (in terms of inch per second PPV) at the nearest offsite structures to the Project Site. It is noted that since impact pile driving methods would not be used during construction of the Project, in accordance with Project Design Feature NOI-PDF-4 provided above, impact pile driving vibration is not included in the onsite construction vibration analysis. Installation of piles for shoring and foundation would utilize drilling methods to minimize vibration generation.

Table IV.G-22
Construction Vibration Impacts—Building Damage

Nearest On-Site and Off-Site Building Structure[a]	Estimated Vibration Velocity Levels at the Outside of and Adjacent to the Nearest Off-Site Structures from the Project Construction Equipment (inch/second (PPV))[b]					Sig. Criteria (PPV)	Sig. Impact?
	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	0.089	0.089	0.076	0.035	0.003	—	—
11-story residential building across the Project Site to the north	0.068	0.068	0.058	0.027	0.002	0.5[d]	No
Five-story residential building on the south side of Burton Way, south of the Project Site	0.005	0.005	0.004	0.002	<0.001	0.3[c]	No
Three-story parking structure on the east side of San Vicente Boulevard, east of the Project Site	0.011	0.011	0.010	0.004	<0.001	0.5[d]	No
Five-story residential building on the west side of Holt Avenue, west of the Project Site	0.021	0.021	0.018	0.008	0.001	0.3[c]	No

[a] *Represents offsite building structures located nearest to the Project Site to the north, south, east, and west.*

[b] *Vibration level calculated based on FTA reference vibration level at 25 foot distance.*

[c] *FTA criteria for engineered concrete and masonry buildings.*

[d] *FTA criteria for reinforced-concrete, steel or timber buildings.*

Source: FTA, 2018; AES, 2020. See Appendix O to this Draft EIR.

As discussed in the Project's Historical Resources Technical Report included as Appendix O to this Draft EIR, there are no offsite historical resources adjacent to the Project Site.[53] The existing onsite cathedral building appears to be individually eligible for local listing as a Los Angeles Historic-Cultural Monument. The cathedral building would be deconstructed, reassembled, and rehabilitated during the Project construction. Therefore, Project construction would not result in vibration impacts to the onsite cathedral building.

[53] *Architectural Resources Group, Our Lady of Mt. Lebanon Project Historical Resources Technical Report, May 14, 2020. Refer to Appendix C to this Draft EIR.*

The assessment of construction vibration provided below for potential building damage due to onsite construction compares the estimated vibration levels generated during construction of the Project to the 0.3 PPV significance criteria for a engineered concrete and masonry building (applicable to the offsite five-story residential buildings to the west and south the Project Site) and the 0.5 PPV significance criteria for reinforced-concrete, steel and timber building (applicable to the offsite 11-story residential building to the north and the three-story parking structure to the east). As indicated in Table IV.G-22 on page IV.G-51, the estimated vibration levels from the construction equipment would be well below the 0.3 PPV building damage significance criteria for the existing five-residential buildings located along Burton Way and Holt Avenue, and the 0.5 PPV building damage significance criteria for the 11-story residential building to the north and the three-story parking structure to the east. **Therefore, the onsite vibration impacts during construction of the Project, pursuant to the significance criteria for building damage, would be less than significant.**

(ii) Human Annoyance Impacts from On-Site Construction

Table IV.G-23 on page IV.G-53 provides the estimated vibration levels at the offsite sensitive uses due to construction equipment operation and compares the estimated vibration levels to the specified significance criteria for human annoyance. Per FTA guidance, the significance criteria for human annoyance is 72 VdB for residential uses, assuming there are a minimum of 70 vibration events occurring during a typical construction day. As indicated in Table IV.G-23, the estimated ground-borne vibration levels from construction equipment would be below the significance criteria for human annoyance at offsite sensitive receptor locations R3 and R4. The estimated ground-borne vibration levels at receptor locations R1 and R2 would exceed the 72-VdB significance criteria during the demolition and grading/excavation phases with large construction equipment (i.e., large bulldozer, caisson drilling and loaded trucks) operating within 80 feet of receptor locations R1 and R2. **Therefore, onsite vibration impacts during construction of the Project, pursuant to the significance criteria for human annoyance, would be significant without mitigation measures.**

(iii) Building Damage and Human Annoyance Impacts from Off-Site Construction

As described above, construction delivery/haul trucks would travel between the Project Site and I-10 via Burton Way, Holt Avenue, 3rd Street, La Cienega Boulevard, Cadillac Avenue, and San Vicente Boulevard. Heavy-duty construction trucks would generate ground-borne vibration as they travel along the Project's anticipated haul route(s). Thus, an analysis of potential vibration impacts using the building damage and human annoyance criteria for ground-borne vibration along the anticipated local haul routes was conducted.

Table IV.G-23
Construction Vibration Impacts—Human Annoyance

Off-Site Receptor Location	Estimated Vibration Velocity Levels at the Off-Site Sensitive Uses Due to On-Site Construction Equipment Operation[a] (VdB)					Significance Criteria (VdB)	Sig. Impact?
	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	87	87	86	79	58	—	—
R1	85	85	84	77	56	72	**Yes**
R2	75	75	74	67	46	72	**Yes**
R3	62	62	61	54	33	72	No
R4	47	47	46	39	18	72	No

[a] Vibration levels calculated based on FTA reference vibration level at 25 distance,
Source: FTA, 2018; AES, 2020. See Appendix O to this Draft EIR.

Regarding building damage, based on FTA data, the vibration generated by a typical heavy-duty truck would be approximately 63 VdB (0.00566 PPV) at a distance of 50 feet from the truck.[54] According to the FTA "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads." Nonetheless, there are existing buildings along the Project's anticipated haul route that are situated approximately 20 feet from the right-of-way and would be exposed to ground-borne vibration levels of approximately 0.022 PPV, as provided in the noise calculation worksheets included in Appendix O to this Draft EIR. This estimated vibration generated by construction trucks traveling along the anticipated haul route(s) would be well below the most stringent building damage criteria of 0.12 PPV for buildings extremely susceptible to vibration. **Therefore, the Project's vibration impact (pursuant to the significance criteria for building damage) from offsite construction activities (i.e., construction trucks traveling on public roadways) would be less than significant**.

As discussed above, per FTA guidance, the significance criteria for human annoyance is 72 VdB for sensitive uses, including residential and hotel uses. It should be noted that buses and trucks rarely create vibration that exceeds 70 VdB at 50 feet from the receptor unless there are bumps in the road.[55] Vibration sensitive uses (i.e., residential) along Burton Way, Holt Avenue, 3rd Street, San Vicente Boulevard, and Cadillac Avenue are located a minimum of 35 feet from the traveled lane. As indicated in the noise

[54] FTA, Transit Noise and Vibration Impact Assessment, September 2018, Figure 5-4.

[55] FTA, Transit Noise and Vibration Impact Assessment, September 2018, p. 113.

calculation worksheets included in Appendix O to this Draft EIR, the temporary vibration levels from trucks passing by would be approximately 68 VdB, which would be below the 72-VdB significance criteria. The residential uses along La Cienega Boulevard are located approximately 25 feet from the traveled lane, which would be exposed to ground-borne vibration of 72 VdB, which would be at the 72-VdB significance threshold. **As such, potential vibration impacts with respect to human annoyance that would result from temporary and intermittent offsite vibration from construction trucks traveling along the anticipated haul route(s) would be significant without mitigation measures.**

(iv) Summary of Construction Vibration Impacts

As discussed above, the estimated vibration levels from onsite construction equipment would be below the building damage significance criteria of 0.3 PPV for the offsite five-story residential buildings to the south and west of the Project Site, and 0.5 PPV at the 11-story residential building and the three-story parking structure north and east of the Project Site, respectively. In addition, the estimated vibration levels from onsite construction equipment would exceed the human annoyance significance criteria of 72 VdB at the offsite residential uses north and west of the Project Site. **Therefore, the Project's vibration impact from onsite construction activities would be significant pursuant to the significance criteria for human annoyance without mitigation.**

The Project's vibration impact associated with temporary and intermittent vibration from offsite construction activities (i.e., construction trucks traveling along the anticipated haul route) would be less than significant with respect to building damage; however, the vibration impact from offsite construction activities would be significant with respect to the significance criteria for human annoyance.

(b) Operation Vibration Impacts

As described above, sources of vibration related to operation of the Project would include vehicle circulation, delivery trucks, and building mechanical equipment. As also discussed above, vehicular-induced vibration, including vehicle circulation within the subterranean parking area, would not generate perceptible vibration levels at offsite sensitive uses. Building mechanical equipment installed as part of the Project would include typical commercial-grade stationary mechanical equipment, such as air-condenser units (mounted at the roof level), that would include vibration-attenuation mounts to reduce vibration transmission so vibration would not be perceptible at the offsite sensitive receptors. **Therefore, operation of the Project would not result in the generation of excessive ground-borne vibration levels that would be perceptible in the vicinity of the Project Site. As such, the vibration impact associated with operation of the Project would be less than significant.**

(2) Mitigation Measures

(a) Construction Vibration

As analyzed above, vibration impacts from onsite and offsite construction activities would be significant pursuant to the significance criteria for human annoyance. Mitigation measures considered to reduce vibration impacts from onsite construction activities with respect to human annoyance included the installation of a wave barrier, which is typically a trench or a thin wall made of sheet piles installed in the ground (essentially a subterranean sound barrier to reduce noise). However, wave barriers must be very deep and long to be effective, are cost prohibitive for temporary applications such as construction, and therefore are considered infeasible.[56] In addition, constructing a wave barrier to reduce the Project's construction-related vibration impacts would, in and of itself, generate ground-borne vibration from the excavation equipment. In addition, it would not be feasible to install a wave barrier along the public roadways for the offsite construction vibration impacts. As such, there are no feasible mitigation measures to reduce the potential vibration human annoyance impacts.

(b) Operation Vibration Impacts

As discussed above, operation of the Project would not result in a significant vibration impact during operation, and no mitigation measures are required.

(3) Level of Significance After Mitigation

(a) Construction Vibration

As described above, there are no feasible mitigation measures that could be implemented to reduce the temporary vibration impacts from onsite construction associated with human annoyance to a less-than-significant level. In addition, it would not be feasible to install a wave barrier along the public roadways for the offsite construction vibration impacts. **Therefore, the Project's vibration impacts from onsite and offsite construction activities with respect to human annoyance would be significant and unavoidable.**

(b) Operation Vibration

As discussed above, the vibration impact associated with Project operation would be less than significant without mitigation.

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[56] *Caltrans, Transportation- and Construction-Induced Vibration Guidance Manual, June 2004.*

Threshold (c): For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

As discussed in Section VI, Other CEQA Considerations, of this Draft EIR, and evaluated in the Initial Study prepared for the Project, included as Appendix A to this Draft EIR, the Project Site is not located within the vicinity of a private airstrip or an airport land use plan or within 2 miles of an airport. Thus, the Project would not expose people residing or working in the project area to excessive airport-related noise levels. The nearest airport is the Santa Monica Airport located approximately 5.25 miles southwest of the Project Site. Since the Project is not located within an airport land use plan, within two miles of a public airport or public use airport, or within the vicinity of a private airstrip, impacts with regard to airport-related noise would not occur. **Therefore, the Project's impact with respect to Threshold (c) would be less than significant.**

e. Cumulative Impacts

(1) Impact Analysis

The Project, together with the related projects and future growth, could contribute to cumulative noise impacts. The potential for cumulative noise impacts to occur is specific to the distance between each related project and their stationary noise sources, as well as the cumulative traffic that these projects would add to the surrounding roadway network.

(a) Construction Noise

(i) On-Site Construction Noise

As indicated in Section III, Environmental Setting, of this Draft EIR, 44 related projects (17 in the City of Los Angeles, 10 in the City of Beverly Hills, and 17 in the West Hollywood) have been identified in the vicinity of the Project Site. Noise from construction of development projects is typically localized and has the potential to affect noise-sensitive uses within 500 feet from the construction site, based on the *L.A. CEQA Thresholds Guide* screening criteria. Thus, noise from construction activities for two projects within 1,000 feet of each other can contribute to a cumulative noise impact for receptors located midway between the two construction sites. Of the 44 related projects, only one related project is located within 1,000 feet of the Project Site. The remaining 43 related projects are located a minimum of 1,400 feet from the Project, which would not contribute to the cumulative onsite construction noise impacts.

Related Project No. LA6 (333 La Cienega Boulevard Project) is a mixed-use development, located approximately 100 feet east of the Project Site. There are noise sensitive receptors located within 500 feet of and have direct line of sight to both Related Project No. LA6 and the Project Site, including the multi-family residential use along San Vicente Boulevard (represented by receptor location R1) and the multi-family residential use along Burton Way (represented by receptor location R3). As analyzed above in Subsection 2.c.(2) (see Table IV.G-12 on page IV.G-34), the estimated Project-related construction noise levels at the uses represented by receptor locations R1 and R3 would exceed the significance criteria by up to 20.8 dBA and 6.0 dBA during the site grading (peak construction noise period), prior to mitigation, respectively. In addition, the estimated construction related noise from Related Project No. LA6 to the multi-family residential use along San Vicente Boulevard (receptor location R1) and the multi-family residential building at the intersection of San Vicente Boulevard and Burton Way (adjacent to receptor location R3) would exceed the ambient noise by 14.6 dBA and 6.0 dBA, respectively.[57] As indicated above, the mitigation measures specified for the Project would reduce the Project-related construction noise levels at receptor locations R1 and R3 by 15 dBA and 7 dBA, respectively. However, the Project-related construction noise level at receptor location R1 would still exceed the significance threshold by 5.8 dBA. In addition, the Related Project No. LA6 would also implement noise mitigation measures, which would reduce the individual project's construction-related noise to a less than significant impact. However, the combined construction-related noise from the Project and Related Project No. LA6 (if occurring concurrently) would exceed the 5 dBA significance threshold, even with mitigation measures.[58] Therefore, there is a potential for cumulatively significant construction noise impacts to occur at the receptor locations in the event Project construction occurs concurrently with construction of Related Project No. LA6.

Construction-related noise levels from the related projects would be intermittent and temporary and it is anticipated that, as with the Project, the related projects would comply with the construction hours and other relevant provisions set forth in the LAMC. Noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through proposed mitigation measures for each individual related project and compliance with locally adopted and enforced noise ordinances. Based on the above, there would be potential cumulative noise impacts at the nearby sensitive uses (e.g., residential uses) located in proximity to the Project Site and Related Project No. LA6, in the event of concurrent construction activities. **As such,**

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[57] *City of Los Angeles, 333 La Cienega Boulevard Project Draft Environmental Impact Report, May 2016, Table 4.3-11.*

[58] *City of Los Angeles, 333 La Cienega Boulevard Project Draft Environmental Impact Report, May 2016, p. 4.3-33.*

cumulative noise impacts associated with onsite construction would be significant without mitigation measures.

(ii) Off-Site Construction Noise

In addition to the cumulative impacts of onsite construction activities, offsite construction haul trucks would have a potential to result in cumulative impacts if the trucks for the related projects and the Project were to utilize the same haul route. As analyzed above in Subsection 2.c.(2) (see Table IV.G-13 on page IV.G-34), the estimated offsite construction noise levels from the Project would exceed the significance criteria along La Cienega Boulevard by 1.5 dBA. Therefore, any additional number of trucks from the Project and the related projects along La Cienega Boulevard would incrementally increase the noise levels, which would contribute to cumulative impacts. There are several related projects located along La Cienega Boulevard that could utilize La Cienega Boulevard, including Related Project No. LA3 (1022 La Cienega Boulevard), Related Project No. LA6 (333 La Cienega Boulevard), and Related Project BH2 (55 La Cienega Boulevard). Related Project No. LA6 is estimated to generate up to 72 haul truck trips per day along La Cienega Boulevard.[59] Therefore, cumulative noise due to construction truck traffic from the Project and other related projects (if there is concurrent construction) has the potential to increase the ambient noise levels along the truck route by 5 dBA. **As such, cumulative noise impacts associated with offsite construction would be significant without mitigation measures.**

(iii) Summary of Cumulative Construction Noise Impacts

As discussed above, onsite and offsite construction activities from the Project and related projects have the potential to result in generation of noise levels in excess of standards established by the City. **Therefore, cumulative noise impacts associated with onsite and offsite construction activities would be significant without mitigation measures.**

(b) Operational Noise

The Project Site and surrounding area have been developed with uses that have previously generated, and will continue to generate, noise from a number of community noise sources, including mechanical equipment (e.g., HVAC systems), outdoor activity areas, and vehicle travel. Similar to the Project, each of the related projects that have been identified in the vicinity of the Project Site would also generate stationary-source and mobile-source noise due to ongoing day-to-day operations. All related projects are of a

[59] *City of Los Angeles, 333 La Cienega Boulevard Project Draft Environmental Impact Report, May 2016, p. 4.3-27.*

residential, retail, commercial, or institutional nature, and these uses are not typically associated with excessive exterior noise levels. However, each project would produce traffic volumes that are capable of generating roadway noise impacts. The potential cumulative noise impacts associated with onsite and offsite noise sources are addressed below.

(i) On-Site Stationary Noise Sources

Due to provisions set forth in the LAMC that limit stationary source noise from items, such as rooftop mechanical equipment, noise levels would be less than significant at the property line for each related project. In addition, as discussed above, noise impacts associated with operations within the Project Site would be significant. **Therefore, based on the distance of the related projects (i.e., Related Project No. LA6) from the Project Site and the operational noise levels (from loading dock activities, and only at the upper levels of receptor location R1) associated with the Project, cumulative stationary source noise impacts associated with operation of the Project and related projects would be significant without mitigation measures**.

(ii) Off-Site Mobile Noise Sources

The Project and related projects in the area would produce traffic volumes (offsite mobile sources) that would generate roadway noise. Cumulative noise impacts due to offsite traffic were analyzed by comparing the projected increase in traffic noise levels from “Existing” conditions to “Future Plus Project” conditions to the applicable significance criteria. Future Plus Project conditions include traffic volumes from future ambient growth, related projects, and the Project. The calculated traffic noise levels under “Existing” and “Future Plus Project” conditions are presented in Table IV.G-24 on page IV.G-60 for a typical weekday and weekend. As shown therein, cumulative traffic volumes would result in an increase ranging from 0.3 dBA (CNEL) along the roadway segments of Robertson Boulevard (between Burton Way and Wilshire Boulevard), 3rd Street and Burton Way (between Robertson Boulevard and San Vicente Boulevard), to up to 0.5 dBA (CNEL) along the roadway segments of San Vicente Boulevard (between Beverly Boulevard and 3rd Street) and La Cienega Boulevard (between Melrose Avenue and Wilshire Boulevard). These increases would be below the 5-dBA significance criteria (applicable when noise levels fall within the normally acceptable or conditionally acceptable land use category). **Therefore, cumulative noise impacts due to offsite mobile noise sources associated with the Project, future growth, and related projects would be less than significant.**

(iii) Summary of Cumulative Operational Noise Impacts

As discussed above, the Project and related projects would result in the exposure of persons to or generation of noise levels in excess of the significance criteria established by the City or in a substantial permanent increase in ambient noise levels in the vicinity of the

Table IV.G-24
Cumulative Roadway Traffic Noise Impacts

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] (CNEL (dBA)) (Weekday/Weekend)		Increase in Noise Levels Due to Cumulative + Project (CNEL (dBA))	Significant Impact?
		Existing Conditions	Future Cumulative Plus Project		
Robertson Boulevard					
Between 3rd St. and Burton Way	Residential	67.2/65.6	67.6/66.0	0.4/0.4	No
Between Burton Way and Wilshire Blvd.	Residential	67.7/66.1	68.0/66.4	0.3/0.3	No
San Vicente Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential	63.4/61.8	63.8/62.2	0.4/0.4	No
Between Beverly Blvd. and 3rd St.	Hospital	63.8/62.2	64.3/62.7	0.5/0.5	No
Between 3rd St. and Burton Way	Residential	62.2/60.6	62.7/61.1	0.5/0.5	No
La Cienega Boulevard					
Between Melrose Ave. and Beverly Blvd.	Residential, School	68.9/67.3	69.4/67.8	0.5/0.5	No
Between Beverly Blvd. and 3rd St.	Commercial	68.9/67.3	69.3/67.7	0.4/0.4	No
Between 3rd St. and San Vicente Blvd.	Commercial	68.8/67.2	69.3/67.7	0.5/0.5	
Between San Vicente Blvd. and Wilshire Blvd.	Hotel	68.8/67.2	69.3/67.7	0.5/0.5	No
3rd Street					
Between Robertson Blvd. and San Vicente Blvd.	Residential	68.4/66.8	68.7/67.1	0.3/0.3	No
Burton Way					
Between Robertson Blvd. and San Vicente Blvd.	Residential	66.7/65.1	67.0/65.4	0.3/0.3	No

[a] *Detailed calculation worksheets are included in Appendix O to this Draft EIR.*

Source: AES, 2020.

Project Site above levels existing without the Project and the related projects due to onsite noise sources. **Therefore, the cumulative operational noise impact associated with offsite sources would be less than significant; however, noise impacts associated with onsite sources (from loading dock activities, and only at the upper levels of receptor location R1) would be significant.**

(c) Construction Vibration

(i) On-Site Construction Vibration

As previously discussed, ground-borne vibration decreases rapidly with distance. Potential vibration impacts due to construction activities are generally limited to buildings/structures that are located in proximity to the construction site (i.e., within 10 feet as related to building damage and 80 feet as related to human annoyance at residential uses). As indicated above, the closest related project, Related Project No. LA6, is approximately 100 feet east of the Project Site. Therefore, based on distance attenuation, potential cumulative vibration impacts with respect to the building damage from the Project and Related Project No. LA6 would be less than significant. **Therefore, the Project would not contribute to a cumulative construction vibration impact with respect to building damage associated with onsite construction and the cumulative impact would be less than significant.**

As discussed above, potential vibration impacts associated with Project-related onsite construction activities would be significant with respect to human annoyance at receptor location R1 (closest sensitive receptor between the Project and the Related Project No. LA6). Related Project No. LA6 is approximately 135 feet from the receptor location R1. Due to the rapid attenuation characteristics of ground-borne vibration, Related Project No. LA6 would not contribute to the cumulative construction vibration impact with respect to human annoyance at the uses represented by receptor location R1. **Therefore, the cumulative construction vibration impact with respect to human annoyance associated with onsite construction would be less than significant.**

(ii) Off-Site Construction Vibration

As previously discussed, based on FTA data, the vibration generated by a typical heavy truck would be approximately 63 VdB (0.00566 PPV) at a distance of 50 feet from the truck.[60] In addition, according to the FTA "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads." As discussed above, there are existing buildings that are approximately 20 feet from the right-of-way of the anticipated haul route(s) for the Project (i.e., Burton Way, Holt Avenue,

[60] *FTA, Transit Noise and Vibration Impact Assessment, September 2018, Figure 5-4.*

3rd Street, La Cienega Boulevard, Cadillac Avenue, and San Vicente Boulevard). These buildings are anticipated to be exposed to ground-borne vibration levels of approximately 0.022 PPV. Trucks from the related projects are expected to generate similar ground-borne vibration levels. Therefore, the vibration levels generated from offsite construction trucks associated with the Project and other related projects along the anticipated haul route(s) would be below the most stringent building damage significance criteria of 0.12 PPV for buildings extremely susceptible to vibration. **Therefore, the potential cumulative vibration impact with respect to building damage from offsite construction would be less than significant.**

As discussed above, potential vibration impacts associated with temporary and intermittent vibration from project-related construction trucks traveling along the anticipated haul routes, including; Burton Way, Holt Avenue, 3rd Street, San Vicente Boulevard, and Cadillac Avenue would be less than significant. However, potential vibration impacts at the residential uses along La Cienega Boulevard would be significant with respect to human annoyance. As related projects would be anticipated to use similar trucks as the Project (i.e., La Cienega Boulevard), it is anticipated that construction trucks would generate similar vibration levels along the anticipated haul route(s). **Therefore, to the extent that other related projects use the same haul route as the Project, the cumulative vibration impact with respect to human annoyance associated with temporary and intermittent vibration from haul trucks traveling along the designated haul route(s) would be significant.**

(iii) Summary of Cumulative Construction Vibration Impacts

As discussed above, due to the rapid attenuation characteristics of ground-borne vibration and given the distance of the nearest related project to the Project Site, there is no potential for a cumulative construction vibration impact with respect to building damage associated with ground-borne vibration from onsite sources. In addition, potential cumulative vibration impacts with respect to building damage from offsite construction would be less than significant. **Therefore, onsite and offsite construction activities associated with the Project and related projects would not generate excessive ground-borne vibration levels with respect to building damage**.

Cumulative construction vibration impacts from onsite construction activities pursuant to the significance criteria for human annoyance would be less significant in the event concurrent construction of the Project and the related projects were to occur. However, to the extent that other related projects use the same haul route(s) as the Project, potential cumulative human annoyance impacts associated with temporary and intermittent vibration from haul trucks traveling along the designated haul route(s) would be significant. **Therefore, onsite construction activities would not generate excessive ground-borne vibration levels with respect to human annoyance that would result in**

cumulative vibration impacts. However, cumulative vibration impacts with respect to human annoyance associated with offsite construction activities would be significant.

(d) Operational Vibration

Vibration levels from project operation are generally limited to building mechanical equipment and vehicle circulations and would be limited to immediate vicinity of the project sites. The related projects (mixed-use and commercial developments) would generate similar vibration levels as the Project. As described above, the nearest related project is approximately 100 feet from the Project Site. Since ground-borne vibration decreases rapidly with distance, operation of the related projects would not contribute to cumulative vibration impacts due to distance between the Project and the related projects. As analyzed above, the Project operation would not result in the generation of excessive ground-borne vibration levels that would be perceptible in the vicinity of the Project Site. **Therefore, based on the distance of the related projects from the Project Site and the operational vibration levels associated with the Project, cumulative vibration impacts associated with operation of the Project and related projects would be less than significant**.

(2) Mitigation Measures

(a) Construction Noise

As analyzed above, there would be potential cumulative noise impacts at the nearby sensitive uses (e.g., residential uses) located in proximity to the Project Site and Related Project No. LA6, in the event of concurrent construction activities. Noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through proposed mitigation measures (e.g., providing temporary noise barriers) for each individual related project and Mitigation Measure NOI-MM-1 would reduce the Project's onsite noise impacts to the extent feasible. As discussed above, the Project-related construction noise levels at receptor location R3 would be reduced to less than significant (i.e., below the 5 dBA significance threshold), with implementation of the Project specified mitigation measures. However, the Project-related construction noise level at receptor location R1 would still exceed the significance threshold by 5.8 dBA, with mitigation measures implemented. In addition, mitigation measures would also be implemented to reduce the Related Project No. LA6 construction-related noise to a less than significant impact at receptor locations R1 and R3. However, even with these mitigation measures, the cumulative noise impact with respect to receptor locations R1 and R3 would be significant (i.e., exceed the significance threshold by up 5.8 dBA at receptor location R1 and up to 3 dBA at receptor location R3), and there are no other physical mitigation measures that would be feasible. As such, cumulative onsite noise impacts associated with onsite construction would be significant.

As analyzed above, cumulative noise impacts associated with offsite construction trucks from the Project and other related projects could occur. Conventional mitigation measures, such as providing temporary noise barrier walls to reduce the offsite construction truck traffic noise impacts, would not be feasible as the barriers would obstruct the access and visibility to the properties along the anticipated truck routes. There are no other feasible mitigation measures to reduce the temporary significant noise impacts associated with the cumulative offsite construction trucks and impacts would be significant and unavoidable.

(b) Operational Noise

As discussed above, operation of the Project and related projects would not result in a significant noise impact during operation, and no mitigation measures are required.

(c) Construction Vibration

Cumulative vibration impacts with respect to building damage associated with onsite and offsite construction activities would be less than significant. However, vibration levels from offsite construction trucks would exceed the significance criteria for human annoyance at vibration sensitive receptors along the anticipated construction routes. There are no feasible mitigation measures to reduce the potential vibration human annoyance impacts. Even though impacts would be temporary, intermittent, and limited to daytime hours when haul trucks are traveling within 25 feet of a sensitive receptor, cumulative vibration impacts from offsite construction with respect to human annoyance would remain significant and unavoidable.

(d) Operational Vibration

Cumulative vibration impacts associated with operation of the Project and related projects would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance after Mitigation

(a) Construction Noise

Cumulative construction noise impacts associated with onsite noise sources and offsite construction traffic would be significant and unavoidable.

(b) Operational Noise

Cumulative impacts associated with offsite noise source would be less than significant. However, cumulative impacts related to operational noise (loading activities) would be significant and unavoidable.

(c) Construction Vibration

Cumulative vibration impacts associated with respect to building damage from onsite and offsite construction activities would be less than significant. However, cumulative vibration impacts associated with human annoyance from offsite construction trucks would be significant and unavoidable.

(d) Operational Vibration

Cumulative impacts related to operational vibration would be less than significant.