IV. Environmental Impact Analysis

G. Noise

1. Introduction

This section of the Draft EIR analyzes the potential noise and vibration impacts that would result from the Project. Specifically, the analysis describes the existing noise environment in the vicinity of the Project Site, estimates future noise and vibration levels at surrounding sensitive land uses resulting from construction and operation of the Project, identifies the potential for significant impacts, and provides mitigation measures to address significant impacts. In addition, this section of the Draft EIR evaluates the potential cumulative noise and vibration impacts resulting from the Project together with related projects and other future growth. Noise calculation worksheets are included in Appendix H of this Draft EIR.

2. Environmental Setting

a. Noise and Vibration Fundamentals

(1) Noise

(a) Fundamentals of Sound and Environmental Noise

Noise is commonly defined as sound that is undesirable because it interferes with speech communication and hearing, causes sleep disturbance, or is otherwise annoying (unwanted sound). The decibel (dB) is a conventional unit for measuring the amplitude of sound as it accounts for the large variations in sound pressure amplitude and reflects the way people perceive changes in sound amplitude.[1] Human hearing is not equally sensitive to sound at all frequencies. Therefore, to approximate this human frequency-dependent response, the A-weighted filtering system is used to adjust measured sound levels (dBA). The term "A-weighted" refers to filtering the noise signal in a manner that corresponds to the way the human ear perceives sound. Examples of various sound levels in different environments are shown in Table IV.G-1 on page IV.G-2.

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

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.

People commonly judge the relative magnitude of sound sensation using subjective terms, such as “loudness” or “noisiness.” A change in sound level of 3 dB is considered “just perceptible,” a change in sound level of 5 dB is considered “clearly noticeable,” and a change (increase) of 10 dB is typically recognized as “twice as loud.”[2]

(b) Outdoor Sound Propagation

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.,

[2] *Bies & Hansen, Engineering Noise Control, 1988, Table 2.1.*

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).[3] 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 and 4.5 dBA per doubling of distance from the point source to the receptor for hard and soft sites, respectively.[4]

In addition, 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), some 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 reflects 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 more substantial barrier.[5] Additionally, structures with closed windows can further attenuate exterior noise by a minimum of 20 dBA to 30 dBA.[6]

(c) Environmental Noise Descriptors

Several rating scales have been developed to analyze noise. Since environmental noise fluctuates over time, these scales consider that the effect of noise is dependent upon the total acoustical energy content, as well as the time and duration of occurrence. The most frequently used noise descriptors, including those used by the City of Los Angeles (City), are summarized below.

Equivalent Sound Level (L_{eq}). L_{eq} is a measurement of the acoustic energy content of noise averaged over a specified time period. Thus, the L_{eq} of a time-varying sound and that of a steady sound are the same if they deliver the same amount of energy to the

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

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

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

[6] *FHWA, Highway Traffic Noise Analysis and Abatement Policy and Guidance, 1995.*

receptor's ear during exposure. L_{eq} for 1-hour periods, during the daytime or nighttime hours, and 24-hour periods are commonly used in environmental assessments. For evaluating community impacts, this rating scale does not vary regardless of whether the noise occurs during day or night.

Maximum Sound Level (L_{max}). L_{max} represents the maximum sound level measured during a measurement period.

Community Noise Equivalent Level (CNEL). CNEL is the time average of all A-weighted sound levels for a 24-hour period with a 10-dBA adjustment (upward) added to the sound levels that occur between the hours of 10:00 P.M. and 7:00 A.M. (nighttime), and a 5-dBA adjustment (upward) added to the sound levels which occur between the hours of 7:00 P.M. and 10:00 P.M. (evening). These penalties attempt to account for increased human sensitivity to noise during the nighttime and evening periods, particularly where sleep is the most probable activity. CNEL has been adopted by the State of California to define the community noise environment for development of the community noise element of a General Plan and is also used by the City for land use planning and to describe noise impacts in the *L.A. CEQA Thresholds Guide*.[7]

Day/Night Average Sound Level (L_{dn}). L_{dn} is the time average of all A-weighted sound levels for a 24-hour period, similar to the CNEL. L_{dn} includes a 10-dBA adjustment (upward) added to the sound levels that occur between the hours of 10:00 P.M. and 7:00 A.M. (nighttime). Unlike CNEL, L_{dn} does not include the 5-dBA adjustment (upward) to the sound levels that occur between the hours of 7:00 P.M. and 10:00 P.M. (evening). L_{dn} is typically within one dBA of CNEL, and the two measurements are often used interchangeably for the purposes of defining the community noise environment and measuring A-weighted sound levels for a 24-hour period.

(2) Ground-Borne Vibration

Vibration is commonly defined as an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root-mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal and is typically used for evaluating potential building damage.[8] The RMS velocity is defined as the square-root of the average of the squared amplitude of the vibration signal and is typically more suitable for evaluating

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[7] *State of California, General Plan Guidelines, 2003.*

[8] *Vibration levels are described in the noise calculation worksheets included in Appendix H of this Draft EIR and in this section of the Draft EIR in terms peak particle velocity level in the unit of inches per second.*

human response to ground-borne vibration.[9] The RMS vibration velocity level can be presented in inch per second or in VdB (a decibel unit referenced to one micro-inch per second).[10] Ground-borne vibration generated by man-made activities (e.g., road traffic, construction operations) typically weakens with greater horizontal distance away from the source of the vibration.

b. Regulatory Framework

Various government agencies have established noise regulations and policies to protect citizens from potential hearing damage and other adverse effects associated with noise and ground-borne vibration. The City has adopted a number of regulations and policies, which are based, in part, on federal and state regulations and are intended to control, minimize, or mitigate environmental noise effects. There are no City-adopted regulations or policies that relate to ground-borne vibration; therefore, the ground-borne vibration standards and guidelines from the Federal Transit Administration (FTA) are used for this analysis. The regulations and policies that are relevant to project construction and operation noise are discussed below.

(1) Federal

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[11] 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.

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[9] *Federal Transit Administration (FTA), "Transit Noise and Vibration Impact Assessment," Section 5.1, September 2018.*

[10] *VdB (velocity level in decibel) = 20 x Log ($V \div V_{ref}$), where V is the RMS velocity amplitude in micro-inch per second and V_{ref} is the reference velocity amplitude of $1x10^{-6}$ inch per second (1 micro-inch per second). All vibration levels described in decibel (VdB) in the noise calculation worksheets included in Appendix H of this Draft EIR and in this section of the Draft EIR are RMS and referenced to 1 micro-inch per second.*

[11] *United States Environmental Protection Agency, "EPA Identifies Noise Levels Affecting Health and Welfare," April 1974, https://archive.epa.gov/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html, accessed October 12, 2018.*

(2) State

The State of California has adopted noise compatibility guidelines for general land use planning (refer to Table IV.G-2 on page IV.G-7), which are used by the City for Noise Compatible Land Use guidelines. The types of land uses addressed by the state and the acceptable noise categories for each land use are included in the *State of California General Plan Guidelines,* which is published and updated by the Governor's Office of Planning and Research. The level of acceptability of the noise environment is dependent upon the activity associated with the particular land use. For example, according to the State, an exterior noise environment up to 65 dBA CNEL is "normally acceptable" for single- and multi-family residential uses, without special noise insulation requirements. In addition, noise levels up to 75 dBA CNEL are "conditionally acceptable" with special noise insulation requirements, while noise levels at 75 dBA CNEL and above are "clearly unacceptable" for residential and hotel uses.[12] In addition, the 2016 California Green Building Standards (CALGreen) Code requires that where the ambient noise environment of a residential use (habitable room) exceeds 65 dBA CNEL or 65 dBA L_{eq}, measures should be implemented to achieve an interior noise environment not to exceed 45 dBA $L_{eq(1\text{-hour})}$. In addition, the 2016 CALGreen Code requires that, where the ambient noise environment exceeds 65 dBA CNEL or 65 dBA L_{eq}, measures should be implemented to achieve an interior noise environment of a non-residential use that would not exceed 50 dBA $L_{eq(1\text{-hour})}$.

(3) City of Los Angeles Regulations and Policies

The Noise Element of the City of Los Angeles General Plan (Noise Element) establishes CNEL guidelines for land use compatibility and includes a number of goals, objectives, and policies for land use planning purposes. The City also has regulations to control unnecessary, excessive, and annoying noise, as set forth in the Los Angeles Municipal Code (LAMC) Chapter XI, Noise Regulation. In addition, the *L.A. CEQA Thresholds Guide* provides thresholds for determining noise impacts of a project. These regulations and policies are described further below.

(a) Noise Element

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

[12] *State of California, Governor's Office of Planning and Research, General Plan Guidelines, October 2003, p. 250.*

Table IV.G-2
City of Los Angeles 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: City of Los Angeles General Plan Noise Element, adopted February 1999.

to excessive noise levels. The following policies and objectives from the Noise Element are applicable to the Project:[13]

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

- Policy 2.1: 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.

[13] *Noise Element of the Los Angeles City General Plan, adopted February 3, 1999.*

- Objective 3 (Land Use Development): Reduce or eliminate noise impacts 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.

The City's noise compatibility guidelines are provided in Table IV.G-2 on page IV.G-7.

(b) City of Los Angeles Noise Regulations (Chapter XI of the LAMC)

Chapter XI, Noise Regulation, of the LAMC (referred to herein as the Noise Regulations) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences in the perceived level of different types of noise and/or noise sources. In accordance with the Noise Regulations, a noise level increase from certain regulated noise sources of 5 dBA over the existing or presumed ambient noise level at an adjacent property line is considered a violation of the Noise Regulations. The 5-dBA increase above ambient is applicable to City-regulated noise sources (e.g., mechanical equipment), and it is applicable any time of the day.[14]

The Noise Regulations state that the baseline ambient noise shall be the actual measured ambient noise level or the City's presumed ambient noise level, whichever is greater. The actual ambient noise level is the measured noise level averaged over a period of at least 15 minutes, L_{eq} (15-minute). The Noise Regulations indicate that in cases where the actual measured 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.) ambient noise levels defined in LAMC Section 111.03 should be used. The City's presumed ambient noise levels for specific land use zones, as set forth in LAMC Section 111.03, are provided in Table IV.G-3 on page IV.G-9.

To account for people's increased tolerance for short-duration noise events, the Noise Regulations provide an additional 5-dBA allowance for noise sources occurring more than 5 minutes but less than 15 minutes in any 1-hour period (for a total of 10 dBA above the ambient) and an additional 5-dBA allowance (total of 15 dBA above the ambient) for noise sources occurring 5 minutes or less in any 1-hour period. These additional allowances for short-duration noise sources are applicable to noise sources occurring between the hours of 7:00 A.M. and 10:00 P.M. (daytime hours). Furthermore, the Noise

[14] *Los Angeles Municipal Code, Chapter XI, Section 112.02.*

Table IV.G-3
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.

Regulations provide that 5 dBA shall be added to the measured noise level for steady high-pitched noise or repeated impulsive noises.[15,16]

The LAMC also provides noise regulations with respect to vehicle-related noise, including Section 114.02, which prohibits the operation of any motor driven vehicles upon any property within the City in a manner that would cause the noise level on the premises of any occupied residential property to exceed the ambient noise level by more than 5 dBA; Section 114.03, which prohibits loading and unloading operating between the hours of 10:00 P.M. and 7:00 A.M., which causes any impulsive sound, raucous or unnecessary noise within 200 feet of any residential building; and Section 114.06, which requires vehicle theft alarm systems shall be silenced within five minutes.

In addition, the Noise Regulations (LAMC Section 112.05) set a maximum noise level from construction equipment (powered equipment or powered hand tools) operating between the hours of 7:00 A.M. and 10:00 P.M., in any residential zone of the City or within 500 feet thereof, of 75 dBA, measured at a distance of 50 feet from the source, unless compliance with this limitation is technically infeasible.[17] LAMC Section 41.40 prohibits construction noise that disturbs persons occupying sleeping quarters in any dwelling, hotel, or apartment or other place of residence between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. and after 6:00 P.M. on Saturday or national holiday, and at any time on Sunday. However, construction hours may be extended with

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[15] *LAMC, Chapter XI, Article I, Section 111.02 (b).*

[16] *Impulsive sound as defined in the LAMC Section 111.01 (e) is sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of impulsive sound shall include, but are not limited to, explosion, musical bass drum beats, or the discharge of firearms.*

[17] *In accordance with the Noise Regulations, "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.*

approval from the Executive Director of the Board of Police Commissioners. In general, the City of Los Angeles Department of Building and Safety enforces noise ordinance provisions relative to noise generated by operation of equipment, and the Los Angeles Police Department enforces provisions relative to noise generated by people.

(4) Ground-Borne Vibration

The City currently does not have any adopted standards, guidelines, or thresholds relative to ground-borne vibration. As such, available guidelines from the FTA are utilized to assess impacts due to ground-borne vibration. As discussed above, in most circumstances common ground-induced vibrations related to roadway traffic and construction activities pose no threat to buildings or structures.[18,19]

The FTA has published a technical manual titled, "Transit Noise and Vibration Impacts Assessment," which provides ground-borne vibration impact criteria with respect to building damage during construction activities.[20] As discussed above, building vibration damage is measured in PPV described in the unit of inches per second. Table IV.G-4 on page IV.G-11 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.

In addition to the FTA Construction Vibration Impact Criteria for Building Damage, the FTA guidance manual also provides vibration criteria for human annoyance for various uses. These criteria were established primarily for rapid transit (rail) projects and, as indicated in Table IV.G-5 on page IV.G-12, are based on the frequency of vibration events. Specific criteria are provided for three land use categories: (1) Vibration Category 1—High Sensitivity; (2) Vibration Category 2—Residential; and (3) Vibration Category 3—Institutional.

c. Existing Conditions

As discussed in Section II, Project Description, of this Draft EIR, the Project Site is located in the Arts District area of the City and surrounded by a mix of light industrial, commercial, and residential uses. The predominant source of noise in the general vicinity

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[18] *FTA, "Transit Noise and Vibration Impact Assessment," Chapter 5.2, September 2018.*

[19] *Caltrans, "Transportation Related Earthborne Vibrations," February 2002.*

[20] *FTA, "Transit Noise and Vibration Impact Assessment," September 2018.*

Table IV.G-4
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.

of the Project Site is vehicular traffic on nearby roadways, particularly along Santa Fe Avenue west of the Project Site, which have high volumes of traffic, as well as noise from the trains that use the tracks adjacent to the Los Angeles River. Ambient noise sources in the vicinity of the Project Site include traffic, transit (nearby trains/rails), and trucks; commercial/industrial activities; construction noise from developing properties in the area; 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.[21] 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, as shown below in Figure IV.G-1 on page IV.G-13. 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*. Although studio uses are not defined as noise sensitive receptors by the *L.A. CEQA Thresholds Guide*, potential noise impacts at the Ruffworld Recording Studio adjacent to the Project Site (represented by receptor R3) were also evaluated for informational purposes only. As discussed below, noise measurements were conducted at the four off-site locations around and adjacent to the Project Site to establish baseline noise conditions in the vicinity of the Project Site. The

[21] *City of Los Angeles, L.A. CEQA Thresholds Guide, p. I.1-3.*

Table IV.G-5
FTA Vibration Impact Criteria for Human Annoyance

Land Use Category	Ground-Borne Vibration Levels (VdB) at which Impacts Occur		
	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.

monitoring locations essentially surround the Project Site and thereby provide 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-1 on page IV.G-13 and described in Table IV.G-6 on page IV.G-14.

(2) Ambient Noise Levels

To establish baseline noise conditions, existing ambient noise levels were monitored at four representative receptor locations (identified as R1 to R4) in the vicinity of the Project Site and one on-site receptor location (identified as P1). The baseline noise monitoring program was conducted on October 10, 2018 using a Quest Technologies Model 2900 Integrating/Logging Sound Level Meter.[22] LAMC Section 111.01 requires ambient noise to be measured over a period of at least 15 minutes. Two 15-minute measurements were conducted at receptor locations R1 through R4 during daytime and nighttime hours. The daytime ambient noise levels were measured between 12:00 P.M. and 2:00 P.M., and the

[22] *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.*

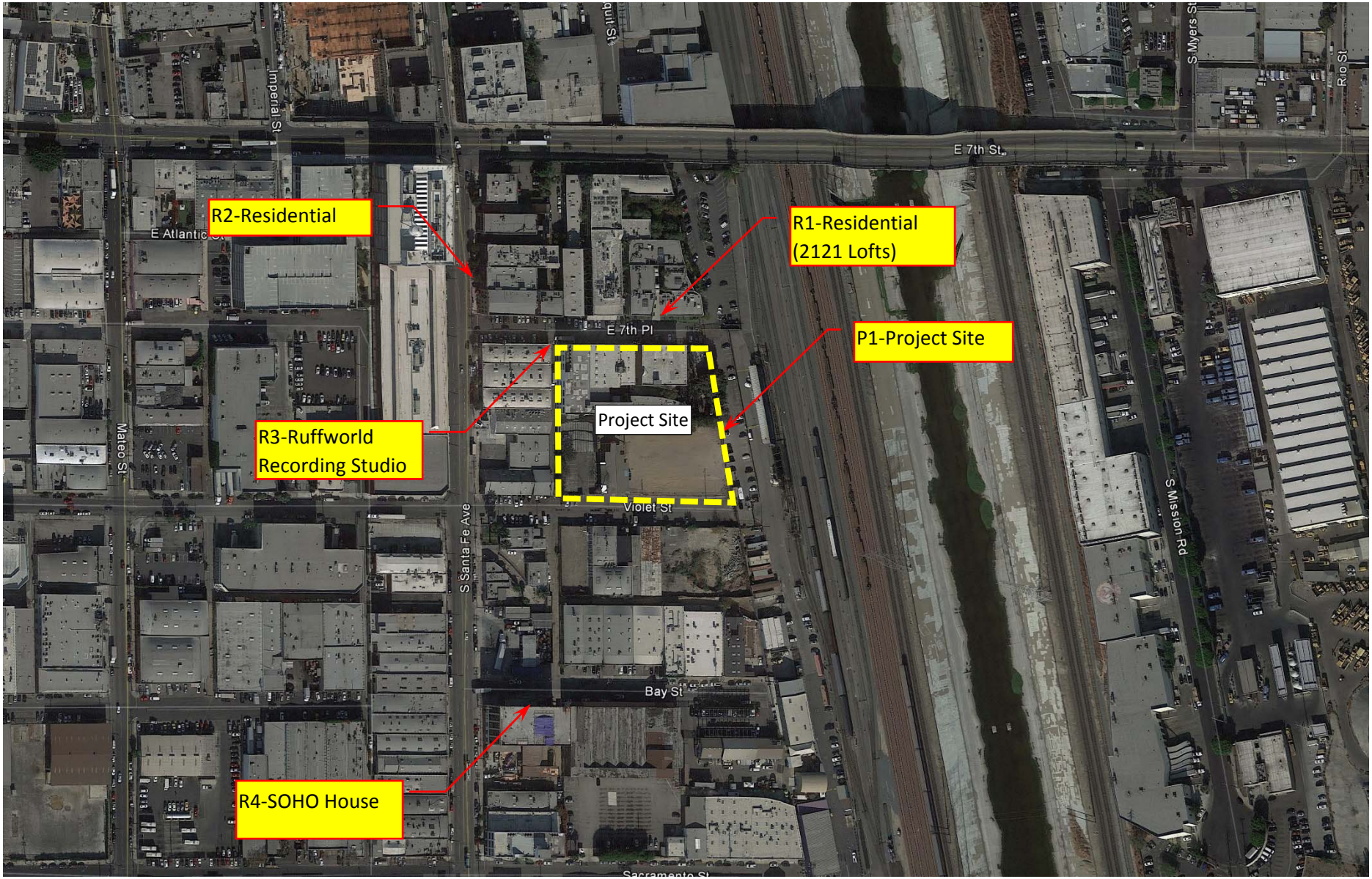

Figure IV.G-1
Noise Measurement Locations

Source: Acoustical Engineering Services, 2018.

Table IV.G-6
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)
P1	Project Site eastern property line	At Project Site Property Line	N/A (used to confirm model)
R1	Multi-family residential use on north side of 7th Place, north of the Project Site	50	Residential
R2	Multi-family residential use at the northeast corner of Santa Fe Avenue and 7th Place, northwest of the Project Site	160	Residential
R3	Ruffworld Recording Studio located at the southwest corner of Santa Fe Avenue and 7th Place, west of the Project Site	15	Recording Studio[b]
R4	SOHO House (hotel use) at the southeast corner of Santa Fe Avenue and Bay Street, southwest of the Project Site[c]	410	Hotel

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

[b] *Studio uses are not considered noise sensitive uses by the L.A. CEQA Thresholds Guide. Therefore, the Ruffworld Recording Studio adjacent to the Project Site represented by receptor location R3, is included in the noise analysis for informational purposes only.*

[b] *The SOHO House was under reconstruction/rehabilitation at the time of the ambient noise measurements.*

Source: Acoustical Engineering Services (AES), 2018. Refer to Appendix H of this Draft EIR.

nighttime ambient noise levels were measured between 10:00 P.M. and 12:00 A.M. The daytime ambient noise measurements were made during the mid-day (non-peak traffic hour) to represent a more conservative condition where the ambient noise levels would generally be lower than during the peak traffic hour. In addition, a 24-hour measurement was conducted at on-site receptor location P1, from 12:00 P.M. on October 10 to 12:00 P.M. on October 11, 2018. This 24-hour measurement was used to confirm ambient noise levels at the Project Site and in the Project vicinity and to identify any unique noise levels that may have occurred during the measurement period.

Table IV.G-7 on page IV.G-15 provides a summary of the ambient noise measurements conducted at the five noise receptor locations. Based on field observations, the ambient noise at the measurement locations is dominated by local traffic and, to a lesser extent, helicopter flyovers, transit (nearby trains/rails) and other typical urban noises. As indicated in Table IV.G-7, the existing daytime ambient noise levels at the off-site noise receptor locations ranged from 56.3 dBA (L_{eq}) at receptor location R1 to 71.8 dBA (L_{eq}) at

Table IV.G-7
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.)	
P1	Industrial	60.3	57.0	64.4
R1	Residential	56.3	55.3	60.2[a]
R2	Residential	71.8	65.9	72.5[a]
R3	Commercial (Recording Studio)	64.5	58.8	65.3[a]
R4	Hotel (Future)	60.2	54.4	60.9[a]

[a] *Estimated based on short-term (15-minute) noise measurement based on FTA procedures.*

[b] *Levels shown for P1 represent the average for the entire daytime and nighttime periods.*

Source: AES, 2018. Refer to Appendix H of this Draft EIR.

receptor location R2. The measured nighttime ambient noise levels ranged from 54.4 dBA (L_{eq}) at receptor location R4 to 65.9 dBA (L_{eq}) at receptor location R2. Thus, the existing ambient noise levels at all off-site 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 uses, as presented above in Table IV.G-3 on page IV.G-9.

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 prepared for the Project, and the noise calculation worksheets are included as Appendix H of this Draft EIR. Nine roadway segments were selected for the existing off-site 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) Version 2.5 and traffic volume data from the Transportation Study prepared for the Project.[23] The TNM traffic noise prediction model 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 CNEL levels, the hourly L_{eq} levels were calculated for 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.).

[23] *FHWA, Traffic Noise Model Version 2.5, www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_v25/, accessed July 19, 2019.*

The traffic noise prediction model 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-8 on page IV.G-17.

Table IV.G-9 on page IV.G-18 provides the calculated CNEL for the analyzed local roadway segments based on existing traffic volumes. As shown therein, the existing CNEL due to surface street traffic volumes ranges from 59.5 dBA CNEL along Violet Street (between Mateo Street and Santa Fe Avenue) to 73.3 dBA CNEL along 7th Street (between Sana Fe Avenue and Boyle Avenue). Currently, the existing traffic-related noise levels along the roadway segment of Mateo Street (between 6th Street and Violet Street) and Santa Fe Avenue (between 6th Street and 7th Street) fall within the conditionally acceptable noise levels for residential uses (i.e., between 60 and 70 dBA CNEL). The existing traffic noise levels along Santa Fe Avenue (between 7th Street and 8th Street, and 7th Street (between Alameda Street and Boyle Avenue), are between 70 dBA CNEL and 75 dBA CNEL, which are considered normally unacceptable for residential uses.

As described in detail in Section IV.H, Transportation, of this Draft EIR, the existing traffic volumes were conducted in 2017 and 2018 when the Sixth Street Bridge Viaduct was under construction and 6th Street was closed between Mateo Street and US-101. With the closure of 6th Street, the existing traffic counts reflect travel patterns with vehicles diverted to parallel routes resulting in higher travel volumes in 1st Street, 4th Street, and 7th Street and lower volumes on 6th Street. However, the Project is planned to be completed and opened in 2024, after the completion of the Sixth Street Bridge Viaduct in 2020. Therefore, in consultation with LADOT, a baseline traffic scenario was developed to provide a basis for the remainder of the study which represents traffic conditions without the effect of the Sixth Street Bridge Viaduct construction on study intersections. Traffic noise associated with the analyzed street segments were also calculated as these noise levels will better represent actual traffic noise conditions when the Project opens in 2024. As shown in Table IV.G-10 on page IV.G-19, the baseline CNEL due to surface street traffic volumes ranges from 55.8 dBA CNEL along Violet Street (east of Santa Fe Avenue) to 73.0 dBA CNEL along 7th Street (between Santa Fe Avenue and Boyle Avenue). The baseline traffic-related noise levels along the roadway segment of Mateo Street (between 6th Street and Violet Street) and along Santa Fe Avenue (between 6th Street and 7th Street) fall within the conditionally acceptable noise levels for residential uses (i.e., between 60 and 70 dBA CNEL). The existing traffic noise levels along Santa Fe Avenue (between 7th Street and 8th Street) and along 7th Street (between Alameda Street and Boyle Avenue) are between 70 dBA CNEL and 75 dBA CNEL, which are considered normally unacceptable for residential uses.

Table IV.G-8
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, 2018. Refer to Appendix H of 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."[24] 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 regards to ground vibration) and distinctly perceptible.[25] Other vibration sources include the existing active rails, approximately 220 feet east of the Project Site. Per FTA, the ground-borne vibration velocity at 200 feet from trains range from approximately 60 VdB (for Rapid Transit or Light Rail Vehicles at 50 mph) to 72 VdB (for Locomotive Powered Passenger or Freight at 50 mph). Therefore, existing ground vibration in the vicinity of the Project Site is generally below the perceptible level.

[24] *FTA, "Transit Noise and Vibration Impact Assessment," Page 112, September 2018.*

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

Table IV.G-9
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]	Noise-Sensitive Land Uses	Existing Noise Exposure Compatibility Category[b]
Mateo Street					
Between 6th St. and 7th St.	Residential	30	68.4	Yes	Conditionally Acceptable
Between 7th St. and Violet St	Commercial	30	69.5	No	Conditionally Acceptable
Santa Fe Avenue					
Between 6th St. and 7th St.	Commercial	35	68.2	No	Conditionally Acceptable
Between 7th St. and Violet St.	Residential	35	70.3	Yes	Normally Unacceptable
Between Violet St. and 8th St.	Hotel	35	70.3	Yes	Normally Unacceptable
7th Street					
Between Alameda St. and Mateo St.	School	35	71.8	Yes	Normally Unacceptable
Between Mateo St. and Santa Fe Ave.	Residential	35	72.1	Yes	Normally Unacceptable
Between Santa Fe Ave. and Boyle Ave.	Residential	35	73.3	Yes	Normally Unacceptable
Violet Street					
Between Mateo St. and Santa Fe Ave.	Commercial	30	59.5	No	Normally Acceptable
East of Santa Fe Ave.	Commercial	30	55.8	No	Normally Acceptable

[a] *Detailed calculation worksheets are included in Appendix H of 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-2 on page IV.G-7.*

Source: AES, 2020.

Table IV.G-10
Baseline Roadway Traffic Noise Levels

Roadway Segment	Adjacent Sensitive Land Use	Approximate Distance to Roadway Center Line (feet)	Calculated Traffic Noise Levels, CNEL (dBA)[a]	Noise-Sensitive Land Uses	Existing Noise Exposure Compatibility Category[b]
Mateo Street					
Between 6th St. and 7th St.	Residential	30	68.5	Yes	Conditionally Acceptable
Between 7th St. and Violet St	Commercial	30	69.7	No	Conditionally Acceptable
Santa Fe Avenue					
Between 6th St. and 7th St.	Commercial	35	68.2	No	Conditionally Acceptable
Between 7th St. and Violet St.	Residential	35	70.3	Yes	Normally Unacceptable
Between Violet St. and 8th St.	Hotel	35	70.3	Yes	Normally Unacceptable
7th Street					
Between Alameda St. and Mateo St.	School	35	71.4	Yes	Normally Unacceptable
Between Mateo St. and Santa Fe Ave.	Residential	35	71.7	Yes	Normally Unacceptable
Between Santa Fe Ave. and Boyle Ave.	Residential	35	73.0	Yes	Normally Unacceptable
Violet Street					
Between Mateo St. and Santa Fe Ave.	Commercial	30	59.5	No	Normally Acceptable
East of Santa Fe Ave.	Commercial	30	55.8	No	Normally Acceptable

[a] *Detailed calculation worksheets are included in Appendix H of 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-2 on page IV.G-7.*

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 groundborne vibration or 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; or

For this analysis, the Appendix G Thresholds listed 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 factors to consider when evaluating 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 take approximately 36 months and be completed in 2024. Therefore, since construction activities would occur over a period longer than 10 days for all phases, the corresponding threshold of significance 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-2 on page IV.G-7 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 on-site (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 threshold of significance used in the noise analysis for on-site 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 off-site traffic (i.e., vehicles traveling on public roadways). Therefore, based on the *L.A. CEQA Thresholds Guide*, the threshold of significance for off-site 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 ambient noise levels and the land use category) at noise-sensitive uses. In addition, the significance for composite noise levels (on-site and off-site 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 on-site and off-site 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 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 off-site reinforced-concrete, steel, or timber building.
- Project construction activities cause ground-borne vibration levels to exceed 0.3 PPV at the nearest off-site engineered concrete and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.2 PPV at the nearest off-site 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 off-site sensitive uses, including residential and hotel uses.
- Project construction activities cause ground-borne vibration levels to exceed 65 VdB at off-site studio (recording/broadcast) uses.

b. Methodology

(1) On-Site Construction Activities

Construction noise impacts due to on-site 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)."[26] The ambient noise levels at surrounding sensitive receptor locations were based on field measurement data (see Table IV.G-7 on page IV.G-15). 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 Version 2.5 computer noise model. The TNM Version 2.5 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 off-site truck volumes were obtained from the Transportation Study prepared for the Project, which is included in Appendix N.1 of this Draft EIR. The TNM noise model calculates the hourly L_{eq} noise levels generated by construction-related haul trucks. Noise impacts were determined by comparing the predicted noise level 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),

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[26] *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).*

parking facilities, 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 on-site stationary noise sources were calculated using the SoundPLAN (version 8.0) computer noise prediction model.[27] 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, off-site roadway noise was analyzed using the FHWA TNM model and traffic data from the Project's Transportation Study, included as Appendix N.1 of this Draft EIR. Roadway noise levels were calculated for various roadway segments, based on the intersection traffic volumes. Roadway noise conditions without the Project were calculated and compared to noise levels that would occur with implementation of the Project to determine Project-related noise impacts for operational off-site 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 off-site 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.

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[27] *SoundPLAN GmbH, SoundPLAN version 8.0, 2017*

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, shall be equipped with state-of-the-art noise shielding and muffling devices (consistent with manufacturers' standards). All equipment shall be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated. Compliance with this measure shall be verified by LADBS via field inspection.

Project Design Feature NOI-PDF-2: All outdoor mounted mechanical equipment shall be enclosed or screened from off-site noise-sensitive receptors. The equipment screen shall 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 off-site noise-sensitive receptors. Documentation shall be submitted at plan check, and shall include documentation prepared by a noise consultant to verify compliance with this measure.

Project Design Feature NOI-PDF-3: Outdoor amplified sound systems, if any, shall be designed so as not to exceed the maximum noise level of 75 dBA (L_{eq-1hr}) at a distance of 15 feet from the amplified speaker sound systems at the Ground Level (pedestrian paseo); 80 dBA (L_{eq-1hr}) at the Level 4 outdoor deck; and 90 dBA at the Level 8 outdoor deck. A qualified noise consultant shall provide written documentation that the design of the system complies with these maximum noise levels.

Project Design Feature NOI-PDF-4: All loading docks adjacent to off-site sensitive receptors shall be designed to be integrated into the building and thus shielded from view by off-site sensitive receptors.

Project Design Feature NOI-PDF-5: Project construction shall not include the use of driven (impact) pile systems.

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 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 some of the existing buildings and surface parking lots, followed by excavation for the subterranean parking levels. Building foundations would then be laid, followed by building construction, paving/concrete installation, and landscape installation. It is estimated that approximately 239,500 cubic yards of export material (e.g., concrete and asphalt surfaces) and soil would be hauled from the Project Site during the excavation phase. Construction delivery/haul trucks would travel on approved truck routes between the Project Site and I-10. Haul trucks would access I-10 via Santa Fe Avenue and Violet Street.

(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 requires 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.

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-27. 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 operate 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

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
Asphalt Concrete Grinder	20	90
Cement and Mortar Mixer	50	80
Concrete Mixer Truck	40	79
Concrete Saw	20	90
Crane	16	81
Drill Rig	20	84
Forklift	10	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.

used during each construction phase.[28] These noise levels are typically associated with multiple pieces of equipment operating on part power, simultaneously.

Table IV.G-12 on page IV.G-28 provides the estimated construction noise levels for various construction phases at the off-site noise-sensitive receptors. To present a conservative impact analysis, the estimated noise levels were calculated for a 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

[28] *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-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))	Sig. Impact?
		Demolition	Grading	Mat Foundation	Concrete	Building Construction	Paving				
R1	50	85.6	82.9	79.5	84.1	84.8	80.6	56.3	61.3	24.3	**Yes**
R2	200	59.6	58.7	53.9	57.8	59.5	55.8	71.8	76.8	0.0	No
R3	140	67.5	66.5	61.8	65.8	67.3	63.7	64.5	69.5	0.0	No
R4	410	53.6	53.6	48.1	51.8	54.0	49.8	60.2	65.2	0.0	No

[a] *The thresholds of significance are equivalent to the measured daytime ambient noise levels (see Table IV.G-7 on page IV.G-15) 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 thresholds of significance, a construction-related noise impact is identified.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

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, the corresponding thresholds of significance used in the construction noise analysis are when the construction-related noise exceeds the ambient L_{eq} noise levels by 5 dBA at a noise-sensitive use. As presented in Table IV.G-12 on page IV.G-28, construction activities would generate the highest noise during the demolition phase at receptors R1, R2, and R3, as it is anticipated to have the highest noise generating construction equipment in the construction area compared to the Project's other construction stages. Construction activities at receptor R4 would be the highest during the building construction phase, as this phase has the highest number of construction equipment. Therefore, the potential noise impacts (i.e., noise increase over the ambient level) would be highest during the building demolition phase at receptors R1, R2, and R3 and during the building construction phase at receptor R4. As indicated in Table IV.G-12, the estimated noise levels during all stages of Project construction would be below the 5-dBA threshold of significance at all off-site receptor locations, with the exception of receptor location R1. Noise levels at Receptor R3 would not exceed the threshold because the existing on-site three-story building at the northwest corner of the Project Site provides noise attenuation from on-site construction activities. The estimated construction-related noise at receptor location R1 would exceed the significance threshold during all phases of construction. These exceedances would range from 18.2 dBA during the mat foundation phase (creation of a thick reinforced concrete slab) to up to 24.3 dBA during the building demolition phase without implementation of mitigation. Therefore, temporary noise impacts associated with the Project's on-site construction would be significant.

(ii) Off-Site Construction Noise

In addition to on-site 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 off-site construction trucks would be associated with delivery/haul trucks. As described above, construction delivery/haul trucks would travel between the Project Site and I-10 via Santa Fe Avenue and Violet Street. Trucks leaving the Project Site would exit the Project Site onto Violet Street to Santa Fe Avenue, head south on Santa Fe Avenue to I-10. Trucks coming to the Project Site would exit I-10 westbound at the Santa Fe Avenue exit, make a right on 8th Street, then turn northbound onto Santa Fe Avenue, continue to Violet Street, make a right-turn toward the Project Site.

The peak period of construction with the highest number of construction trucks would occur during the mat foundation phase, which would last approximately four days. During this phase, there would be a maximum of 156 concrete trucks coming to and leaving the Project Site (equal to 312 total truck trips) per day. In addition, there would be a total of 150 worker trips to and from the Project Site on a daily basis during the mat foundation phase. There would also be construction haul/delivery truck trips (up to 272 delivery truck trips per day) during other construction phases of the Project, but such trips would be less than the 312 truck trips under the mat foundation phase.

Table IV.G-13 on page IV.G-31 provides the estimated number of construction-related trips, including haul/delivery trucks and worker vehicles, and the estimated noise levels along the anticipated haul route(s). As indicated in Table IV.G-13, the noise levels generated by construction trucks during all stages of Project construction would be below the existing daytime ambient noise levels along Santa Fe Avenue and, therefore, would be below the threshold of significance of 5 dBA above ambient noise level (based on the measured ambient at R2). Therefore, temporary noise impacts from off-site construction traffic would be less than significant.

(iii) Summary of Construction Noise Impacts

As discussed above, temporary noise impacts associated with the Project's on-site construction would be significant at one off-site receptor location (represented by R1). Temporary noise impacts from off-site construction traffic would be less than significant. Therefore, without mitigation measures, Project construction would result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City during all phases of construction.

(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) on-site 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 dining, plaza, paseo, outdoor courtyards, roof level deck), parking facilities, loading dock, and trash compactor; and (2) off-site mobile (roadway traffic) noise sources.

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

Construction Phase	Estimated Number of Construction Truck/Worker Trips per Day	Estimated Number of Construction Truck/Worker Trips per Hour[a]	Estimated Haul Truck Noise Levels Along Santa Fe Avenue (L_{eq} (dBA))
Demolition	40/16	5/7	59.1
Grading	170/18	29/8	66.5
Mat Foundation	312/150	39/60	68.1
Foundation/Concrete/Podium	40/500	5/200	63.3
Building Construction	272/500	34/200	68.2
Paving/Landscaping	20/50	3/20	57.8
Existing Ambient Noise Levels Along the Project Haul Routes, L_{eq} (dBA)[b]			71.8
Threshold of Significance, L_{eq} (dBA)[c]			76.8
Significant Impact?			No

[a] *For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over a 6-hour period (between 9 A.M. and 3 P.M.) for haul trucks (during grading period) and over an 8-hour work day for other construction trucks (i.e., delivery and concrete). For worker vehicles, the number of hourly trips is based on 40% of the worker trips that would arrive in one hour (A.M. or P.M. peak hour) to represent a conservative analysis.*

[b] *Ambient noise levels along Santa Fe Avenue are based on measurements at nearby receptor locations (i.e., ambient noise levels along Santa Fe Avenue area based on measurements at receptor R2).*

[c] *The thresholds of significance are equivalent to the measured daytime ambient noise levels plus 5 dBA.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

(i) On-Site Stationary Noise Sources

Mechanical Equipment

As part of the Project, new mechanical equipment (e.g., HVAC equipment) would be located at the roof level and within the building structure (e.g., mechanical equipment room). 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 would be enclosed or screened from off-site noise-sensitive receptors.

Table IV.G-14 on page IV.G-33 presents the estimated noise levels at the off-site 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 41.4 dBA (L_{eq}) at receptor location R1 to 45.1 dBA (L_{eq}) at receptor location R2, which would be well below the existing ambient noise levels. As such, the estimated noise levels at all off-site receptor locations would be below the thresholds of significance of 5 dBA (L_{eq}) above ambient noise levels. Therefore, noise impacts 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 various outdoor open space areas, including a pedestrian paseo at the ground level; outdoor amenities (seating areas, outdoor kitchen, and a fire pit) on Level 4; and an outdoor deck on Level 8 of the office building, which would include a swimming pool and lounge areas. 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.[29] 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 10:00 P.M.

An additional potential noise source associated with outdoor uses would be the use of an outdoor sound system (e.g., with music or other sounds broadcast through an outdoor mounted speaker system). As set forth in Project Design Feature NOI-PDF-3, the amplified sound system used in outdoor areas would be designed so as not to exceed the maximum noise levels of 75 to 90 dBA L_{eq} as indicated in Table IV.G-15 on page IV.G-34, thereby ensuring that the amplified sound system would not exceed the significance criteria (i.e., an increase of 5 dBA L_{eq}) at any off-site noise-sensitive receptor location. Table IV.G-15 presents the anticipated number of people at each of the outdoor spaces and the Project's maximum amplified sound levels. To represent a conservative noise scenario, the noise levels from the use of the Project's outdoor spaces were calculated based on the assumption of concurrent use of all the outdoor spaces with the maximum number of people as well as simultaneous use of the amplified sound systems. This represents a conservative, worst case analysis because the Project would not be expected to have all the outdoor spaces at maximum capacity concurrently.

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

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	55.3	41.4	55.5	60.3	0.0	No
R2	65.9	45.1	65.9	70.9	0.0	No
R3	58.8	41.6	58.9	63.8	0.0	No
R4	54.4	42.8	54.7	59.4	0.0	No

[a] *The thresholds of significance are equivalent to the measured daytime or nighttime ambient noise level, whichever is lower (see Table IV.G-7 on page IV.G-15) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those thresholds of significance, a noise impact is identified.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

Table IV.G-16 on page IV.G-35 presents the estimated noise levels at the off-site 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 50.5 dBA (L_{eq}) at receptor R3 to 57.9 dBA (L_{eq}) at receptor R1 and would be below the thresholds of significance of 5 dBA (L_{eq}) above ambient noise levels. As such, noise impacts from the use of the outdoor areas would be less than significant.

Parking Facilities

As discussed in Section II, Project Description, of this Draft EIR, the Project would provide 828 vehicular parking spaces within six subterranean levels. Sources of noise within the parking garage would primarily include vehicular movements and engine noise, doors opening and closing, and intermittent car alarms. Noise levels within the parking garage would fluctuate with the amount of automobile and human activity. Since the subterranean parking levels would be fully enclosed on all sides, noise generated within the subterranean parking garage would be effectively shielded from off-site sensitive receptor locations in the immediate vicinity of the Project Site. Table IV.G-17 on page IV.G-36 presents the estimated noise levels from the parking operation (mainly noise from vehicle entering/leaving subterranean parking driveways) at the off-site receptor locations. As indicated in Table IV.G-17, the estimated noise levels from the Project parking operation would be well below the thresholds of significance of 5 dBA (L_{eq}) above the ambient noise levels (based on the lowest measured ambient). Therefore, noise impacts from the parking garage would be less than significant.

Table IV.G-15
Outdoor Use Analysis Assumptions

Outdoor Space	Estimated Total Number of People[a]	Amplified Sound System Levels, dBA (L_{eq})
Level 1—Pedestrian Paseo	819	75 dBA at 15 feet
Level 4—Outdoor Deck	233	80 dBA at 25 feet
Level 8—Outdoor Deck	1,871	90 dBA at 25 feet

[a] *Based on maximum 15 square feet per person, per Building Code.*
Source: Arno Matis Architecture Inc, 2018.

Loading Dock and Trash Collection Areas

The Project would include two loading dock areas at Level 1, one for residential use and one for commercial use. The residential loading docks and loading area would be located at the western side of the residential building, immediately south of the residential parking entrance. The commercial loading dock and loading area would be located immediately to the east of the office building at the southeastern corner of the Project Site along Violet Street. The Project trash rooms would be located in the subterranean parking Level P1 and at the ground level near the residential and commercial loading docks. Noise sources associated with the loading dock 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.[30] The trash rooms (trash compactors) would be effectively buffered from the off-site sensitive receptors as they are located within an enclosed room and within the subterranean parking level. As provided above in Project Design Feature NOI-PDF-4, all loading docks adjacent to off-site sensitive receptors will be designed to be integrated into the building and thus shielded from view by off-site sensitive receptors. Table IV.G-18 on page IV.G-37 presents the estimated noise levels at the off-site receptor locations from operation of the loading docks. As indicated in Table IV.G-18, the estimated noise from the loading dock operation range from 32.7 dBA (L_{eq}) at receptor location R1 to 52.3 dBA (L_{eq}) at receptor location R4. The estimated noise levels from the loading dock and trash compactor at all off-site receptor locations would be well below the thresholds of significance of 5 dBA (L_{eq}) above ambient daytime noise levels. Therefore, noise impacts from loading dock and trash compactor operations would be less than significant.

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

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	55.3	57.9	59.8	60.3	0.0	No
R2	65.9	56.2	66.3	70.9	0.0	No
R3	58.8	50.5	59.4	63.8	0.0	No
R4	54.4	55.4	57.9	59.4	0.0	No

[a] *The thresholds of significance are equivalent to the measured daytime or nighttime ambient noise level, whichever is lower (see Table IV.G-7 on page IV.G-15) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those thresholds of significance, a noise impact is identified.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

(ii) Off-Site Mobile Noise Sources

Future Plus Project

Future roadway noise levels were calculated along the nine roadway segments in the vicinity of the Project Site. The roadway noise levels were calculated using the traffic data provided in the Transportation Study prepared for the Project, which is included in Appendix N.1 of this Draft EIR. As discussed in the Transportation Study, prior to the implementation of TDM measures, the Project is expected to generate 5,318 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 was analyzed to determine if any traffic-related noise impacts would result from operation of the Project. Table IV.G-19 on page IV.G-38 provides a summary of the roadway noise impact analysis. The calculated CNEL levels are conservatively calculated along the roadways and do not account for the presence of any physical sound barriers or intervening structures. As shown in Table IV.G-19, the Project would result in a maximum of a 4.7 dBA (CNEL) increase in traffic noise along the roadway segment of Violet Street (east Santa Fe Avenue). As there is no noise-sensitive receptor along this segment, there are no significant traffic noise impacts along this segment. At other analyzed roadway segments, the increase in traffic-related noise levels would be 1.3 dBA or less. The increase in traffic noise levels would be well below the applicable 3-dBA or 5-dBA CNEL thresholds of significance for off-site noise-sensitive receptors. Therefore, traffic noise impacts under Future Plus Project conditions would be less than significant.

Table IV.G-17
Estimated Noise Levels from Parking Facilities

Receptor Location	Existing Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Parking Facilities, dBA (L_{eq})	Ambient + Project Noise Levels, dBA (L_{eq})	Significance Criteria[a]	Exceedance over Significance Criteria	Significant Impact?
R1	55.3	13.6	55.3	60.3	0.0	No
R2	65.9	9.2	65.9	70.9	0.0	No
R3	58.8	9.6	58.8	63.8	0.0	No
R4	54.4	19.6	54.4	59.4	0.0	No

[a] *The thresholds of significance are equivalent to the measured daytime or nighttime ambient noise level, whichever is lower (see Table IV.G-7 on page IV.G-15) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those thresholds of significance, a noise impact is identified.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

Baseline Plus Project

The analysis of traffic noise impacts provided above was based on the incremental increase in traffic noise levels attributable to the Project as compared to Baseline without Project conditions. An additional analysis was performed to determine the potential noise impacts based on the increase in noise levels due to Project-related traffic compared with the baseline traffic noise conditions. As shown in Table IV.G-20 on page IV.G-39, when compared with baseline conditions, the Project would result in a maximum increase of 10.7 dBA (CNEL) in traffic noise along Violet Street (east of Santa Fe Avenue). However, as discussed above, there is no noise-sensitive receptor along this segment, and therefore there are no significant traffic noise impacts along this segment. At other analyzed roadway segments, the increase in traffic-related noise levels would be 1.3 dBA or lower. The estimated increase in traffic noise levels as compared to existing conditions would be well below the relevant 3-dBA CNEL thresholds of significance. Therefore, traffic noise impacts under Baseline 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 on-site and off-site noise source (e.g., mechanical equipment, outdoor areas, parking facilities, loading dock and trash compactor, and off-site traffic), an evaluation of potential composite noise level increases (i.e., noise levels from all on-site noise sources combined) at the analyzed sensitive receptor locations was also performed. This evaluation of composite noise levels from all on-site Project-related noise sources, evaluated using the CNEL noise metric, was conducted to determine the contributions at the noise-sensitive receptor locations in the vicinity of the Project Site.

Table IV.G-18
Estimated Noise Levels from Loading Dock

Receptor Location	Existing Ambient Noise Levels (dBA (L_{eq}))	Estimated Noise Levels from Loading Dock (dBA (L_{eq}))	Ambient + Project Noise Levels (dBA (L_{eq}))	Significance Criteria[a]	Exceedance over Significance Criteria	Significant Impact?
R1	56.3	32.7	56.3	61.3	0.0	No
R2	71.8	36.7	71.8	76.8	0.0	No
R3	64.5	41.9	64.5	69.5	0.0	No
R4	60.2	52.3	60.2	65.2	0.0	No

[a] *The thresholds of significance are equivalent to the measured daytime ambient noise levels (see Table IV.G-7 on page IV.G-15) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those thresholds of significance, a noise impact is identified.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

Table IV.G-21 on page IV.G-40 presents the estimated composite noise levels in terms of CNEL at the off-site sensitive receptor locations from the Project-related noise sources. As indicated in Table IV.G-21, the Project would result in an increase in composite noise levels ranging from 0.4 dBA at receptor location R3 to 2.2 dBA at receptor location R1. The composite noise levels from Project operation at the off-site receptor location R2 would be below the 3-dBA significance criteria as the composite (Project plus ambient) noise level falls within the normally unacceptable (70 to 75 CNEL) land use categories. The composite noise levels at receptor locations R1, R3, and R4 would be below the 5-dBA thresholds of significance as the composite noise levels fall within the conditionally acceptable (60 to 70 CNEL) land use category. As such, composite noise level impacts due to Project operations would be less than significant.

Therefore, Project operations would not result in the generation of a substantial 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. Operational noise impacts from on- and off-site sources would be less than significant.

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

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels (CNEL (dBA))		Increase in Noise Levels due to Project (CNEL (dBA))	Significant Impact?
		Future Without Project	Future Plus Project		
Mateo Street					
Between 6th St. and 7th St.	Residential	71.7	71.7	0.0	No
Between 7th St. and Violet St	Commercial	71.8	71.9	0.1	No
Santa Fe Avenue					
Between 6th St. and 7th St.	Commercial	71.3	71.4	0.1	No
Between 7th St. and Violet St.	Residential	73.2	73.6	0.4	No
Between Violet St. and 8th St.	Hotel	72.9	73.2	0.3	No
7th Street					
Between Alameda St. and Mateo St.	School	74.1	74.2	0.1	No
Between Mateo St. and Santa Fe Ave.	Residential	73.8	74.0	0.2	No
Between Santa Fe Ave. and Boyle Ave.	Residential	74.9	75.1	0.2	No
Violet Street					
Between Mateo St. and Santa Fe Ave.	Commercial	59.9	61.2	1.3	No
East of Santa Fe Ave.	Commercial	63.2	67.9	4.7	No

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

Table IV.G-20
Roadway Traffic Noise Impacts—Baseline Plus Project

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels (CNEL (dBA))		Increase in Noise Levels due to Project (CNEL (dBA))	Significant Impact?
		Baseline	Baseline Plus Project		
Mateo Street					
Between 6th St. and 7th St.	Residential	68.5	68.6	0.1	No
Between 7th St. and Violet St	Commercial	69.7	69.8	0.1	No
Santa Fe Avenue					
Between 6th St. and 7th St.	Commercial	68.2	68.4	0.2	No
Between 7th St. and Violet St.	Residential	70.3	71.0	0.7	No
Between Violet St. and 8th St.	Hotel	70.3	70.7	0.4	No
7th Street					
Between Alameda St. and Mateo St.	School	71.4	71.6	0.2	No
Between Mateo St. and Santa Fe Ave.	Residential	71.7	71.9	0.2	No
Between Santa Fe Ave. and Boyle Ave.	Residential	73.0	73.2	0.2	No
Violet Street					
Between Mateo St. and Santa Fe Ave.	Commercial	59.5	60.8	1.3	No
East of Santa Fe Ave.	Commercial	55.8	66.5	10.7	No[a]

[a] *No significant traffic noise impacts, as there is no noise-sensitive use along this roadway segment.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

Table IV.G-21
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)) (G=B+C+D+E+F)[b]	Ambient plus Project Noise Levels (CNEL (dBA)) (H=A+G)[b]	Increase in Noise Levels due to Project (CNEL (dBA)) (H-A)	Sig Criteria[a] (CNEL (dBA))	Sig. Impact?
		Traffic (B)	Mechanical (C)	Parking (D)	Loading (E)	Outdoor Spaces (F)					
R1	60.2	47.9	48.1	20.3	29.9	57.4	58.3	62.4	2.2	65.2	No
R2	72.5	62.7	51.8	15.9	33.9	55.7	63.8	73.0	0.5	75.5	No
R3	65.3	50.5	48.3	16.3	39.1	50.0	54.6	65.7	0.4	70.3	No
R4	60.9	54.6	49.5	26.3	49.5	54.9	58.9	63.0	2.1	65.9	No

[a] *The thresholds of significance 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 thresholds of significance, a noise impact is identified.*

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

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

(2) Mitigation Measures

As analyzed above, construction of the Project would have the potential to result in significant noise impacts at the off-site sensitive receptor location R1 during all phases of construction. Therefore, the following mitigation measure is provided to reduce the construction-related noise impacts:

Mitigation Measure NOI-MM-1: Prior to the start of construction activities, a temporary and impermeable sound barrier shall be erected along the northern property line of the Project Site between the construction areas and the residential use on the north side of 7th Place. The temporary sound barrier shall be designed to provide a minimum 15-dBA noise reduction at the ground level of receptor R1. At plan check, building plans shall include documentation prepared by a noise consultant verifying compliance with this measure.

(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 a temporary sound barrier) would reduce the noise generated by on-site construction activities by a minimum 15 dBA at the residential use on 7th Place north of the Project Site (receptor location R1). However, the construction-related noise at receptor location R1 would still exceed the significance threshold by 3.2 to up to 9.3 dBA during all of the construction phases. The noise impacts at location R1 would be temporary when construction equipment is operating at the northern portion of the Project Site with direct line-of-sight to the receptor location R1. However, there are no other feasible mitigation measures to further reduce the construction noise at location R1 to below the significance threshold. **Therefore, construction noise impacts associated with on-site noise sources would remain significant and unavoidable.**

(b) Off-Site Construction Noise

Project-level noise impacts from off-site construction would be less than significant without mitigation.

(c) Operational Noise

Project-level impacts with regard to on-site and off-site operational noise would be less than significant without mitigation.

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-43 provides the estimated vibration levels (in terms of inch per second PPV) at the nearest off-site 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-5 provided above, impact pile driving vibration is not included in the on-site construction vibration analysis. Installation of piles for shoring and foundation would utilize drilling methods to minimize vibration generation.

As discussed in Section IV.C, Cultural Resources, of the Draft EIR, there are four historical resources in the vicinity of the Project Site, including the Engine Company No. 17 building located at 710 Santa Fe Avenue (225 feet north of the Project Site), the Ford Motor Company Factory building located at 2046–2060 7th Street and 715–821 Santa Fe Avenue (220 feet west of the Project Site), the building located at 2035 Bay Street (450 feet southwest of the Project Site), and on-site Building C (located at 2140 7th Place). The off-site historical resources are located at sufficient distance from the Project Site and would not be exposed to the Project on-site construction activities. The assessment of construction vibration provided in Table IV.G-22 for potential building damage due to on-site construction compares the estimated vibration levels generated during construction of the Project to the 0.12-PPV significance criteria for the historic structures, 0.3-PPV

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

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]					Significance 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	—	—
Two-story residential building to the north	0.032	0.032	0.027	0.012	0.001	0.3[d]	No
Single-story industrial buildings to the west	0.022	0.024	0.020	0.009	0.001	0.3[d]	No
Single-story industrial buildings to the south	0.114	0.114	0.097	0.045	0.004	0.3[d]	No
Engine Company No. 17 building (historic)	0.003	0.003	0.003	0.001	<0.001	0.12[c]	No
Ford Motor Company Factory building (historic)	0.003	0.003	0.003	0.001	<0.001	0.12[c]	No
2035 Bay Street building (historic)	0.001	0.001	0.001	<0.001	<0.001	0.12[c]	No
On-site Building C, 2140 7th Place (historic)	0.523	0.523	0.446	0.206	0.018	0.12[c]	**Yes**

[a] *Represents off-site 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 extremely susceptible to vibration damage.*

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

Source: FTA, 2018; AES, 2020. Refer to Appendix H of this Draft EIR.

significance criteria for an engineered concrete and masonry building (applicable to the single- and two-story buildings to the north, south and west of the Project Site). In addition, the construction vibration analysis for potential building damage due to off-site construction activities (i.e., haul trips) conservatively compares the estimated vibration levels generated from haul truck activities to the 0.12-PPV significance criteria for buildings extremely susceptible to vibration damage.

As indicated in Table IV.G-22, the estimated vibration velocity levels from construction equipment would be below the building damage threshold of significance for the existing off-site building structures north, south, and west of the Project Site. In addition, the estimated vibration levels from the construction equipment would be well below the 0.12 PPV building damage threshold of significance for the off-site historic

buildings. However, the estimated vibration levels would exceed the building damage threshold of significance at on-site Building C. Therefore, the on-site vibration impacts during construction of the Project would be significant.

(ii) Human Annoyance Impacts from On-Site Construction

Table IV.G-23 on page IV.G-45 provides the estimated vibration levels at the off-site sensitive uses due to construction equipment operation and compares the estimated vibration levels to the specified thresholds of significance for human annoyance. Per FTA guidance, the thresholds of significance for human annoyance is 72 VdB for sensitive uses, including residential and hotel, and 65 VdB for studio (recording/broadcast) 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 off-site sensitive receptor locations R2 and R4. The estimated ground-borne vibration levels would be up to 78 VdB at receptor location R1 and up to 69 VdB at receptor location R3, which would exceed the 72 VdB and 65 VdB significance criteria, respectively. The vibration exceedance would occur 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 the receptor location R1 and within 140 feet of receptor location R3. Vibration from impacts would below the significance criteria after the foundation phase. Therefore, on-site vibration impacts during construction of the Project, pursuant to the significance criteria for human annoyance, would be significant.

(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 Santa Fe Avenue and Violet Street. Trucks would exit the Project Site onto Violet Street, head west to Santa Fe Avenue, and head south on Santa Fe to I-10. Incoming trucks would exit I-10 at the Santa Fe Avenue off-ramp, turn right onto 8th Street, head north on Santa Fe Avenue, and turn right onto Violet Street to the Project Site. 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.

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

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	78	78	77	70	49	72	**Yes**
R2	60	60	59	52	31	72	No
R3	69	69	68	61	40	65	**Yes**
R4	51	51	50	43	22	72	No

[a] *Vibration levels calculated based on FTA reference vibration level at 25 distance,*

Source: FTA, 2018; AES, 2020. Refer to Appendix H of this Draft EIR.

from the truck.[31] 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 H of 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, vibration impacts (pursuant to the thresholds of significance for building damage) from off-site construction activities (i.e., construction trucks traveling on public roadways) would be less than significant.

As discussed above, per FTA guidance, the thresholds of significance for human annoyance is 72 VdB for residential and hotel and 65 VdB for studio (recording/broadcast) 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.[32] There are no vibration sensitive uses (i.e., residential, hotel and recording studios) along Violet Street (between the Project Site and Santa Fe). The estimated vibration levels generated by construction trucks traveling along Santa Fe Avenue were assumed to be within 30 feet of the sensitive use (future hotel use at receptor R4). As indicated in the noise calculation worksheets

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

[32] *FTA, "Transit Noise and Vibration Impact Assessment," Page 113, September 2018.*

included in Appendix H of this Draft EIR, the temporary vibration levels could reach approximately 70 VdB periodically as trucks pass sensitive receptors along the anticipated haul route(s) (at 30 feet). Therefore, the future hotel uses (receptor R4) along Santa Fe Avenue would be exposed to ground-borne vibration up to 70 VdB, which would be below the 72-VdB threshold of significance from the construction trucks. In addition, the recording studio (receptor R3) is located approximately 160 feet from the haul routes. The estimated vibration level from construction trucks along the haul routes would be 48 VdB at receptor R3, which would be well below the 65 VdB significance threshold. Therefore, potential vibration impacts with respect to human annoyance that would result from temporary and intermittent off-site vibration from construction trucks traveling along the anticipated haul route(s) would be less than significant.

(iv) Summary of Construction Vibration Impacts

As discussed above, the estimated vibration levels from on-site construction equipment would be below the building damage thresholds of significance of 0.3 PPV for the off-site buildings adjacent to the Project Site to the north, south and west and 0.12 PPV for off-site historic buildings. However, the estimated vibration levels from on-site construction equipment would exceed the building damage thresholds of significance at on-site Building C. In addition, construction activities would exceed the ground-borne vibration thresholds of significance associated with human annoyance at receptor locations R1 and R3 (during the site demolition, grading/excavation, and foundation phases).

Based on the above, the estimated vibration levels associated with temporary and intermittent vibration from off-site construction activities (i.e., construction trucks traveling along the anticipated haul route(s)) would be well below the most stringent 0.12 PPV significance threshold pursuant to building damage (for buildings along the anticipated haul route(s)) and below the human annoyance significance threshold of 72 VdB at the future hotel use (receptor R4). Therefore, vibration impacts associated with off-site construction activities would be less than significant with respect to both building damage and human annoyance at all receptors.

(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 off-site 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 off-site sensitive receptors. **Therefore, operation of the Project would not increase the existing ambient vibration levels in the immediate vicinity of the Project Site and would not result in the generation of excessive ground-borne vibration levels. As such, vibration impacts associated with operation of the Project would be less than significant.**

(2) Mitigation Measures

As discussed above, Project vibration levels generated from on-site construction activities would result in significant impacts with respect to building damage at on-site Building C. Therefore, the following mitigation measure is provided to reduce vibration impacts:

Mitigation Measure NOI-MM-2: Prior to start of construction, the Applicant shall retain the services of a structural engineer to visit on-site Building C to inspect and document (video and/or photographic) the apparent physical condition of the building. In addition, the structural engineer shall establish baseline structural conditions of the building and prepare a shoring design.

Prior to construction, the Applicant shall retain the services of a qualified acoustical engineer to review proposed construction equipment and develop and implement a vibration monitoring program capable of documenting the construction-related ground vibration levels at on-site Building C during shoring and excavation of the parking garage. The vibration monitoring system shall measure (in vertical and horizontal directions) and continuously store the peak particle velocity (PPV) in inch/second. The system shall also be programmed for two preset velocity levels: a warning level of 0.10 inch/second (PPV) and a regulatory level of 0.12 inch/second (PPV). The system shall also provide real-time alert when the vibration levels exceed the two preset levels.

The vibration monitoring program shall be submitted to the Department of Building and Safety and the Department of City Planning, prior to initiating any construction activities.

In the event the warning level 0.10 inch/second (PPV) is triggered, the contractor shall identify the source of vibration generation and provide feasible steps to reduce the vibration level, including but not limited to halting/staggering concurrent activities and utilizing lower vibratory techniques.

In the event the regulatory level 0.12 inch/second (PPV) is triggered, the contractor shall halt the construction activities in the vicinity of the building and visually inspect the building for any damage. Results of

the inspection must be logged. The contractor shall identify the source of vibration generation and provide feasible steps to reduce the vibration level. Construction activities may then restart once the vibration level is re-measured and below the warning level.

In the event damage occurs to historic finish materials at the on-site building C due to construction vibration, such materials shall be repaired in consultation with a qualified preservation consultant and the City of Los Angeles Office of Historic Resources. If warranted, such repairs shall be conducted in a manner that meets the Secretary of the Interior's Standards.

As discussed above, Project vibration levels generated from on-site construction activities would result in significant impacts with respect to human annoyance (receptors R1 and R3). Mitigation measures considered to reduce vibration impacts from on-site 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.[33] 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, and could potentially result in traffic disruptions or be infeasible due to soil conditions. Thus, it is concluded that there are no feasible mitigation measures that could be implemented to reduce the temporary vibration impacts from on-site construction (during site demolition, grading/excavation, and foundation phases) associated with human annoyance to a less-than-significant level.

Operation of the Project would not result in a significant vibration impact during operation. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

Vibration impacts from on-site construction activities with respect to human annoyance would remain significant and unavoidable. With implementation of Mitigation Measure NOI-MM-2, impacts to the on-site historic building would be reduced to less than significant levels. Impacts to the off-site historic structures would continue to be less than significant without mitigation. Vibration impacts associated with haul trucks would be less than significant without mitigation with regard to both building damage and human annoyance. Operational vibration would also be less than significant without mitigation.

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[33] *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 in the Initial Study included as Appendix A of this Draft EIR, the Project Site would not expose people residing or working in the project area to excessive airport-related noise levels. The nearest airport is the Los Angeles International Airport located approximately 10.8 miles southwest of the Project Site. **Since the Project would not be located within the vicinity of a private airstrip or an airport land use plan, within two miles of a public airport or public use airport, the Project would have no impact with respect to Threshold (c), and no further analysis is required.**

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, 74 related projects 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. While the majority of the related projects are located a substantial distance (greater than 1,000 feet) from the Project Site, the following 12 related projects are within 1,000 feet of the Project Site:

- Related Project No. 8 is a mixed-use development located at 2051 7th Street, approximately 560 feet northwest of the Project Site. However, the Related Project No. 8 is currently under construction and is anticipated to be completed prior to the start of the Project construction. Therefore, Related Project No. 8 would not contribute to cumulative construction-related noise impacts.

- Related Project No. 10 is a mixed-use development located at 826 Mateo Street, approximately 710 feet west of the Project Site. There are noise sensitive receptors located along Santa Fe Avenue between Related Project No. 10 and the Project Site. However, there are intervening buildings between the Related Project No. 10 and the Project Site, which would provide adequate noise reduction from the construction activities between the two projects. Therefore, the Project would not contribute to cumulative construction-related noise impacts in the event of concurrent construction with Related Project No. 10.

- Related Project No. 11 is an office/retail development located at 2030 7th Street, approximately 230 feet west of the Project Site. However, construction for this related project is completed. Therefore, the Related Project No. 11 would not contribute to cumulative construction-related noise impacts.

- Related Project No. 18 is an office/retail development located at 2130 Violet Street, approximately 60 feet south of the Project Site. The nearest noise sensitive receptor to the Project Site and the Related Project No. 18 is the multi-family residential use on 7th Place (receptor location R1). As analyzed above in Subsection 3.c.(2)(a)(i) (see Table IV.G-12 on page IV.G-28), the estimated Project-related construction noise levels at receptor R1 would be up to 24.3 dBA above the threshold of significance and would be significant during all phases of construction. Therefore, the Project could contribute to cumulative construction-related noise impacts at receptor location R1 in the event of concurrent construction with Related Project No. 18.

- Related Project No. 25 is a private club (SOHO House) development located at 1000 Santa Fe Avenue, approximately 410 feet southwest of the Project Site. The Related Project No. 25 is represented by receptor location R4. The Related Project No. 25 is nearly complete and will be operational prior to the start of the Project construction. Therefore, the Related Project No. 25 would not contribute to cumulative construction-related noise impacts

- Related Project No. 26 is a mixed-use development located at 2110 Bay Street, approximately 410 feet south of the Project Site. The nearest noise sensitive receptor to Related Project No. 26 and the Project Site is the future SOHO House (construction nearly completed and will be operational prior to Project construction), represented by receptor location R4. Receptor location R4 is adjacent to the Related Project No. 26 Site and would be exposed to Related Project No. 26 construction-related noise level of 76.7 dBA (excavator operating at 50 feet), which would exceed the 5 dBA above ambient significance criteria.[34] However, as analyzed above in Subsection 3.c.(2)(a)(i) (see Table IV.G-12 on page IV.G-28), the estimated Project-related construction noise levels at receptor location R4 would be up to 54.0 dBA, which would be well below the noise from

[34] *City of Los Angeles, 2110 Bay Street Mixed-Use Project Draft EIR, Section IV.H Noise, November 2018*

the Related Project No. 26 and a minimum 11.2 dBA below the significance criteria. Per Caltrans, when two noise levels are 10 dB or more apart, the lower value does not contribute significantly (less than 0.5 dB) to the total noise level.[35] Thus, the Project would not result in a significant contribution (i.e., measurable increase) to the cumulative construction noise. Therefore, the Project would not contribute to cumulative construction-related noise impacts in the event of concurrent construction with Related Project No. 26.

- Related Project No. 32 is a mixed-use development located at 676 Mateo Street, approximately 990 feet northwest of the Project Site. There are multiple buildings between Related Project No. 32 and the Project Site, which would provide adequate noise reduction from the construction activities between the two projects. Therefore, the Project would not contribute to cumulative construction-related noise impacts in the event of concurrent construction with Related Project No. 32.

- Related Project No. 37 is a mixed-use development located at 670 Mesquit Street, approximately 435 feet north of the Project Site. There are noise sensitive receptors located between Related Project No. 37 and the Project Site, including the multi-family residential use on 7th Place, represented by receptor location R1. As analyzed above in Subsection 3.c.(2)(a)(i) (see Table IV.G-12 on page IV.G-28), the estimated Project-related construction noise levels at receptor R1 would be up to 24.3 dBA above the threshold of significance during all phases of construction. In addition, receptor location R1 is approximately 225 feet from the Related Project No. 37 and would be exposed to the Related Project No. 37 construction noise. Therefore, the Project could contribute to cumulative construction-related noise impacts at receptor location R1 in the event of concurrent construction with Related Project No. 37.

- Related Project No. 44 is a mixed-use development located at 1000 Mateo Street, approximately 835 feet southwest of the Project Site. There are multiple buildings between Related Project No. 44 and the Project Site, which would provide adequate noise reduction from the construction activities between the two projects. Therefore, the Project would not contribute to cumulative construction-related noise impacts in the event of concurrent construction with Related Project No. 44.

- Related Project No. 45 is an office/retail/restaurant development located at 2159 Bay Street, approximately 380 feet southeast of the Project Site. The nearest noise sensitive receptor to the Related Project No. 45 and the Project Site is the future SOHO House (construction nearly complete and will be operational prior to construction of the Project), represented by receptor location R4. Receptor location R4 is located approximately 250 feet west of the Related

[35] *Caltrans, Technical Noise Supplement, 2009, Chapter 2.1.3.5.*

Project No. 45 Site and would be exposed to the Related Project No. 26 construction-related noise. However, as analyzed above in Subsection 3.c.(2)(a)(i) (see Table IV.G-12 on page IV.G-28), the estimated Project-related construction noise levels at receptor location R4 would be up to 54 dBA and minimum 11.2 dBA below the significance criteria. As described above, when two noise levels are 10 dB or more apart, the lower value does not contribute significantly (less than 0.5 dB) to the total noise level. Therefore, the Project construction noise contribution would not be cumulatively considerable. Therefore, the Project would not contribute to cumulative construction-related noise impacts in the event of concurrent construction with Related Project No. 45.

- Related Project No. 48 is an industrial park development located at 1005 Mateo Street, approximately 1000 feet southwest of the Project Site. There are multiple buildings between Related Project No. 44 and the Project Site, which would provide adequate noise reduction from the construction activities between the two projects. Therefore, the Project would not contribute to cumulative construction-related noise impacts in the event of concurrent construction with Related Project No. 48.

- Related Project No. 64 is a mixed-use development located at 1024 Mateo Street, approximately 880 feet southwest of the Project Site. There are multiple buildings between Related Project No. 64 and the Project Site, which would provide adequate noise reduction from the construction activities between the two projects. Therefore, the Project would not contribute to cumulative construction-related noise impacts in the event of concurrent construction with Related Project No. 64.

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, assuming concurrent construction activities, there would potentially be cumulative noise impacts at the nearby sensitive uses (e.g., residential and hotel uses) located in proximity to the Project Site and Related Project Nos. 18, 26, and 37, in the event of concurrent construction activities. As such, cumulative on-site noise impacts from on-site construction would be significant.

(ii) Off-Site Construction Noise

In addition to the cumulative impacts of on-site construction activities, off-site 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. Specifically,

based on the existing daytime ambient noise level of 71.8 dBA (L_{eq}) along the anticipated haul route, including Santa Fe Avenue (refer to Table IV.G-12 on page IV.G-31), it is estimated that up to 304 truck trips per hour could occur along Santa Fe Avenue without exceeding the significance criteria of 5 dBA above ambient noise levels. Therefore, if the total number of trucks from the Project and related projects were to add up to 305 truck trips per hour along Santa Fe Avenue, the estimated noise level from 305 truck trips per hour would be 76.8 dBA, which would exceed the ambient noise levels by 5 dBA and exceed the significance criteria.[36] Since the Project would generate up to 39 truck trips per hour during peak construction period, this impact would be triggered with an additional 266 truck trips per hour, which would be equivalent to seven projects with concurrent haul activities with similar export to the Project (i.e. 239,500 cubic yards for each project). Based on the related projects map, there are 18 related projects (Related Project Nos. 1, 8, 10, 11, 15, 18, 24, 25, 26, 29, 32, 37, 39, 44, 45, 48, 57, and 64) located within 1,000 feet of Santa Fe Avenue, which could contribute to the cumulative construction traffic. However, seven of the 18 related projects (Related Project Nos. 1, 8, 11, 15, 24, 25, and 26) are either completed or under construction and would not contribute to cumulative construction truck traffic. Related Project Nos. 37 (670 Mesquit), 45 (2159 Bay Street), 29 (520 Mateo), 32 (676 Mateo) would have approximately 407,000, 140,000, 105,000, and 74,500 cubic yards of export (average of 181,625 cubic yards per project), respectively.[37,38,39,40] The remaining seven related projects would have much less export based on review of the proposed development. Based on the estimated amount of export from the related projects, it can be assumed that truck traffic related to construction of the Project and other related projects would not cumulatively add up to 305 or more hourly truck trips. Therefore, cumulative noise due to construction truck traffic from the Project and other related projects would not exceed the ambient noise levels along the haul route by 5 dBA. As such, cumulative off-site noise impacts from off-site construction would be less than significant.

(iii) Summary of Cumulative Construction Noise Impacts

As discussed above, off-site construction activities from the Project and related projects would not increase the ambient noise by 5 dBA. However, the on-site construction activities from the Project and the related projects have the potential to result in the

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[36] *It is estimated that with 171 truck trips per hour, the noise level would be 72.7 dBA, which is 4.9 dBA above the ambient noise level of 67.8 dBA. With 172 truck trips per hour, the noise level would be 72.8 dBA, which would exceed the ambient by 5.0 dBA.*

[37] *City of Los Angeles, 670 Mesquit Project Initial Study, April 2017.*

[38] *City of Los Angeles, 2159 Bay Street Initial Study, August 2018.*

[39] *City of Los Angeles, 520 Mateo Draft EIR, December 2017.*

[40] *City of Los Angeles, 676 Mateo Initial Study, February 2018.*

generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City. **Therefore, cumulative noise impacts from on-site construction activities would be significant.**

(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 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 on-site and off-site 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, and operational noise at the property line, operational noise levels would be less than significant for each related project. In addition, as discussed above, noise impacts associated with operations within the Project Site would be less than significant. Therefore, based on the distance of the related projects from the Project Site and the operational noise levels associated with the Project, cumulative stationary source noise impacts associated with operation of the Project and related projects would be less than significant.

(ii) Off-Site Mobile Noise Sources

The Project and related projects in the area would produce traffic volumes (off-site mobile sources) that would generate roadway noise. Cumulative noise impacts due to off-site traffic were analyzed by comparing the projected increase in traffic noise levels from "Baseline" 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 "Baseline" and "Future Plus Project" conditions are presented in Table IV.G-24 on page IV.G-55. As shown therein, cumulative traffic volumes would result in an increase ranging from 1.7 dBA (CNEL) along the roadway segment of Violet Street (between Mateo Street and Santa Fe Avenue), to 12.1 dBA (CNEL) along the roadway segment of Violet Street (east of Santa Fe Avenue). As there is no noise-sensitive use along the segment of Violet Street (east of

Table IV.G-24
Cumulative Roadway Traffic Noise Impacts

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels (CNEL (dBA))		Increase in Noise Levels due to Project and Related Projects (CNEL (dBA))	Significant Impact?
		Baseline	Future Plus Project		
Mateo Street					
Between 6th St. and 7th St.	Residential	68.5	71.7	3.2	Yes
Between 7th St. and Violet St	Commercial	69.7	71.9	2.2	No
Santa Fe Avenue					
Between 6th St. and 7th St.	Commercial	68.2	71.4	3.2	No
Between 7th St. and Violet St.	Residential	70.3	73.6	3.3	Yes
Between Violet St. and 8th St.	Hotel	70.3	73.2	2.9	No
7th Street					
Between Alameda St. and Mateo St.	School	71.4	74.2	2.8	No
Between Mateo St. and Santa Fe Ave.	Residential	71.7	74.0	2.3	No
Between Santa Fe Ave. and Boyle Ave.	Residential	73.0	75.1	2.1	No
Violet Street					
Between Mateo St. and Santa Fe Ave.	Commercial	59.5	61.2	1.7	No
East of Santa Fe Ave.	Commercial	55.8	67.9	12.1	No[a]

[a] *No significant traffic noise impacts, as there is no noise-sensitive use along this roadway segment.*

Source: AES, 2020. Refer to Appendix H of this Draft EIR.

Santa Fe Avenue), there are no significant traffic noise impacts along this roadway segment. The estimated traffic noise levels would exceed the 3-dBA threshold of significance (applicable when noise levels fall within the normally unacceptable or clearly unacceptable land use category) along the roadway segments of Mateo Street (between 6th and 7th Streets), and Santa Fe Avenue (between 7th Street and Violet Street). Therefore, cumulative noise impacts due to off-site mobile noise sources associated with the Project, future growth, and related projects would be significant.

(iii) Summary of Cumulative Operational Noise Impacts

As discussed above, the Project and related projects would result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City due to operational traffic noise. Cumulative operation noise impacts from on-site sources would be less than significant. However, cumulative operational noise impacts from off-site sources 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 15 feet as related to building damage, 80 feet as related to human annoyance at residential uses, and 140 feet as related to recording studio uses). As analyzed above, off-site vibration impacts related to building damage associated with Project-related on-site construction activities would be less than significant, and potential impacts to on-site historic Building C would be reduced to a less-than-significant level with implementation of mitigation measures. In addition, it is expected that the related projects would implement mitigation measures, as necessary, to ensure that potential building damage impacts to nearby historical resources would be less than significant. As discussed above, the nearest related project to the Project Site would be Related Project No. 18, which is approximately 60 feet south of the Project Site. Therefore, due to distance attenuation cumulative construction vibration impacts would not be expected from the concurrent construction of the Project and Related Project No. 18. As such, potential cumulative construction vibration impact with respect to building damage associated with on-site construction would be less than significant.

As discussed above, potential vibration impacts associated with Project-related on-site construction activities would be significant with respect to human annoyance at receptor locations R1 and R3. Related Project No. 18 is approximately 410 feet and 390 feet from the receptor locations R1 and R3, respectively. Due to the distance attenuation, Related Project No. 18 would not contribute to the cumulative construction

vibration impact with respect to human annoyance at both receptor locations R1 and R3. Therefore, potential cumulative construction vibration impact with respect to human annoyance associated with on-site 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.[41] 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., Santa Fe Avenue and Violet Street). 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 off-site 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, potential cumulative vibration impacts with respect to building damage from off-site 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 route(s) would be less than significant with respect to human annoyance. As related projects would be anticipated to use similar trucks as the Project, 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, potential cumulative human annoyance impacts associated with temporary and intermittent vibration from haul trucks traveling along the designated haul routes would be less than 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 on-site sources. In addition, potential cumulative vibration impacts with respect to building damage from off-site construction would be less than significant. Therefore, on-site and off-site construction activities

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

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 on-site 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. In addition, to the extent that other related projects use the same haul route as the Project, potential cumulative human annoyance impacts associated with temporary and intermittent vibration from haul trucks traveling along the designated haul routes would be less than significant.

Therefore, cumulative vibration impacts associated with on-site and off-site construction activities would be less than 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, which would be limited to the related project sites. As described above, the nearest related project (Related Project No. 18) is a minimum of 60 feet from the Project Site. Since ground-borne vibration decreases rapidly with distance, the related projects operation would not contribute to the cumulative vibration impacts due to distance between the Project and the related projects. As analyzed above, the Project operation would not increase in the existing vibration in the immediate 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 evaluated above, there would potentially be cumulative noise impacts at the nearby sensitive uses (e.g., residential and hotel uses) located in proximity to the Project Site and Related Project Nos. 18, 26, and 37, in the event of concurrent on-site 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. However, even with these mitigation measures, cumulative noise impacts would continue

to occur, and there are no other physical mitigation measures that would be feasible. As such, cumulative on-site noise impacts from on-site construction would be significant.

(b) Operational Noise

As discussed above, operation of the Project would not result in a significant noise impact during operation. However, as analyzed above, cumulative noise impacts associated with off-site traffic would occur along two of the analyzed roadway segments, including; Mateo Street (between 6th and 7th Streets) and Santa Fe Avenue (between 7th and 8th Street). Conventional mitigation measures, such as providing noise barrier walls to reduce the off-site traffic noise impacts, would not be feasible as the barriers would obstruct the access and visibility to the properties along the impacted roadway segments. There are no other feasible mitigation measures to reduce the significant noise impacts associated with the cumulative off-site traffic. Project impacts would be cumulatively considerable.

(c) Construction Vibration

Cumulative vibration impacts associated with on-site and off-site construction activities would be less than significant. Therefore, no mitigation measures are required.

(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

Construction noise impacts associated with on-site noise sources would remain significant and unavoidable. Cumulative off-site construction noise impacts would be less than significant without mitigation.

(b) Operational Noise

Cumulative operational noise associated with off-site traffic would be significant and unavoidable.

(c) Construction Vibration

Cumulative impacts with regard to on-site and off-site construction vibration would be less than significant without mitigation.

(d) Operational Vibration

Cumulative impacts with regard to operational vibration would be less than significant without mitigation.