IV. Environmental Impact Analysis
F. Noise

1. Introduction

This section of this Draft EIR analyzes the potential noise and vibration impacts of the Project. Included in this section is a description of the existing noise and vibration levels within the Project Site area, an estimation of the future noise and vibration levels at surrounding sensitive land uses associated with construction and operation of the Project, an analysis of the potential noise impacts, and the inclusion of mitigation measures to address any identified potential significant impacts, as applicable. Additionally, this section of this Draft EIR evaluates the Project's incremental contribution to potential cumulative noise and vibration impacts resulting from past, present, and probable future projects. This section summarizes the noise and vibration information provided in the Noise Calculation Worksheets prepared by Acoustical Engineering Services (AES), included in Appendix G of this Draft EIR.[1]

2. Environmental Setting

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

a. Noise and Vibration Basics

(1) Noise Principles and Descriptors

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as undesirable (i.e., loud, unexpected, or annoying) sound. Acoustics is defined as the physics of sound and addresses its propagation and control.[2] In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver of the sound, and the propagation path between the two. The loudness of the noise source and

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[1] *AES, Noise Calculation Worksheets, February 2024. See Appendix G of this Draft EIR.*

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

obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement and reflects the way people perceive changes in sound amplitude.[3] The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of feeling pain. Pressure waves traveling through air exert a force registered by the human ear as sound.[4]

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but, rather, a broad band of frequencies varying in levels of magnitude. When all of the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.[5]

The typical human ear is not equally sensitive to the frequency range from 20 to 20,000 Hz. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to these extremely low and extremely high frequencies. This method of frequency filtering or weighting is referred to as A-weighting, expressed in units of A-weighted decibels (dBA), which is typically applied to community noise measurements.[6] Some representative common outdoor and indoor noise sources and their corresponding A-weighted noise levels are shown in Figure IV.F-1 on page IV.F-3.

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

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

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

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

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

Figure IV.F-1

Decibel Scale and Common Noise Sources

Source: State of California, Department of Transportation (Caltrans), Technical Noise Supplement, 2009.

(2) Noise Exposure and Community Noise

Community noise exposure is typically measured over a period of time; a noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the sound sources contributing to the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with many unidentifiable individual contributors. Single-event noise sources, such as aircraft flyovers, sirens, etc., may cause sudden changes in background noise level. [7] However, generally, background noise levels change gradually throughout the day, corresponding with the addition and subtraction of distant noise sources, such as changes in traffic volume.

These successive additions of sound to the community noise environment change the community noise level from moment to moment, requiring the noise exposure to be measured over periods of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. The following noise descriptors are used to characterize environmental noise levels over time.[8]

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

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

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

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

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

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

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

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

(3) Effects of Noise on People

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

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

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep.

The World Health Organization's Guidelines for Community Noise details the adverse health effects of high noise levels, which include hearing impairment, speech intelligibility, sleep disturbance, physiological functions (e.g., hypertension and cardiovascular effects), mental illness, performance of cognitive tasks, social and behavioral effects (e.g., feelings of helplessness, aggressive behavior), and annoyance.[9]

With regard to the subjective effects, the responses of individuals to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity. Overall, there is no completely satisfactory way to measure

[9] *World Health Organization Team, edited by Birgitta B, Thomas Lindvall, and Dietrich H. Schwela, Guidelines for Community Noise, 1999.*

the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise levels, the following relationships generally occur:[10]

- Except in carefully controlled laboratory experiments, a change of 1 dBA in ambient noise levels cannot be perceived;
- Outside of the laboratory, a change of 3 dBA in ambient noise levels is considered to be a barely perceivable difference;
- A change of 5 dBA in ambient noise levels is considered to be a readily perceivable difference; and
- A change of 10 dBA in ambient noise levels is subjectively heard as doubling of the perceived loudness.

These relationships between change in noise level and human hearing response occur in part because of the logarithmic nature of sound and the dB scale. Because the dBA scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but, rather, logarithmically. Under the dBA scale, a doubling of sound energy corresponds to a 3-dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and 10 sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.[11]

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

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

(4) Noise Attenuation

When noise propagates over a distance, the noise level reduces, or attenuates, with distance depending on the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, referred to as "spherical spreading." The rate of sound attenuation for a point source, such as a piece of mechanical or electrical equipment (e.g., air conditioner) or idling vehicle (e.g., bulldozer), is 6 dBA per doubling of distance from the noise source to the receptor over acoustically "hard" sites and 7.5 dBA per doubling of distance from the noise source to the receptor over acoustically "soft" sites.[12] Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the reduction in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, which, in addition to geometric spreading, provide an excess ground attenuation value of 1.5 dBA (per doubling distance).[13] 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.

Roadways and highways consist of several localized noise sources on a defined path and, hence, are treated as "line" sources, which approximate the effect of several point sources.[14] Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading."[15] Line sources (e.g., traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[16] Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

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

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[12] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Sections 2.1.4.1 and 2.1.4.2.*

[13] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Sections 2.1.4.1 and 2.1.4.2.*

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

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

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

behind a sound wall. This type of sound attenuation is known as "barrier insertion loss." If a receptor is located behind the wall but still has a view of the source (i.e., the line-of-sight is not fully blocked), barrier insertion loss would still occur but to a lesser extent. Additionally, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall can reflect noise back to the receptor, thereby compounding the noise. Noise barriers can provide noise level reductions ranging from approximately 5 dBA (where the barrier just breaks the line-of-sight between the source and receiver) to an upper range of 20 dBA with a larger barrier.[17] Additionally, structures with closed windows can further attenuate exterior noise by a minimum of 20 dBA to 30 dBA.[18]

Receptors located downwind from a noise source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. [19] Atmospheric temperature inversion (i.e., increasing temperature with elevation) can increase sound levels at long distances. Other factors such as air temperature, humidity, and turbulence can, under the right conditions, also have substantial effects on noise levels.[20]

(5) Vibration Fundamentals

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

As described in the Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Manual, groundborne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard.[21] In contrast to airborne noise, groundborne

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[17] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Sections 2.1.4.24 and 5.1.1.*

[18] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 7.4.2, Table 7-1.*

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

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

[21] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 7.*

vibration is not a common environmental problem, as it is unusual for vibration from sources such as rubber-tired buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, heavy trucks traveling on rough roads, and certain construction activities, such as blasting, pile-driving, and operation of heavy earth-moving equipment.[22] Groundborne vibration generated by man-made activities (e.g., road traffic, construction operations) typically weakens with greater horizontal distance from the source of the vibration.

Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec) and is most frequently used to describe vibration impacts to buildings. [23] The root mean square (RMS) amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body.[24] Decibel notation (VdB) is commonly used to express RMS vibration velocity amplitude. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. PPV is typically a factor of 1.7 to 6 times greater than RMS vibration velocity; FTA uses a crest factor of 4.[25] The decibel notation VdB acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include buildings where vibration would interfere with operations within the building or cause damage (especially older masonry structures), locations where people sleep, and locations with vibration-sensitive equipment.[26]

Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to the vibration of floors and walls; it is perceptible only inside buildings.[27] The relationship between groundborne vibration and groundborne noise depends on the frequency of the vibration and the acoustical absorption characteristics of the receiving room. For typical buildings, groundborne vibration that causes low frequency noise (i.e., the vibration spectrum peak is less than 30 Hz) results in a ground-borne noise level that is approximately 50 decibels lower than the velocity level. For groundborne vibration that causes mid-frequency noise (i.e., the vibration spectrum peak is between 30 and 60 Hz), the groundborne noise level will be approximately 35 to

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[22] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 7.*

[23] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[24] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[25] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[26] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Sections 6.1, 6.2, and 6.3.*

[27] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.4.*

37 decibels lower than the velocity level.[28] Therefore, for typical buildings, the groundborne noise decibel level is lower than the groundborne vibration velocity level at low frequencies.

b. Regulatory Framework

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

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

(1) Federal

(a) Noise Control Act of 1972

Under the authority of the Noise Control Act of 1972, the United States Environmental Protection Agency (USEPA) established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the Code of Federal Regulations (CFR) that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, USEPA issued guidance levels for the protection of public health and welfare in residential areas of an outdoor L_{dn} of 55 dBA and an indoor L_{dn} of 45 dBA.[29] These guidance levels are not standards or regulations and were developed without consideration of technical or economic feasibility. There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Project. Moreover, the federal noise standards are not reflective of urban environments that range by land use, density, proximity to commercial or

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[28] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 6-3 and Table 6-14.*

[29] *U.S. Environmental Protection Agency, EPA Identifies Noise Levels Affecting Health and Welfare, April 1974.*

industrial centers, etc. As such, for purposes of determining acceptable sound levels to evaluate intrusive noise sources and increases, this section utilizes the City of Los Angeles Noise Regulations, discussed below.

(b) Federal Transit Administration Vibration Standards

There are no federal vibration standards or regulations adopted by any agency that are applicable to evaluating vibration impacts from land use development projects, such as the Project. However, the FTA has adopted vibration criteria for use in evaluating vibration impacts from construction activities, as presented in its *Transit Noise and Vibration Impact Assessment Manual*.[30] The vibration damage criteria adopted by the FTA are shown in Table IV.F-1 on page IV.F-12.

The FTA has also adopted standards associated with human annoyance for determining the groundborne vibration and noise impacts from groundborne noise on the following three off-site land-use categories: Vibration Category 1—High Sensitivity, Vibration Category 2—Residential, and Vibration Category 3—Institutional.[31] The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses, such as schools, churches, other institutions, and quiet offices, that do not have vibration-sensitive equipment but that still potentially involve activities that could be disturbed by vibration. The vibration thresholds associated with human annoyance for these three land use categories are shown in Table IV.F-2 on page IV.F-13. No thresholds have been adopted or recommended for commercial or office uses.

(c) Occupational Safety and Health Act of 1970

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

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[30] FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 7-5, p. 86.

[31] FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 6-1, p. 124.

Table IV.F-1
Construction Vibration Damage Criteria

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: FTA, Transit Noise and Vibration Impact Assessment Manual, 2018.

exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.[32]

(2) State

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

The State of California has not adopted Statewide standards for environmental noise, but the Governor's Office of Planning and Research (OPR) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as presented in Figure IV.F-2 on page IV.F-14.[33] The purpose of these guidelines is to maintain acceptable noise levels in a community setting for different land use types. Noise levels are divided into four general categories, which vary in range according to land use type: "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable." The City of Los Angeles (City) has developed its own compatibility guidelines in the Noise Element of the General Plan based in part on OPR's guidelines. California Government Code Section 65302 requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(f) requiring a noise element to be included in the general plan. The noise element must identify and appraise noise problems in the community and analyze and quantify current and projected noise levels.

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

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[32] *U.S. Department of Labor, Occupational Safety and Health Act, 1970.*

[33] *State of California, Governor's Office of Planning and Research, General Plan 2017 Guidelines, p. 377.*

Table IV.F-2
Groundborne Vibration and Groundborne Impact Criteria for General Assessment

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

[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: FTA, Transit Noise and Vibration Impact Assessment Manual, 2018.

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

(3) Regional

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

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

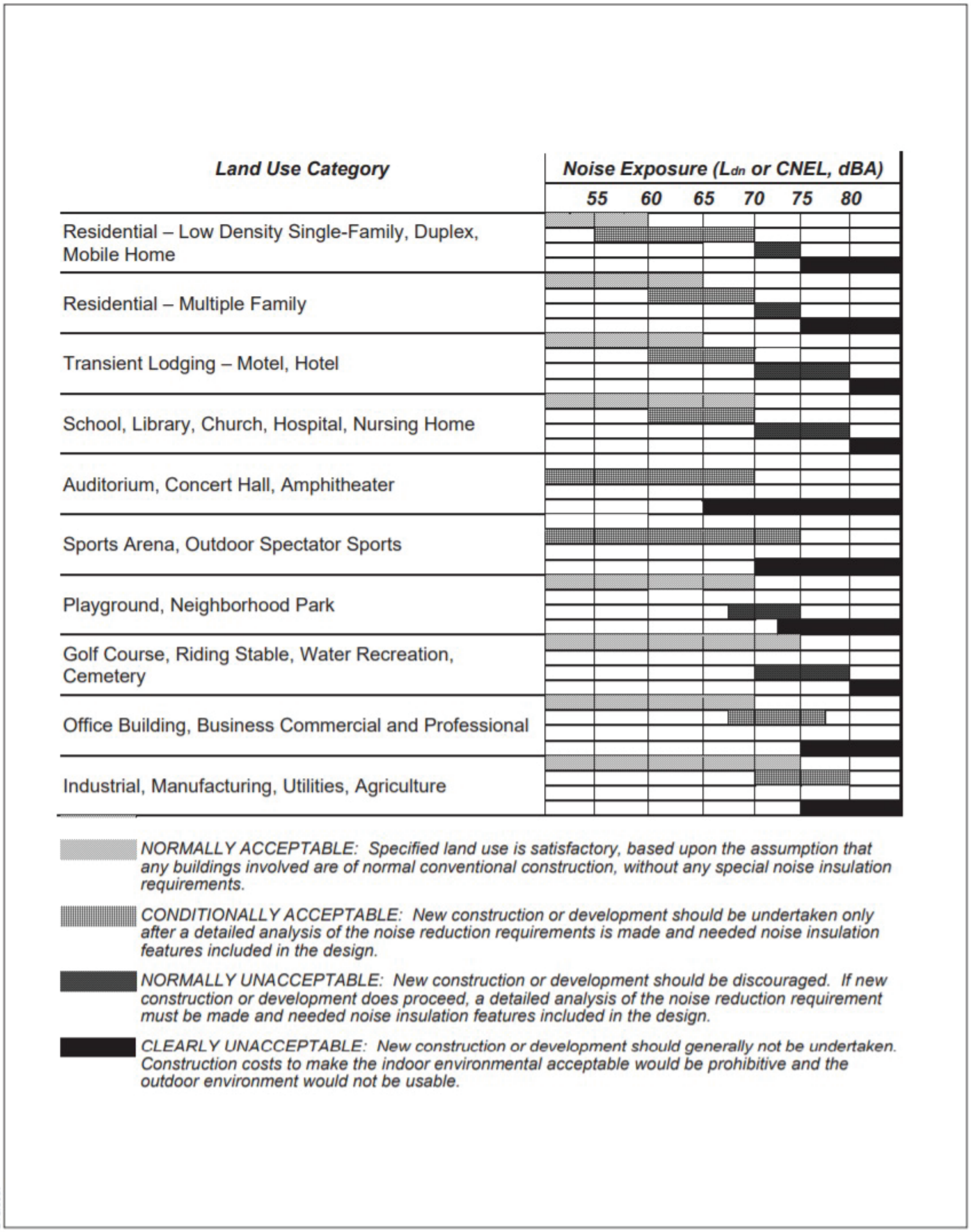

Figure IV.F-2

Guidelines for Noise Compatible Land Use

Source: State of California, General Plan Guidelines, Governor's Office of Planning and Research, 2003.

(4) Local

(a) Los Angeles Municipal Code

The City of Los Angeles Noise Regulations are provided in Chapter XI of the Los Angeles Municipal Code (LAMC). LAMC Section 111.02 provides procedures and criteria for the measurement of the sound level of "offending" noise sources. In accordance with the LAMC, a noise source that causes a noise level increase of 5 dBA over the existing average ambient noise level as measured at an adjacent property line creates a noise violation. This standard applies to radios, television sets, air conditioning, refrigeration, heating, pumping and filtering equipment, powered equipment intended for repetitive use in residential areas, and motor vehicles driven on-site. To account for people's increased tolerance for short-duration noise events, the Noise Regulations provide a 5-dBA allowance for a noise source that causes noise lasting more than five but less than 15 minutes in any one-hour period, and an additional 5-dBA allowance (for a total of 10 dBA) for a noise source that causes noise lasting five minutes or less in any one -hour period.[34]

The LAMC provides that in cases where the actual ambient conditions are not known, the City's presumed daytime (7:00 A.M. to 10:00 P.M.) and nighttime (10:00 P.M. to 7:00 A.M.) minimum ambient noise levels as defined in LAMC Section 111.03 should be used. The presumed ambient noise levels for these areas where the actual ambient conditions are not known as set forth in the LAMC Sections 111.03 are provided in Table IV.F-3 on page IV.F-16. For example, for residential-zoned areas, the presumed ambient noise level is 50 dBA during the daytime and 40 dBA during the nighttime.

LAMC Section 112.01 limits noise from amplified voice and music and prohibits the operation of such devices (e.g., radio, musical instrument, phonograph, television receiver, or other machine) or other sounds in such a manner as to disturb the peace, quiet, and comfort of neighbors. Specifically, noise from such uses or operation which exceeds the ambient noise level on the premises of any other occupied property, or if a condominium, apartment house, duplex, or attached business, within any adjoining unit, by more than 5 dB.

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

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

Table IV.F-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 (A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and R5)	50	40
Commercial (P, PB, CR, C1, C1.5, C2, C4, C5, and CM)	60	55
Manufacturing (M1, MR1, and MR2)	60	55
Heavy Manufacturing (M2 and M3)	65	65

Source: LAMC Section 111.03.

LAMC Section 112.05 sets a maximum noise level for construction equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. Compliance with this standard shall not apply where compliance therewith is technically infeasible.[35] LAMC Section 41.40 prohibits construction between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, 6:00 P.M. and 8:00 A.M. on Saturday or any national holiday, and at any time on Sunday (i.e., construction is allowed Monday through Friday between 7:00 A.M. to 9:00 P.M. and Saturdays and national holidays between 8:00 A.M. to 6:00 P.M.). In general, the City's Department of Building and Safety enforces provisions of the City's noise regulations relative to construction equipment, and the Los Angeles Police Department (LAPD) enforces provisions relative to noise generated by people.

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

Section 91.1206.14.2 prohibits interior noise levels attributable to exterior sources from exceeding 45 dBA in any habitable room. The noise metric shall be either the day-night average sound level (L_{dn}) or the CNEL, consistent with the noise element of the local general plan.

[35] *In accordance with the City's 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.*

(b) City of Los Angeles General Plan Noise Element

The Noise Element of the City's General Plan policies include the CNEL guidelines for land use compatibility as shown in Table IV.F-4 on page IV.F-18 and includes a number of goals, objectives, and policies for land use planning purposes. The overall purpose of the Noise Element is to guide policymakers in making land use determinations and in preparing noise ordinances that would limit exposure of citizens to excessive noise levels.[36] The following policies and objectives from the Noise Element apply to the Project.

- **Objective 2 (Non-Airport):** Reduce or eliminate non-airport related intrusive noise, especially relative to noise sensitive uses.
- **Policy 2.2:** Enforce and/or implement applicable City, state, and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.
- **Objective 3 (Land Use Development):** Reduce or eliminate noise impact associated with proposed development of land and changes in land use.
- **Policy 3.1:** Develop land use policies and programs that will reduce or eliminate potential and existing noise impacts.

Exhibit I of the Noise Element also contains guidelines for noise compatible land uses.[37] Table IV.F-4 summarizes these guidelines, which are based on OPR guidelines from 1990.

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

[37] *City of Los Angeles, General Plan Noise Element, Adopted February 3, 1999, p. I-1.*

Table IV.F-4
City of Los Angeles Guidelines for Noise Compatible Land Use

Land Use	Community Noise Exposure CNEL (dB)			
	Normally Acceptable	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Single-Family, Duplex, Mobile Homes	50 to 60	55 to 70	70 to 75	Above 70
Multi-Family Homes	50 to 65	60 to 70	70 to 75	Above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 to 70	60 to 70	70 to 80	Above 80
Transient Lodging—Motels, Hotels	50 to 65	60 to 70	70 to 80	Above 80
Auditoriums, Concert Halls, Amphitheaters	—	50 to 70	—	Above 65
Sports Arena, Outdoor Spectator Sports	—	50 to 75	—	Above 70
Playgrounds, Neighborhood Parks	50 to 70	—	67 to 75	Above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 to 75	—	70 to 80	Above 80
Office Buildings, Business, Professional Commercial	50 to 70	67 to 77	Above 75	—
Industrial, Manufacturing, Utilities, Agriculture	50 to 75	70 to 80	Above 75	—

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

Conditionally Acceptable: *New construction or development should be undertaken only after a detailed analysis of the noise-reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.*

Normally Unacceptable: *New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.*

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

Source: City of Los Angeles L.A. CEQA Thresholds Guide, 2006.

c. Existing Conditions

As discussed in Section II, Project Description, of this Draft EIR, the Project Site is located in an urbanized area. The predominant source of noise in the vicinity of the Project Site is vehicular traffic on adjacent roadways, particularly along 7th Street, Hope Street, 8th Street, and Flower Street, which have high volumes of traffic. Ambient noise sources in the vicinity of the Project Site include automobile and truck traffic; commercial activities; parking activities within surface and structured parking areas; 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.[38] Similarly, the Noise Element defines noise-sensitive land uses as single-family and multi-unit dwellings, long-term care facilities (including convalescent and retirement facilities), dormitories, motels, hotels, transient lodging, and other residential uses; houses of worship; hospitals; libraries; schools; auditoriums; concert halls; outdoor theaters; nature and wildlife preserves; and parks.[39] 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, five noise receptor locations were selected to represent noise-sensitive uses within 500 feet of the property line of Project Site (receptor locations R1 through R5). These locations represent areas with land uses that could qualify as noise-sensitive uses according to the definition of such uses in the *L.A. CEQA Thresholds Guide* and the General Plan. As discussed below, noise measurements were conducted at five off-site locations to establish baseline noise conditions in the vicinity of the Project Site. The measurement locations surround the Project Site and thereby provide representative baseline measurements for noise-sensitive uses in the vicinity of the Project Site. In addition, the measurement locations provide an adequate basis to evaluate potential impacts at the measurement locations and at other sensitive receptors located beyond the measurement location in the same direction from the Project Site. The noise measurement locations surrounding the Project Site are shown in Figure IV. F-3 on page IV.F-20 and described in Table IV.F-5 on page IV.F-21.

(2) Ambient Noise Levels

To establish baseline noise conditions, existing ambient noise levels were measured at five off-site receptor locations (identified as R1 through R5) that are representative of sensitive uses in the vicinity of the Project Site. The noise measurements were conducted on March 6, 2023, using a Larson-Davis Model 870 and a Quest Technologies Model 2900

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

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

Figure IV. F-3

Noise Measurement Locations

Source: Acoustical Engineering Services, 2024.

Table IV.F-5
Description of Noise Measurement Locations

Receptor Location	Description	Approximate Distance from Measurement Location to Nearest Project Site Boundary (feet)[a]	Nearest Noise-Sensitive Land Use(s)
R1	Multi-family residential uses on the south side of 8th Street, across the Project Site to the south. Receptor R1 represents the multi-family residential uses along the south side of 8th Street (between Flower Street and Grand Avenue)	75	Multi-family Residential
R2	Religious use on the east side of Hope Street, across the Project Site to the east. Receptor R2 also represents the proposed mixed-use development at the northeast corner of Hope Street and 8th Street.	85	Religious, Proposed Multi-family Residential
R3	Multi-family residential uses on the north side of 7th Street, north of the Project Site. Receptor R3 also represents the multi-family residential uses along the north side of 7th Street (between Flower Street and Hope Street)	350	Multi-family Residential
R4	Multi-family residential use at the northeastern corner of 8th Street and Figueroa Street, west of the Project Site.	270	Multi-family Residential
R5	Hotel use on the west side of Flower Street, southwest of the Project Site.	195	Hotel

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

Source: AES, 2024. See Appendix G of this Draft EIR.

Integrating/Logging Sound Level Meters.[40] A 24-hour ambient noise measurement was conducted at receptor location R2. Two 15-minute measurements were conducted at each of the off-site receptor locations R1, R3 through R5 during daytime and nighttime hours. The daytime ambient noise levels were measured between 11:00 A.M. and 1:00 P.M., and the nighttime ambient noise levels were measured between 10:00 P.M. and 12:00 A.M. The

[40] *These sound meters meet the minimum industry standard performance requirements for "Type 1" (Larson-Davis Model 870) and "Type 2" (Quest Technologies Model 2900) 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.*

ambient noise measurements were recorded in accordance with the City's standards, which require ambient noise to be measured over a period of at least 15 minutes.[41]

Table IV.F-6 on page IV.F-23 provides a summary of the ambient noise measurements conducted at the five noise receptor locations. Based on field observations, the current ambient noise at the measurement locations is dominated by local traffic and, to a lesser extent, nearby construction, and other typical urban noises (e.g., pedestrian talking, retails/commercials activities). As indicated in Table IV.F-6, the existing daytime ambient noise levels at the off-site noise receptor locations ranged from 67.7 dBA (L_{eq}) at receptor location R1 to 72.8 dBA (L_{eq}) at receptor location R4. The measured nighttime ambient noise levels ranged from 64.8 dBA (L_{eq}) at receptor location R2 to 67.7 dBA (L_{eq}) at receptor location R4. 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}), as provided in Table IV.F-3 on page IV.F-16.

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 traffic volume information provided in the Transportation Assessment prepared for the Project, which is included in Appendix I.1 of this Draft EIR.[42] Twelve roadway segments were selected for the existing off-site traffic noise analysis included in this section based on proximity to the Project Site and potential increases in traffic volumes from the Project. Traffic noise levels were calculated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) and traffic volume data provided by the transportation consultant for the Project. The TNM calculates the hourly L_{eq} noise levels based on specific information, including the hourly traffic volume, vehicle type mix, vehicle speed, and lateral distance between the noise receptor and the roadway. To calculate the 24-hour CNEL levels, the hourly L_{eq} levels were calculated during daytime hours (7:00 A.M. to 7:00 P.M.), evening hours (7:00 P.M. to 10:00 P.M.), and nighttime hours (10:00 P.M. to 7:00 A.M.). The TNM calculates the 24-hour CNEL noise levels based on specific information, including average daily traffic (ADT); percentages of day, evening, and nighttime traffic volumes relative to ADT; vehicle speed; and distance between the noise receptor and the roadway. Vehicle mix/distribution information used in the noise calculations is shown in Table IV.F-7 on page IV.F-23.

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[41] *LAMC Section 111.01.*

[42] *Gibson Transportation Consulting, Inc., Transportation Assessment for The Bloc Residential Tower and Signage SUD Project, Los Angeles, California, January 2023, revised February 2024.*

Table IV.F-6
Existing Ambient Noise Levels

Receptor Location	Noise-Sensitive Land Use	Measured Noise Levels, L_{eq} (dBA)		CNEL (24-hour)
		Daytime Hours (7:00 A.M.–10:00 P.M.)	Nighttime Hours (10:00 P.M.–7:00 A.M.)	
R1	Residential	67.7	66.3	71.3[a]
R2	Religious, Residential (proposed)	69.6[b]	64.8[b]	72.9
R3	Residential	68.1	65.6	70.9[a]
R4	Residential	72.8	67.7	73.9[a]
R5	Hotel	70.5	66.5	72.3[a]

[a] *Based on FTA Procedures which provide estimates based on short-term (15-minute) noise measurement.*

[b] *Levels shown for R2 represent the average for the entire daytime and nighttime periods, per the LAMC Section 111.01.(a).*

Source: AES, 2024. See Ambient Noise Measurements provided in Appendix G of this Draft EIR.

Table IV.F-7
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.)	
Car	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 two axles.*

[b] *Heavy Truck—Trucks with three or more axles.*

Source: AES, 2024.

Table IV.F-8 on page IV.F-24 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 67.9 dBA CNEL along Hope Street (between Wilshire Boulevard and 7th Street) to 71.9 dBA CNEL along 8th Street (between Figueroa Street and Flower Street). Currently, the existing traffic-related noise levels along the roadway segments of Hope Street (between Wilshire Boulevard and 9th Street) and 7th Street (between Figueroa Street and Flower Street) fall within the conditionally acceptable land use category for residential uses (i.e., between 60 and 70 dBA CNEL).

Table IV.F-8
Existing Roadway Traffic Noise Levels

Roadway Segment	Adjacent 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]
Flower Street					
Between Wilshire Blvd. and 7th St.	Residential	40	71.4	Yes	Normally Unacceptable
Between 7th St. and 8th St.	Commercial	40	71.8	No	Conditionally Acceptable
Between 8th St. and 9th St.	Residential, Hotel	40	71.7	Yes	Normally Unacceptable
Hope Street					
Between Wilshire Blvd. and 7th St.	Residential	40	67.9	Yes	Conditionally Acceptable
Between 7th St. and 8th St.	Hotel, Religious	40	68.1	Yes	Conditionally Acceptable
Between 8th St. and 9th St.	Residential	40	68.3	Yes	Conditionally Acceptable
7th Street					
Between Figueroa St. and Flower St.	Commercial	35	69.8	No	Conditionally Acceptable
Between Flower St. and Hope St.	Residential	35	70.8	Yes	Normally Unacceptable
Between Hope St. and Grand Ave.	Commercial	35	71.8	No	Conditionally Acceptable
8th Street					
Between Figueroa St. and Flower St.	Residential	35	71.9	Yes	Normally Unacceptable
Between Flower St. and Hope St.	Residential	35	71.3	Yes	Normally Unacceptable
Between Hope St. and Grand Ave.	Residential	35	71.5	Yes	Normally Unacceptable

[a] *Detailed calculation worksheets are included in Appendix G of this Draft EIR.*

[b] *Noise compatibility is based on the most stringent land use, per the City's land use compatibility guidelines as provided in Table IV.F-4 on page IV.F-18.*

Source: AES, 2024. See Off-Site Traffic Noise Calculations for Existing Conditions provided in Appendix G of this Draft EIR.

The existing traffic-related noise levels along Flower Street (between Wilshire Boulevard), 7th Street (between Flower Street and Grand Avenue), and 8th Street (between Figueroa Street and Grand Avenue) fall within the normally unacceptable land use category for residential uses (i.e., between 70 dBA and 75 dBA CNEL).

(3) Existing Groundborne Vibration Levels

Based on field observations during the noise measurements, the primary source of existing groundborne 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."[43] Trucks and buses typically generate groundborne vibration velocity levels of around 63 VdB (at a distance of 50 feet), and these levels could reach 72 VdB when trucks and buses pass over traffic speed bumps in the road. Per the FTA, 75 VdB is the dividing line between barely perceptible (with regards to ground vibration) and distinctly perceptible.[44] Therefore, existing groundborne vibration in the vicinity of the Project Site is generally below the perceptible level. However, groundborne vibration associated with heavy trucks traveling on road surfaces with irregularities, such as speed bumps and potholes, could reach the perceptible threshold.

3. Project Impacts

a. Thresholds of Significance

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

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 groundborne noise levels; or

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

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

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

For this analysis, the Appendix G thresholds listed above are relied upon. The analysis utilizes factors and considerations identified in the *L.A. CEQA Thresholds Guide*, as appropriate, to assist in answering the Appendix G threshold questions. The *L.A. CEQA Thresholds Guide* identifies the factors below to evaluate noise impacts.

(1) Construction Noise

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

- Construction activities lasting more than one day would exceed existing ambient exterior sound levels by 10 dBA (hourly L_{eq}) or more at a noise-sensitive use;
- Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use; or
- Construction activities of any duration would exceed the ambient noise level by 5 dBA (hourly L_{eq}) at a noise-sensitive use between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. or after 6:00 P.M. on Saturday, or at any time on Sunday.

As discussed in Section II, Project Description, of this Draft EIR, construction of the Project is anticipated to occur over a period of approximately 48 months. Construction could begin in 2027 and end in 2031. Therefore, since construction activities would occur over a period longer than 10 days for all stages, the corresponding significance criteria used in the construction noise analysis presented in this section of this 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.F-4 on page IV.F-18 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 docks, or parking facilities, increase the ambient noise level (hourly L_{eq}) at noise-sensitive uses by 5 dBA.

The significance criterion used in the noise analysis for on-site operations presented above 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 significance criterion 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 land use category) at noise-sensitive uses. In addition, the significance criterion 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) FTA Groundborne Vibration Standards and Guidelines

The City currently does not have significance criteria to assess vibration impacts during construction. Thus, the FTA guidelines set forth in FTA's *Transit Noise and Vibration Impact Assessment Manual* 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 groundborne vibration associated with potential building damage would be considered significant if any of the following events were to occur:

- Project construction activities cause groundborne vibration levels to exceed 0.5 PPV at the nearest off-site reinforced concrete, steel, or timber building.
- Project construction activities cause groundborne vibration levels to exceed 0.3 PPV at the nearest off-site engineered concrete and masonry building.
- Project construction activities cause groundborne vibration levels to exceed 0.2 PPV at the nearest off-site non-engineered timber and masonry building.

- Project construction activities cause groundborne 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 groundborne vibration levels to exceed 72 VdB at off-site sensitive uses, including residential, hotel and theater 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 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)."[45] The ambient noise levels at surrounding sensitive receptor locations were based on field measurement data (see Table IV.F-6 on page IV.F-23). The construction noise levels were then calculated for the 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(4), Noise Attenuation). Additional noise attenuation was assigned to the receptor locations where the line-of-sight to the Project Site was interrupted by the presence of intervening structures.

(2) Off-Site Construction Haul Trucks

Off-site construction noise impacts from haul trucks associated with the Project were analyzed using the FHWA's TNM. The TNM is the current Caltrans standard computer noise model for traffic noise studies. The model allows for the input of roadway, noise

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[45] *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 U.S. Environmental Protection Agency report referenced in the* L.A. CEQA Thresholds Guide *(published in 1971).*

receivers, and sound barriers, if applicable. The construction-related off-site truck volumes were obtained from the Transportation Assessment prepared for the Project, which is included in Appendix I.1 of this Draft EIR. The TNM calculates the hourly L_{eq} noise levels generated by construction-related haul trucks. Noise impacts were determined by comparing the predicted noise level of construction-related haul trucks plus the ambient noise levels 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 outdoor spaces), parking facilities, and loading docks; (2) calculating the noise level from each noise source at the surrounding sensitive receptor property lines; and (3) comparing such noise levels to the ambient noise levels to determine significance. The on-site stationary noise sources were calculated using the SoundPLAN (version 8.2) computer noise prediction model.[46] 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 and traffic data from the Project's Transportation Assessment, included as Appendix I.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

Groundborne 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 receptor locations, and comparing the Project's activities to the applicable vibration significance thresholds, as described below.

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[46] *SoundPLAN GmbH, SoundPLAN version 8.2, 2020.*

(6) Operational Vibration

The primary source of vibration related to operation of the Project would include vehicle circulation within the parking facilities 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 chillers, boilers, fans, and pumps located at Level B (lowest basement level), cooling towers at Level 9, and cooling towers and fans at Level 53 (mechanical room roof), 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, groundborne vibration attenuates rapidly as a function of distance from the vibration source.

c. Project Design Features

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

Project Design Feature NOI-PDF-1: Power construction equipment (including combustion engines), fixed or mobile, will be equipped with state-of-the-art noise shielding and muffling devices, consistent with manufacturers' standards. All equipment will be properly maintained to ensure that no additional noise due to worn or improperly maintained parts will be generated.

Project Design Feature NOI-PDF-2: Project construction will not include the use of driven (impact) pile systems.

Project Design Feature NOI-PDF-3: Outdoor mounted mechanical equipment will be enclosed or screened by the building design (e.g., a roof parapet or mechanical screen) from view of off-site noise-sensitive receptors. The equipment screen will be impermeable (i.e., solid material with minimum weight of 2 pounds per square foot) and break the acoustic line-of-sight from the equipment to the off-site noise-sensitive receptors.

Project Design Feature NOI-PDF-4: Outdoor amplified sound systems, if any, will be designed so as not to exceed the maximum noise level of 80 dBA (L_{eq-1hr}) at a distance of 25 feet from the amplified speaker sound systems at Level 12 outdoor spaces and 85 dBA (L_{eq-1hr}) at a distance of 25 feet from the amplified speaker sound systems at Level 51 outdoor spaces. A qualified noise consultant will provide written documentation that the design of the system complies with this maximum noise level.

d. Analysis of Project Impacts

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

(1) Impact Analysis

(a) Construction Noise

As discussed above, construction of the Project is anticipated to occur over a period of approximately 48 months. Thus, the corresponding significance threshold used in the construction noise analysis below is the exceedance of the ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use. Construction of the 53-story tower would generally commence with the structural upgrade of the existing nine-story parking/ retail podium building and subterranean levels below and the demolition/reconfiguration of a portion of this building. In particular, new building foundations would be provided, which would require some grading and excavation. This would be followed by new building construction, concrete installation, new building façades, and landscape installation. It is estimated that approximately 18,239 cubic yards of soil would be hauled from the Project Site. In accordance with LAMC requirements, construction activities generally would be permitted to occur Monday through Friday from 7:00 A.M. to 9:00 P.M. and between 8:00 A.M. and 6:00 P.M. on Saturday or national holidays, or outside of these hours if an afterhours construction permit is approved by the Los Angeles Board of Police Commissioners. Construction delivery/haul trucks would travel on approved truck routes between the Project Site and SR-110 via 6th Street, Hope Street, and 8th Street. Incoming trucks would travel southbound on SR-110, exit at 6th Street heading east, turn right on Hope Street, heading south, and enter the staging area on the Hope Street curb lane. Departing trucks would exit the staging area on Hope Street heading south, turn right on 8th Street, heading west toward SR-110. Access along 7th Street or Flower Street is not feasible as the entire Project Site is completely built out and the existing buildings would remain.

(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, structural upgrades, grading and excavation, and building construction (including installation of digital and other SUD signs). Each stage of construction would involve the use of various types of construction equipment and would, therefore, have its own distinct noise characteristics. Demolition generally involves the use of backhoes, front-end loaders, and heavy-duty trucks. Grading and excavation typically require the use of earth-moving equipment, such as excavators, front-end loaders, and heavy-duty trucks. Building construction typically involves the use of cranes, forklifts, concrete trucks, pumps, and delivery trucks. Noise from construction equipment would generate both steady-state and episodic noise that could be heard within and adjacent to the Project Site. As provided in Project Design Feature NOI-PDF-1 above, construction equipment will have proper noise muffling devices per the manufacturer's standards.

Individual pieces of construction equipment anticipated to be used during construction of the Project could produce maximum noise levels (L_{max}) of 74 dBA to 89 dBA at a reference distance of 50 feet from the noise source, as shown in Table IV.F-9 on page IV.F-33. In addition, the Project would also utilize electric construction equipment, when available. These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites often operates under less than full power conditions or partial power. To more accurately characterize noise levels during construction, the average (hourly L_{eq}) noise levels associated with each construction stage was calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage.[47] These noise levels are typically associated with multiple pieces of equipment operating on partial power, simultaneously.

Table IV.F-10 on page IV.F-34 provides the estimated construction noise levels for various construction stages at the five selected off-site receptor locations (R1 to R5). 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 represent a conservative 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 the construction noise would be constant, when, in fact, construction activities and associated noise levels are periodic and fluctuate based on the construction activities.

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[47] *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.F-9
Construction Equipment Noise Levels

Equipment	Estimated Usage Factor[a] (%)	Typical Noise Level at 50 feet from Equipment, dBA (L_{max})
Air Compressor (electric)	40	68[b]
Aerial Lift (electric)	20	65[b]
Cement and Mortar Mixer (electric)	50	61[b]
Concrete/Industrial Saw (electric)	20	76[b]
Crane (tower) electric	16	71[b]
Crane (mobile)	16	81
Drill Rig	20	84
Forklift (electric)	20	65[b]
Generator	50	81
Jackhammer	20	89
Plate Compactor (electric)	40	62[b]
Excavator (electric)	40	81
Rough Terrain Forklift	20	75
Pump	50	81
Roller	20	80
Skid Steer Loader (electric)	40	57[b]
Rubber-tired Loader	40	79
Tractor/Loader/Backhoe	40	80
Sweeper/Scrubber	10	82
Delivery Truck	40	74
Welders (electric)	40	64[b]

[a] *Usage factor represents the percentage of time the equipment would be operating at full power.*

[b] *Noise levels for electric equipment are based on manufacturer's published noise levels or are estimated to be 10 dBA lower than standard diesel equipment.*

Source: FHWA Roadway Construction Noise Model User's Guide, 2006.

Table IV.F-10
Construction Noise Impacts

Off-Site Receptor Location	Approximate Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Stage (L_{eq} (dBA))									Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Threshold (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact Without Mitigation?
		Utility Relocation	Demolition (Existing)	Structural (Existing)	Interior (Existing)	Demolition (New Tower)	Grading (New Tower)	Mat Foundation (New Tower)	Building Skin	Closeout				
R1	135	61.1	**80.1**	60.4	60.1	**79.8**	60.8	58.9	59.0	61.0	67.7	72.7	7.4	**Yes**
R2	85	**78.3**	**82.8**	**78.7**	**78.0**	**82.4**	**78.9**	**77.3**	62.5	65.0	69.6	74.6	8.2	**Yes**
R3	350	51.4	59.3	53.2	53.7	64.0	54.0	51.7	51.6	52.8	68.1	73.1	0.0	No
R4	380	50.7	58.5	52.5	53.0	63.5	53.4	51.0	50.9	52.1	72.8	77.8	0.0	No
R5	320	52.2	59.7	53.9	54.2	64.7	54.7	52.4	52.3	53.6	70.5	75.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime ambient noise levels (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide, for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance thresholds, a construction-related noise impact is identified.*

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

As indicated in Table IV.F-10 on page IV.F-34, the estimated construction-related noise would exceed the significance thresholds at receptor locations R1 and R2, by up to 7.4 dBA and 8.2 dBA, respectively. However, the estimated noise levels during all stages of Project construction would be below the significance thresholds at off-site receptor locations R3, R4, and R5.

The construction phases of the Project would have the potential to overlap. Therefore, overlapping construction noise activities were evaluated to determine the potential impacts. Construction noise impacts associated with the overlapping construction are provided in Table IV.F-11 on page IV.F-35. As indicated in Table IV.F-11, the estimated noise levels due to overlapping construction activities would exceed the significance thresholds at off-site receptor locations R1 and R2 by up to 10.3 dBA and 11.0 dBA, respectively. However, the estimated noise levels due to overlapping construction activities would remain below the significance thresholds at off-site receptor locations R3, R4, and R5. **Therefore, temporary noise impacts associated with the Project's on-site construction activities 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 from the material delivery/concrete/haul trucks.

With regard to haul routes, as described above, construction haul trucks would travel between the Project Site and SR-110 via 6th Street, Hope Street, and 8th Street. The peak period of construction with the highest number of construction trucks would occur during the mat foundation stage, which would occur for a duration of up to two days (two mat pours). The new tower is being constructed through the podium building (existing parking structure) with the new mat foundation at the ground level. During this construction stage, there would be a maximum of approximately 340 concrete trucks coming to and leaving the Project Site (equal to 680 total trips) per day. In addition, there would be up to approximately 80 construction trucks during the building structural upgrades phase (total of 160 truck trips). There would also be approximately 30 to 250 construction workers traveling to and from the Project Site on a daily basis during the various construction stages. Construction workers are expected to arrive at the Project Site before construction starts and leave when construction ends. Therefore, construction worker vehicle noise would not overlap with Project construction equipment or trucks. In addition, the noise

Table IV.F-11
Construction Noise Impacts—Overlapping Construction

Off-Site Receptor Location	Approximate Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Stage (L_{eq} (dBA))								Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Threshold (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact Without Mitigation?
		Utility Relocation & Demolition (Existing)	Demolition (Existing & New Tower)	Structural (Existing) & Demo (New Tower)	Structural (Existing) & Grading (New Tower)	Structural (Existing), Interior & Mat Foundation	Structural (Existing) & Interior	Structural (Existing), Interior, and Building Skin	Interior and Building Skin				
R1	135	**80.2**	**83.0**	**79.8**	63.6	64.6	63.3	64.6	62.6	67.7	72.7	10.3	**Yes**
R2	85	**84.1**	**85.6**	**83.9**	**81.8**	**82.8**	**81.4**	**81.4**	**78.1**	69.6	74.6	11.0	**Yes**
R3	350	60.0	65.3	64.3	56.6	57.7	56.5	57.7	55.8	68.1	73.1	0.0	No
R4	380	59.2	64.7	63.8	56.0	57.0	55.8	57.0	55.1	72.8	77.8	0.0	No
R5	320	60.4	65.9	65.0	57.3	58.3	57.1	58.3	56.4	70.5	75.5	0.0	No

[a] Significance thresholds are equivalent to the measured daytime ambient noise levels (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide, for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance thresholds, a construction-related noise impact is identified.

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

levels generated by construction worker vehicle trips would be lower than the construction truck trips.[48]

Table IV.F-12 on page IV.F-38 provides the estimated number of construction-related truck trips, including haul/concrete/material delivery trucks and the estimated noise levels along the anticipated truck routes. As indicated in Table IV.F-12, the hourly noise levels generated by Project construction trucks along the anticipate haul routes, 6th Street, Hope Street, and 8th Street would be consistent with the existing daytime ambient noise levels for all construction stages, which would be below the 5-dBA significance threshold.

As indicated above, the construction phases of the Project would have the potential to overlap. Therefore, noise levels due to off-site construction trucks associated with overlapping construction were evaluated to determine the potential impacts. Off-site construction noise impacts associated with the overlapping construction (construction trucks) are provided in Table IV.F-13 on page IV.F-39. As indicated in Table IV.F-13, the estimated noise levels due to overlapping construction combined would be below the significance thresholds. **Therefore, temporary noise impacts from off-site construction trucks along the haul routes would be less than significant.**

In addition to the off-site construction trucks, the Project includes off-site utility improvements, including installation of approximately 772 feet of 12-inch water main upgrade, and three hydrant installations along Hope Street between 7th Street and 8th Street. Construction associated with the off-site utility improvements would involve a limited number of equipment (e.g., a concrete saw, a backhoe, and a dump truck) and would occur for short duration (i.e., few days). In addition, electric construction equipment (electric concrete saw) would be used for the off-site utility improvements to minimize noise levels. The Project would also include an off-site staging area along Hope Street, which would include a parking lane and a travel lane, adjacent to the Project Site, associated with construction of the tower. Noise associated with the staging area would include tractor trailers (delivery trucks). Table IV.F-14 on page IV.F-40 provides the estimated construction noise levels associated with the off-site utility improvements and staging area along Hope Street. As indicated in Table IV.F-14, the estimated noise levels due to the off-site utility improvements associated with construction of the tower would exceed the significance criteria at the off-site receptor locations R1, R2, and R3 by 0.9 dBA, 2.5 dBA, and 0.5 dBA, respectively. Noise levels associated with the off-site staging for construction of the tower would exceed the significance criteria at receptor location R2 by 3.2 dBA. The overlapping (composite) off-site construction noise levels for construction of the tower (off-site utility improvements and off-site staging) would exceed the significance criteria at the off-site receptor locations R1, R2, and R3 by 2.6, 5.9, and 0.7 dBA, respectively.

[48] *Based on TNM noise model, a truck generates approximately 14 dBA louder than an automobile.*

Table IV.F-12
Off-Site Construction Truck Noise Levels

Construction Stage	Estimated Number of Construction Truck Trips per Day	Estimated Number of Construction Truck Trips per Hour[b]	Estimated Truck Noise Levels Plus Ambient Along the Project Truck Routes[a] (L_{eq} (dBA)) (Project/Project + Ambient)		
			6th Street	Hope Street	8th Street
Utility Relocation	10	1	54.0/68.3	54.0/69.7	54.0/67.9
Existing Building—Demolition	64	6	61.8/69.0	61.8/70.3	61.8/68.7
Existing Building & New Tower—Structural Upgrades	160	10	64.0/69.5	64.0/70.7	64.0/69.2
Existing Building & New Tower—Interior Buildout	80	5	61.0/68.9	61.0/70.2	61.0/68.5
New Tower—Structural Demolition	64	4	60.0/68.7	60.0/70.1	60.0/68.4
New Tower—Grading & Preparation	150	13	65.1/69.9	65.1/70.9	65.1/69.6
New Tower—Foundation (Mat Pour)	680	25	68.0/71.1	68.0/71.9	68.0/70.9
New Tower—Skin	20	2	57.0/68.4	57.0/69.8	57.0/68.1
Closeout	14	1	54.0/68.3	54.0/69.7	54.0/67.9
Existing Ambient Noise Levels Along the Project Haul Routes, L_{eq} (dBA)[d]			68.1	69.6	67.7
Significance Threshold (L_{eq} (dBA))[e]			73.1	74.6	72.7
Maximum Exceedance Over Significance Threshold (L_{eq} (dBA))			0.0	0.0	0.0
Significant Impact?			No	No	No

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

[b] *For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over an 8-hour workday. Haul truck hourly trips during demolition are based on 6 hours of hauling per day. Concrete truck trips for the mat foundation pour are based on a uniform distribution of trips over a 14-hour workday. Trucks are traveling in one direction; therefore, hourly trips are divided by two.*

[d] *Ambient noise levels along 6th Street, Hope Street, and 8th Street are based on measurements at nearby receptor locations; R1 (along 8th Street), R2 (along Hope Street), and R3 (representative of 6th Street).*

[e] *Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA.*

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

Table IV.F-13
Off-Site Construction Truck Noise Levels—Overlapping Construction

Construction Stage	Estimated Number of Construction Truck Trips per Day	Estimated Number of Construction Truck Trips per Hour[b]	Estimated Truck Noise Levels Plus Ambient Along the Project Truck Routes[a] (L_{eq} (dBA)) (Project/Project + Ambient)		
			6th Street	Hope Street	8th Street
Utility Relocation & Existing Demo	74	7	62.5/69.2	62.5/70.4	62.5/68.8
Existing Demo & New Tower Demo	128	10	64.0/69.5	64.0/70.7	64.0/69.2
Existing Structural & New Tower Demo	224	14	65.5/70.0	65.5/71.0	65.5/69.7
Existing Structural & New Tower Grading	310	23	67.6/70.9	67.6/71.7	67.6/70.7
Existing Structural, Interior, & New Mat Foundation	920	40	70.0/72.2	70.0/72.8	70.0/72.0
Existing Structural & Interior	240	15	65.8/70.1	65.8/71.1	65.8/69.9
Existing Structural, Interior, & Building Skin	260	17	66.3/70.3	66.3/71.3	66.3/70.1
Interior & Building Skin	100	7	62.5/69.2	62.5/70.4	62.5/68.8
Existing Ambient Noise Levels Along the Project Haul Routes, L_{eq} (dBA)[d]			68.1	69.6	67.7
Significance Criteria, L_{eq} (dBA)[e]			73.1	74.6	72.7
Maximum Exceedance Over Significance Threshold (L_{eq} (dBA))			0.0	0.0	0.0
Significant Impact?			No	No	No

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

[b] *For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over an 8-hour workday. Haul truck hourly trips during demolition are based on 6 hours of hauling per day. Concrete truck trips for the mat foundation pour are based on a uniform distribution of trips over a 14-hour workday.*

[d] *Ambient noise levels along 6th Street, Hope Street, and 8th Street are based on measurements at nearby receptor locations; R1 (along 8th Street), R2 (along Hope Street), and R3 (representative of 6th Street).*

[e] *Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA.*

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

Table IV.F-14
Off-Site Construction Noise Levels

Off-Site Receptor Location	Estimated Off-Site Construction Noise Levels (L_{eq} (dBA))			Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Threshold (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Threshold (L_{eq} (dBA))	Significant Impact Without Mitigation?
	Off-Site Utilities (A)	Off-Site Staging (B)	Composite (A+B)				
R1	73.6	70.3	75.3	67.7	72.7	2.6	**Yes**
R2	77.1	77.8	80.5	69.6	74.6	5.9	**Yes**
R3	73.6	59.5	73.8	68.1	73.1	0.7	**Yes**
R4	53.3	55.0	57.2	72.8	77.8	0.0	No
R5	40.8	42.2	44.6	70.5	75.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime ambient noise levels (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide, for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance thresholds, a construction-related noise impact is identified.*

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

Therefore, temporary noise impacts associated with construction of the Project's off-site utility improvements and off-site staging would be significant.

(iii) Summary of Construction Noise Impacts

As discussed above, Project on-site and off-site (utilities/staging) construction would result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of significance criterion established by the City. **Therefore, temporary noise impacts associated with the Project's on-site and off-site (utilities/ staging) construction activities would be potentially significant.**

(b) Operational Noise

This section provides a discussion of potential operational noise impacts at nearby noise-sensitive receptors. Specific operational noise sources addressed herein are: (a) on-site stationary noise sources, including outdoor mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] equipment), activities associated with the proposed outdoor spaces (located at Level 12 and Level 51), parking facilities, and loading dock; and (b) off-site mobile (roadway traffic) noise sources.

(i) On-Site Stationary Noise Sources

Mechanical Equipment

As part of the Project, new mechanical equipment (e.g., air ventilation equipment) would be located at the roof level and/or within the building structure (e.g., garage exhaust fans). Although operation of mechanical 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, with implementation of Project Design Feature NOI-PDF-3, listed above, all outdoor mounted mechanical equipment will be enclosed or screened from off-site noise-sensitive receptors. Table IV.F-15 on page IV.F-42 presents the estimated noise levels at the off-site receptor locations from mechanical equipment during operation of the Project.

As indicated in Table IV.F-15, the estimated noise levels from the mechanical equipment would range from 24.7 dBA (L_{eq}) at the uses represented by receptor location R3 to 31.7 dBA (L_{eq}) at the uses represented by receptor location R1, which would be well below the existing ambient noise levels. Further, the estimated ambient noise levels at all off-site receptor locations with the addition of the Project's mechanical equipment would be below the significance criterion of 5 dBA (L_{eq}) above ambient noise levels (based on the lowest measured ambient noise levels). **Therefore, noise impacts from mechanical equipment during Project operation would be less than significant.**

Outdoor Spaces

As discussed in Section II, Project Description, of this Draft EIR, the Project would include outdoor spaces on Level 12 and Level 51. 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.[49] 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 1:00 A.M. Table IV.F-16 on page IV.F-42 presents the anticipated number of people at each of the outdoor spaces.

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

Table IV.F-15
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	66.3	31.7	66.3	71.3	0.0	No
R2	64.8	27.7	64.8	69.8	0.0	No
R3	65.6	24.7	65.6	70.6	0.0	No
R4	67.7	28.5	67.7	72.7	0.0	No
R5	66.5	29.7	66.5	71.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime or nighttime ambient noise levels, whichever is lower (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those significance thresholds, a potentially significant noise impact is identified.*

Source: AES, 2024. See Operation Noise Calculations provided in Appendix G of this Draft EIR.

Table IV.F-16
Outdoor Use Analysis Assumptions

Location	Approximate Area (sf)	Estimated Total Number of People
Level 12—Outdoor Space	15,526	672
Level 52—Outdoor Space	4,262	284

Source: Handel Architects LLP, 2024; AES, 2024.

An additional potential noise source associated with outdoor spaces would be the use of an outdoor sound system (e.g., music or other sounds broadcast through an outdoor mounted speaker system) at the outdoor spaces. As set forth in Project Design Feature NOI-PDF-4, if an amplified sound system is used in outdoor areas, it would be designed so as not to exceed the maximum noise level of 80 dBA L_{eq} at Level 12 outdoor spaces and 85 dBA L_{eq} at Level 51 outdoor spaces, thereby ensuring that the amplified sound system would not exceed the significance criterion (i.e., an increase of 5 dBA L_{eq}) at any off-site noise-sensitive receptor location.

Table IV.F-17 on page IV.F-43 presents the estimated noise levels at the off-site sensitive receptors resulting from the use of outdoor spaces. As presented in Table IV.F-17, the estimated noise levels from the outdoor spaces would range from 44.9 dBA (L_{eq}) at the uses represented by receptor location R5 to 66.0 dBA (L_{eq}) at the

Table IV.F-17
Estimated Noise Levels from Outdoor Spaces

Receptor Location	Existing Ambient Noise Levels (dBA (L_{eq}))	Estimated Noise Levels from Outdoor Spaces (dBA (L_{eq}))	Ambient + Project Noise Levels (dBA (L_{eq}))	Significance Threshold[a]	Exceedance Over Significance Threshold	Significant Impact?
R1	66.3	66.0	69.2	71.3	0.0	No
R2	64.8	55.5	65.3	69.8	0.0	No
R3	65.6	61.5	67.0	70.6	0.0	No
R4	67.7	49.9	67.8	72.7	0.0	No
R5	66.5	44.9	66.5	71.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime or nighttime ambient noise levels, whichever is lower (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those significance thresholds, a potentially significant noise impact is identified.*

Source: AES, 2024. See Operation Noise Calculations provided in Appendix G of this Draft EIR.

uses represented by receptor location R1. With the addition of noise generated by use of the Project's outdoor spaces, the resulting noise levels would be below the significance criterion of 5 dBA (L_{eq}) above ambient noise levels (based on the lowest measured ambient noise level) at all off-site receptor locations. **As such, the Project's noise impact from the use of the outdoor spaces would be less than significant.**

<u>Loading Dock</u>

Loading docks for the new residential uses would be located within the Project Site's existing subterranean parking level and would be shared with the existing hotel use. Noise sources associated with the loading docks would include delivery/trash collection trucks. Based on measured noise levels from typical loading dock facilities, delivery/trash collection trucks could generate noise levels of approximately 70 dBA (L_{eq}), at a distance of 50 feet.[50] However, the loading docks would be effectively shielded to the off-site sensitive receptors as they are located within the existing subterranean parking garage. The building would provide a minimum 20-dBA noise reduction from interior to the exterior, resulting in the reduction of loading dock noise to approximately 50 dBA to the exterior, which would be well below the exterior ambient noise levels surrounding the Project Site (64.8 to 67.7 dBA). As such, the estimated ambient noise levels with the addition of noise levels from the loading dock at all off-site receptor locations would be below the significance criteria of 5 dBA (L_{eq}) above ambient daytime noise levels. **Therefore, noise impacts from loading dock operations would be less than significant.**

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

Parking Facilities

As discussed in Section II, Project Description, of this Draft EIR, the Project would provide a total of approximately 1,948 vehicular parking spaces for all existing and proposed uses on the Project Site. These parking spaces would be located within the podium building (Levels 4 through 11) and in the two existing subterranean parking levels. Sources of noise within the parking facilities would primarily include vehicular movements and engine noise, doors opening and closing, and intermittent car alarms. Noise levels within the parking facilities would fluctuate with the amount of automobile and human activity. Table IV.F-18 on page IV.F-45 presents the estimated noise levels at the off-site sensitive receptors resulting from the parking operation. As presented in Table IV.F-18, the estimated noise levels from the parking operations would range from 43.4 dBA (L_{eq}) at the uses represented by receptor location R5 to 54.8 dBA (L_{eq}) at the uses represented by receptor location R2. The estimated ambient noise levels with the addition of the noise levels generated by the Project's parking operation would be below the significance criterion of 5 dBA (L_{eq}) above ambient noise levels at all off-site receptor locations. **Therefore, noise impacts from the parking facilities during Project operation would be less than significant.**

(ii) Off-Site Mobile Noise Sources

Future Plus Project Mobile Noise

Future roadway noise levels were calculated along 12 roadway segments in the vicinity of the Project Site. The roadway noise levels were calculated using the traffic data provided in the Transportation Assessment prepared for the Project, which is included in Appendix I.1 of this Draft EIR. As discussed in the Transportation Assessment, the Project is expected to generate 92 and 117 net trips during the morning and afternoon peak hour, respectively, increasing the 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 the operation of the Project. Table IV.F-19 on page IV.F-46 provides a summary of the roadway noise impact analysis. The noise levels experienced along the 12 analyzed roadway segments are conservative as the calculated CNEL levels are used and do not account for the presence of any physical sound barriers or intervening structures. As shown in Table IV.F-19, the Project would result in a maximum increase of up to 0.2 dBA (CNEL) in traffic noise along the roadway segment of Hope Street (between 8th Street and 9th Street). At other analyzed roadway segments, the increase in traffic-related noise levels would be 0.1 dBA or lower. The increase in traffic noise levels along analyzed roadway segments would be well below the 5-dBA CNEL significance criterion, which is applicable to noise levels that fall within the conditionally acceptable land use category (i.e., between 60 and 70 dBA CNEL) and the 3-dBA CNEL significance criterion for noise levels that fall within the normally unacceptable land use category (i.e., between 70 and 75 dBA

Table IV.F-18
Estimated Noise Levels from Parking Operation

Receptor Location	Existing Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Parking Operation, dBA (L_{eq})	Ambient + Project Noise Levels, dBA (L_{eq})	Significance Threshold[a]	Exceedance Over Significance Threshold	Significant Impact?
R1	66.3	45.8	66.3	71.3	0.0	No
R2	64.8	54.8	65.2	69.8	0.0	No
R3	65.6	49.0	65.7	70.6	0.0	No
R4	67.7	48.0	67.7	72.7	0.0	No
R5	66.5	43.4	66.5	71.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime or nighttime ambient noise levels, whichever is lower (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the City of Los Angeles Noise Regulations. If the estimated noise levels exceed those significance thresholds, a potentially significant noise impact is identified.*

Source: AES, 2024. See Operation Noise Calculations provided in Appendix G of this Draft EIR.

CNEL) for residential uses. **Therefore, traffic noise impacts under Future Plus Project conditions would be less than significant.**

Existing Plus Project Mobile Noise

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 Future 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 existing baseline traffic noise conditions.

As shown in Table IV.F-20 on page IV.F-47, when compared with existing conditions, the Project would result in a maximum increase of up to 0.2 dBA (CNEL) in traffic noise along the roadway segment of Hope Street (between 8th Street and 9th Street). At other analyzed roadway segments, the increase in traffic-related noise levels would be 0.1 dBA or lower. The increase in traffic noise levels along analyzed roadway segments would be well below the 5-dBA CNEL significance criterion, which is applicable to noise levels that fall within the conditionally acceptable land use category (i.e., between 60 and 70 dBA CNEL) and the 3-dBA CNEL significance criterion for noise levels that fall within the normally unacceptable land use category (i.e., between 70 and 75 dBA CNEL) for residential uses. **Therefore, traffic noise impacts under Existing Plus Project conditions would be less than significant.**

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

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] (CNEL (dBA))		Increase in Noise Levels due to Project (CNEL (dBA))	Significant Impact?
		Future Without Project	Future Plus Project		
Flower Street					
Between Wilshire Blvd. and 7th St.	Residential	72.7	72.7	0.0	No
Between 7th St. and 8th St.	Commercial	73.0	73.0	0.0	No
Between 8th St. and 9th St.	Residential, Hotel	72.7	72.8	0.1	No
Hope Street					
Between Wilshire Blvd. and 7th St.	Residential	68.3	68.4	0.1	No
Between 7th St. and 8th St.	Hotel, Religious	68.6	68.7	0.1	No
Between 8th St. and 9th St.	Residential	69.1	69.3	0.2	No
7th Street					
Between Figueroa St. and Flower St.	Commercial	71.4	71.4	0.0	No
Between Flower St. and Hope St.	Residential	72.0	72.1	0.1	No
Between Hope St. and Grand Ave.	Commercial	73.0	73.0	0.0	No
8th Street					
Between Figueroa St. and Flower St.	Residential	73.1	73.2	0.1	No
Between Flower St. and Hope St.	Residential	72.7	72.8	0.1	No
Between Hope St. and Grand Ave.	Residential	72.7	72.8	0.1	No

[a] *See Off-Site Traffic Noise Calculations for Future No Project Conditions and Future Plus Project Conditions provided in Appendix G of this Draft EIR.*

Source: AES, 2024.

Table IV.F-20
Roadway Traffic Noise Impacts—Existing Plus Project

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] (CNEL (dBA))		Increase in Noise Levels due to Project (CNEL (dBA))	Significant Impact?
		Existing	Existing Plus Project		
Flower Street					
Between Wilshire Blvd. and 7th St.	Residential	71.4	71.4	0.0	No
Between 7th St. and 8th St.	Commercial	71.8	71.9	0.1	No
Between 8th St. and 9th St.	Residential, Hotel	71.7	71.7	0.0	No
Hope Street					
Between Wilshire Blvd. and 7th St.	Residential	67.9	67.9	0.0	No
Between 7th St. and 8th St.	Hotel, Religious	68.1	68.2	0.1	No
Between 8th St. and 9th St.	Residential	68.3	68.5	0.2	No
7th Street					
Between Figueroa St. and Flower St.	Commercial	69.8	69.9	0.1	No
Between Flower St. and Hope St.	Residential	70.8	70.8	0.0	No
Between Hope St. and Grand Ave.	Commercial	71.8	71.9	0.1	No
8th Street					
Between Figueroa St. and Flower St.	Residential	71.9	72.0	0.1	No
Between Flower St. and Hope St.	Residential	71.3	71.4	0.1	No
Between Hope St. and Grand Ave.	Residential	71.5	71.6	0.1	No

[a] *See Off-Site Traffic Noise Calculations for Existing Conditions and Existing Plus Project Conditions provided in Appendix G of this Draft EIR.*

Source: AES, 2024.

(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 docks, 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, which was evaluated using the CNEL noise metric, as specified in the *L.A. CEQA Threshold Guide*, was conducted to determine the contributions at the noise-sensitive receptor locations in the vicinity of the Project Site.

Table IV.F-21 on page IV.F-48 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.F-21, the Project would result in an increase in composite noise levels ranging from 0.1 dBA at the uses represented by receptor locations R4 and R5 to 2.2 dBA at the uses represented by receptor location R1. The composite noise level from Project operation at all off-site receptor locations would be below the 3-dBA significance criterion, which is applicable as the Ambient Plus Project Composite noise level falls within the normally unacceptable (70 to 75 CNEL) range for the residential and hotel land use categories. As such, composite noise level impacts due to Project operations would be less than significant.

Based on the above, Project operations would not result in the substantial permanent increase in ambient noise levels in the vicinity of the Project Site in excess of standards established in the City's Noise Element or Noise Ordinance, or applicable standards of other agencies. **Therefore, the Project's operational noise impacts from on- and off-site sources would be less than significant.**

Table IV.F-21
Composite Noise Impacts

Receptor Location	Existing Ambient Noise Levels (CNEL (dBA))	Calculated Project-Related Noise Sources (CNEL (dBA))				Project Composite Noise Levels (CNEL (dBA))	Ambient Plus Project Composite Noise Levels (CNEL (dBA))	Increase in Noise Levels due to Project (CNEL (dBA))	Significance Threshold[a] (CNEL (dBA))	Significant Impact?
		Traffic	Mechanical	Parking	Outdoor Spaces					
R1	71.3	46.2	38.4	52.5	69.3	69.4	73.5	2.2	74.3	No
R2	72.9	44.2	34.4	61.5	58.8	63.4	73.4	0.5	75.9	No
R3	70.9	46.4	31.4	55.7	64.8	65.4	72.0	1.1	73.9	No
R4	73.9	52.0	35.2	54.7	53.2	58.2	74.0	0.1	76.9	No
R5	72.3	55.5	36.3	49.5	48.0	57.1	72.4	0.1	75.3	No

[a] *Significance thresholds are equivalent to the existing ambient noise levels plus 3 dBA if the estimated noise levels (ambient plus Project) fall within the "normally unacceptable" or "clearly unacceptable" land use categories or ambient noise levels 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 and the L.A. CEQA Thresholds Guide. If the estimated noise levels exceed those significance thresholds, a potentially significant noise impact is identified.*

Source: AES, 2024. See Operations Noise Calculations provided in Appendix G of this Draft EIR.

(2) Mitigation Measures

(a) On-Site Construction Noise

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

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

- Along the southern property line of the Project Site between the construction areas and the noise sensitive use on the south side of 8th Street (receptor R1). The temporary sound barrier shall be designed to provide a minimum 13-dBA noise reduction at the ground level of receptor location R2.
- Along the eastern side of the Project's off-site staging area (along Hope Street) between the construction areas and the noise sensitive use on the east side of Hope Street (receptor R2). The temporary sound barrier shall be designed to provide a minimum 13-dBA noise reduction at the ground level of receptor location R2.
- During the off-site utility improvements construction along Hope Street. Provide a temporary moveable noise barrier between the construction equipment and receptor locations R1, R2, and R3, where feasible. The temporary noise barrier shall be designed to provide minimum 3-dBA, 6-dBA, and 2-dBA noise reductions at the ground level of receptor locations R1, R2, and R3, respectively.

(b) Off-Site Construction Noise

As analyzed above, noise impacts associated with off-site construction trucks would be less than significant. Therefore, no mitigation measures are required.

Construction of the Project would have the potential to result in significant temporary noise impacts associated with off-site utility improvements and off-site staging. Therefore, Mitigation Measure NOI-MM-1 is provided to reduce construction-related noise impacts.

(c) Operational Noise

Noise impacts associated with on-site noise sources and off-site traffic during Project operation were determined to be less than significant. Therefore, no mitigation measures are required.

(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, as presented in Table IV.F-22 and Table IV.F-23 on pages IV.F-52 and IV.F-53, respectively, implementation of Mitigation Measure NOI-MM-1 (installation of temporary sound barriers during the tower construction) would reduce the noise generated by on-site construction activities at the off-site sensitive uses by a minimum of 11 dBA at the residential uses across the Project Site to the south (receptor location R1) and 12 dBA at the religious use across the Project Site to the east (receptor location R2). As presented in Table IV.F-23, the estimated construction-related noise levels at off-site sensitive receptor locations R1 and R2 would be reduced to below a level of significance with implementation of Mitigation Measure NOI-MM-1 at the ground level. However, the temporary sound barriers of Mitigation Measure NOI-MM-1 would not be effective in reducing the construction-related noise levels from construction of the tower for the upper levels of the multi-story residential buildings located along the south side of 8th Street, represented by receptor location R1. In addition, the temporary sound barriers would not be effective in reducing the construction noise from construction of the tower at the upper levels of the proposed mixed-use development at 754 Hope Street that is represented by receptor location R2. In order to be effective at the upper levels of these multi-story residential buildings, the temporary noise barrier would need to be as high as the building, which would not be feasible (i.e., cost prohibitive and impractical). There are no other feasible mitigation measures to further reduce the construction noise from construction of the tower at the upper levels of receptor locations R1 and R2 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

Noise impacts from off-site construction trucks would be less than significant. Therefore, no mitigation measures are required or included, and the impacts would remain less than significant.

Table IV.F-22
Construction Noise Impacts—With Mitigation Measures

Off-Site Receptor Location	Minimum Noise Reduction Provided by Mitigation Measures[b] (feet)	Estimated Construction Noise Levels by Construction Stage (L_{eq} (dBA))									Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Threshold (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact With Mitigation?
		Utility Relocation	Demolition (Existing)	Structural (Existing)	Interior (Existing)	Demolition (New Tower)	Grading (New Tower)	Mat Foundation (New Tower)	Building Skin	Closeout				
R1	11	50.1	69.1	49.4	49.1	68.8	49.8	47.9	48.0	50.0	67.7	72.7	—[c]	**Yes**[c]
R2	12	66.3	70.8	66.7	66.0	70.4	66.9	65.3	50.5	53.0	69.6	74.6	—[c]	**Yes**[c]
R3	0	51.4	59.3	53.2	53.7	64.0	54.0	51.7	51.6	52.8	68.1	73.1	0.0	No
R4	0	50.7	58.5	52.5	53.0	63.5	53.4	51.0	50.9	52.1	72.8	77.8	0.0	No
R5	0	52.2	59.7	53.9	54.2	64.7	54.7	52.4	52.3	53.6	70.5	75.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime ambient noise levels (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide, for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance thresholds, a construction-related noise impact is identified.*

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

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

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

Table IV.F-23
Construction Noise Impacts—Overlapping Construction with Mitigation Measures

Off-Site Receptor Location	Minimum Noise Reduction Provided by Mitigation Measures[b] (feet)	Estimated Construction Noise Levels by Construction Stage (L_{eq} (dBA))								Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Threshold (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact With Mitigation?
		Utility Relocation & Demolition (Existing)	Demolition (Existing & New Tower)	Structural (Existing) & Demo (New Tower)	Structural (Existing) & Grading (New Tower)	Structural (Existing), Interior & Mat Foundation	Structural (Existing) & Interior	Structural (Existing), Interior, and Building Skin	Interior and Building Skin				
R1	11	69.2	72.0	68.8	52.6	53.6	52.3	53.6	51.6	67.7	72.7	—[c]	**Yes**[c]
R2	12	72.1	73.6	71.9	69.8	70.8	69.4	69.4	66.1	69.6	74.6	—[c]	**Yes**[c]
R3	0	60.0	65.3	64.3	56.6	57.7	56.5	57.7	55.8	68.1	73.1	0.0	No
R4	0	59.2	64.7	63.8	56.0	57.0	55.8	57.0	55.1	72.8	77.8	0.0	No
R5	0	60.4	65.9	65.0	57.3	58.3	57.1	58.3	56.4	70.5	75.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime ambient noise levels (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide, for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance thresholds, a construction-related noise impact is identified.*

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

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

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

Noise impacts from off-site utility improvements construction along Hope Street would be potentially significant. Temporary noise barrier, as specified in Mitigation Measure NOI-MM-1, would provide minimum 3-dBA, 6-dBA, and 2-dBA noise reductions at receptor locations R1, R2 and R3, respectively. As provided in Table IV.F-24 on page IV.F-55, the estimated construction noise levels would be reduced to less than significant at receptor location R3. However, noise impacts would remain significant at receptor locations R1 and R2 (proposed mixed-use development at 754 Hope Street), as the temporary sound barrier would not be effective in reducing the construction noise at the upper levels at these two receptor locations, and there are no feasible mitigation measures to reduce construction noise at the upper levels. **Therefore, construction noise impacts associated with the off-site utility improvements and off-site staging construction would remain significant and unavoidable. However, significant noise impact at receptor location R1 would be limited to few days during the off-site utility improvements construction. Significant noise impacts at receptor location R2 would only occur if the proposed mixed-use development at 754 Hope Street is built and occupied during the tower construction.**

(c) Operational Noise

Noise impacts associated with on-site noise sources and off-site traffic during operation of the Project were determined to be less than significant without mitigation. Therefore, no mitigation measures are required or included, and the impacts would remain less than significant.

Threshold (b): Would the Project result in the generation of excessive groundborne vibration or groundborne 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 effects of vibration can range from no perceptible effects at the lowest vibration levels to low rumbling sounds and perceptible vibration at moderate levels. However, groundborne vibrations from construction activities rarely reach levels that damage structures.

Table IV.F-24
Off-Site Utility Improvements Construction Noise Levels—With Mitigation Measures

Off-Site Receptor Location	Minimum Noise Reduction Provided by Mitigation Measures[b] (feet)	Estimated Construction Noise Levels (L_{eq} (dBA))			Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Signifi-cance Threshold (L_{eq} (dBA))[a]	Maximum Noise Exceed-ance Above the Criteria (L_{eq} (dBA))	Significant Impact With Mitigation?
		Off-Site Utilities (A)	Off-Site Staging (B)	Composite (A+B)				
R1	3	70.6	67.3	72.3	67.7	72.7	—[c]	**Yes**[c]
R2	6	71.1	71.8	74.5	69.6	74.6	—[c]	**Yes**[c]
R3	2	71.6	57.5	71.8	68.1	73.1	0.0	No
R4	0	53.3	55.0	57.2	72.8	77.8	0.0	No
R5	0	40.8	42.2	44.6	70.5	75.5	0.0	No

[a] *Significance thresholds are equivalent to the measured daytime ambient noise levels (see Table IV.F-6 on page IV.F-23) plus 5 dBA, per the L.A. CEQA Thresholds Guide, for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance thresholds, a construction-related noise impact is identified.*

[b] *Noise reduction provided by temporary noise barrier along the off-site utility construction area.*

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

Source: AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

(i) Building Damage Impacts from On-Site Construction

With regard to potential building damage, the Project would generate groundborne 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.F-25 on page IV.F-56 provides the estimated ground vibration velocity levels (in terms of inch per second PPV) at the nearest off-site structures, including historic 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-2 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.

Vibration impacts associated with potential building damage were evaluated for the nearest off-site buildings to the north, south, east, and west. In addition, the vibration impacts were also evaluated for 8 of the 20 off-site historical resources (as identified in Section IV.B, Cultural Resources, of this Draft EIR) closest to the Project Site, including the General Petroleum Corporation Parking Garage (located at 757 South Flower Street), Sawyer Building (located at 801 South Flower Street), Milner Hotel (located at 813 South

Table IV.F-25
Construction Vibration Impacts—Building Damage

Nearest Off-Site Buildings[a]	Approximate Distance Between the Off-Site Buildings and the Construction Equipment (feet)	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)	Significant Impact?
		Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	25	0.089	0.089	0.076	0.035	0.003	—	—
Multi-Story residential building to the north	350	0.002	0.002	0.002	0.001	<0.001	0.5[c]	No
Multi-Story residential Building to the south	75	0.017	0.017	0.015	0.007	0.001	0.5[c]	No
Multi-Story parking structure to the east	80	0.016	0.016	0.013	0.006	0.001	0.5[c]	No
Multi-Story parking structure to the west	80	0.016	0.016	0.013	0.006	0.001	0.5[c]	No
General Petroleum Corp. Parking Garage to the West (historic structure)	80	0.016	0.016	0.013	0.006	0.001	0.12[d]	No
Sawyer Building to the Southwest (historic structure)	125	0.008	0.008	0.007	0.003	<0.001	0.12[d]	No
Milner hotel to the Southwest (historic structure)	190	0.004	0.004	0.004	0.002	<0.001	0.12[d]	No
SoCal Gas Company Complex (historic structure)	75	0.017	0.017	0.015	0.007	0.001	0.12[d]	No
Air Raid Siren (historic structure)	120	0.009	0.009	0.007	0.003	<0.001	0.12[d]	No
Auto Center Garage (historic structure)	80	0.016	0.016	0.013	0.006	0.001	0.12[d]	No
Third Church of Christ Scientist Reading Room (historic structure)	100	0.011	0.011	0.010	0.004	<0.001	0.12[d]	No

Table IV.F-25 (Continued)
Construction Vibration Impacts—Building Damage

Nearest Off-Site Buildings[a]	Approximate Distance Between the Off-Site Buildings and the Construction Equipment (feet)	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)	Significant Impact?
		Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
J.W. Robinson's Department Store Building (historic structure)	120	0.009	0.009	0.007	0.003	<0.001	0.12[d]	No
7th Street Commercial Historic District (historic district)	120	0.009	0.009	0.007	0.003	<0.001	0.12[d]	No

[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 a 25-foot distance.*
[c] *FTA criterion for reinforced-concrete, steel or timber buildings.*
[d] *FTA criterion for buildings extremely susceptible to vibration damage.*
Source: FTA, 2018; AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

Flower Street), Southern California Gas Company Complex (located at 800–26 South Flower Street), the Air Raid Siren (located at the southeast corner of 8th Street and Hope Street), Auto Center Garage (located at 746 South Hope Street), Third Church of Christ Scientist Reading Room (located at 730 South Hope Street), and J.W. Robinsons Department Store Building (located 600–32 West 7th Street). The assessment of construction vibration provided below 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 criterion for buildings extremely susceptible to vibration damage (applicable to the off-site historical resources) and the 0.5-PPV significance criterion for engineered concrete and masonry buildings (applicable to the off-site multi-story parking structure and multi-story residential buildings to the north, south, east, and west of the Project Site).

As indicated in Table IV.F-25 on page IV.F-56, the estimated vibration levels from the construction equipment would be well below the 0.12-PPV building damage significance criterion at the eight off-site historical resources and the 0.5-PPV building damage significance criterion for the multi-story parking structure and residential building to the north, south, east, and west of the Project Site. **Therefore, on-site vibration impacts with respect to building damage during construction of the Project would be less than significant.**

(ii) Human Annoyance Impacts from On-Site Construction

Table IV.F-26 on page IV.F-59 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 significance criterion for human annoyance. Per FTA guidance, the significance criterion for human annoyance is 72 VdB for residential uses, assuming there is a minimum of 70 vibration events occurring during a typical construction day. As indicated in Table IV.F-26, the estimated groundborne vibration levels from construction equipment would be below the significance criterion for human annoyance at all off-site sensitive receptor locations. **Therefore, on-site vibration impacts with respect to human annoyance during construction of the Project would be less than 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 SR-110 via 6th Street, Hope Street, and 8th Street. Heavy-duty construction trucks would generate groundborne 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 groundborne vibration along the anticipated local haul routes was conducted.

Table IV.F-26
Construction Vibration Impacts—Human Annoyance

Off-Site Receptor Location	Approximate Distance Between the Off-Site Buildings and the Construction Equipment (feet)	Estimated Vibration Velocity Levels at the Off-Site Sensitive Uses Due to On-Site Construction Equipment Operation[a] (VdB)					Significance Criteria (VdB)	Significant Impact?
		Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	25	87	87	86	79	58	—	—
R1	200	59.9	59.9	58.9	51.9	30.9	72	No
R2	80	71.8	71.8	70.8	63.8	42.8	72	No
R3	350	52.6	52.6	51.6	44.6	23.6	72	No
R4	380	51.5	51.5	50.5	43.5	22.5	72	No
R5	320	53.8	53.8	52.8	45.8	24.8	72	No

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

Source: FTA, 2018; AES, 2024. See Construction Noise & Vibration Calculations provided in Appendix G of this Draft EIR.

Regarding building damage, based on FTA data, the vibration generated by a typical heavy-duty truck would be approximately 63 VdB (0.00566 PPV) at a distance of 50 feet from the truck.[51] According to 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 groundborne vibration levels of approximately 0.022 PPV, as provided in the noise calculation worksheets included in Appendix G 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 criterion of 0.12 PPV for buildings extremely susceptible to vibration. **Therefore, vibration impacts with respect to 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 significance criterion for human annoyance is 72 VdB for residential 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. [52] The estimated vibration levels generated by construction trucks traveling along the anticipated haul route were assumed to be within 22 feet of the sensitive uses (i.e., residential uses) along 6th Street, Hope Street, and 8th Street. As indicated in the noise calculation worksheets included in Appendix G of this Draft EIR, the temporary vibration levels could reach approximately 73.7 VdB periodically as trucks pass by sensitive receptors along the anticipated haul route(s) at a distance of 22 feet. **Thus, 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 potentially 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 significance criteria of 0.12 PPV for the off-site historical resources and 0.5 PPV for the off-site multi-story residential buildings to the Project to the north and south and the multi-level parking structures to the east and west. In addition, the estimated vibration levels from on-site construction equipment would be below the human annoyance significance criterion of 72 VdB at receptor locations R1 through R5. **Therefore, vibration impacts from on-site construction activities (pursuant to the significance criteria for building damage and human annoyance) would be less than significant.**

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

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

Vibration impacts associated with temporary and intermittent vibration from off-site construction activities (i.e., construction trucks traveling along the anticipated truck routes) would be less than significant with respect to building damage; however, vibration impacts from off-site construction activities would be significant with respect to the significance criterion for human annoyance along the along anticipated truck routes, including 6th Street, Hope Street, and 8th Street.

(b) Operational Vibration Impacts

As described above, sources of vibration related to operation of the Project would include vehicle circulation, delivery trucks, and building mechanical equipment and that it is unusual for vibration from sources, such as rubber-tired buses and trucks, to be perceptible even in locations close to major roads. As such, vehicular-induced vibration, including vehicle circulation within the subterranean, surface, and above-grade parking facilities, 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, including chillers, boilers, fans, and pumps located at Level B (lowest basement level), cooling towers at Level 9, and cooling towers and fans at Level 53 (mechanical room roof), that would include vibration-attenuation mounts to reduce vibration transmission to ensure that vibration would not be perceptible at the off-site sensitive receptors. **As such, operation of the Project would not result in the generation of excessive groundborne vibration levels that would be perceptible in the vicinity of the Project Site. Therefore, vibration impacts associated with operation of the Project would be less than significant.**

(2) Mitigation Measures

(a) *Construction Vibration*

As discussed above, vibration impacts (pursuant to the significance criteria for building damage) associated with on-site and off-site construction activities would be less than significant. Therefore, no mitigation measures are required.

Vibration impacts (pursuant to the significance criterion for human annoyance) from on-site construction activities would be less than significant. However, off-site construction activities (i.e., construction trucks) would be potentially significant pursuant to the significance criterion for human annoyance. Mitigation measures considered to reduce vibration impacts from off-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, are cost prohibitive for temporary applications, such as construction, and are therefore considered infeasible.[53] Additionally, constructing a wave barrier to reduce the Project's off-site construction-related vibration impacts would, in and of itself, generate groundborne vibration from the excavation equipment. Furthermore, it would not be feasible to install a wave barrier along the public roadways for the off-site construction vibration impacts, as an open trench would block access to and from the sensitive receptor locations. In addition, the applicant does not have a right to construct a wave barrier on properties they do not own; consequently, the wave barrier would need to be installed on the public sidewalk, which the City would not permit due to disruption of streets and sidewalks. As such, there are no feasible mitigation measures to reduce the potential vibration human annoyance impacts.

(b) Operational Vibration

As discussed above, vibration impacts during operation of the Project would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

(a) Construction Vibration

Vibration impacts with respect to building damage from on-site and off-site construction activities were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant. However, vibration impacts from off-site construction with respect to human annoyance would remain significant and unavoidable as there is no feasible mitigation available.

(b) Operational Vibration

Vibration impacts associated with Project operation were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

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?

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

As summarized in Section VI, Other CEQA Considerations, of this Draft EIR, and evaluated in the Initial Study, included as Appendix A of this Draft EIR, the Project Site is not located within the vicinity of a private airstrip. The closest private airstrip or airport is the Los Angeles International Airport, which is approximately 10 miles southwest of the Project Site. In addition, the Project Site is not located within 2 miles of an airport or within an area subject to an airport land use plan. **Since the Project would not be located within the vicinity of a private airstrip, an airport land use plan, or within 2 miles of a public airport or public use airport, noise impacts with respect to Threshold (c) would not occur. 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, 44 related projects have been identified in the vicinity of the Project Site. Noise from the construction of related 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 six related projects are within 1,000 feet of the Project Site:

- Related Project No. 1 (8th and Fig) is a mixed-use development located at 744 South Figueroa Street, approximately 260 feet west of the Project Site. However, construction for this related project is complete. Therefore, Related Project No. 1 would not contribute to cumulative construction-related noise impacts.

- Related Project No. 2 is a mixed-use development located at 945 West 8th Street, approximately 875 feet northwest of the Project Site. However, construction for this related project is complete. Therefore, Related Project No. 2 would not contribute to cumulative construction-related noise impacts.

- Related Project No. 3 (8th/Grand/Hope Project) is a mixed-used development located at 754 South Hope Street, approximately 85 feet southeast of the Project Site. There are noise sensitive receptors located between Related Project No. 3 and the Project Site, as represented by receptor R1. As analyzed above in Subsection 3.d.(1).(a).(i) (see Table IV.F-11 on page IV.F-35), the estimated Project-related construction noise levels at the uses represented by receptor location R1 would exceed the significance criteria by up to 10.3 dBA during the demolition phase. Since Related Project No. 3 has a direct line-of-sight to receptor location R1, there is a potential for cumulative construction noise impacts to occur in the event Project construction occurs concurrently with construction of Related Project No. 3.

- Related Project No. 4 (Embassy Tower) is a mixed-used development located at 848 South Grand Avenue, approximately 775 feet south of the Project Site. There are noise sensitive receptors located along Grand Avenue (between 8th Street and 9th Street) between Related Project No. 4 and the Project Site. However, there are several buildings located between Related Project No. 4 and the Project Site, which would provide shielding of construction-related noise 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. 4.

- Related Project No. 6 is a mixed-used development located at 845 South Olive Street and 842 Grand Avenue, approximately 820 feet south of the Project Site. There are noise sensitive receptors located along Grand Avenue (between 8th Street and 9th Street) between Related Project No. 6 and the Project Site. However, there are several buildings located between Related Project No. 6 and the Project Site, which would provide shielding of construction-related noise 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. 6.

- Related Project No. 8 is a mixed-used development located at 949 South Hope Street, approximately 850 feet southwest of the Project Site. There are noise sensitive receptors located along Hope Street (between 8th Street and 9th Street) between Related Project No. 6 and the Project Site. However, there are several buildings located between Related Project No. 8 and the Project Site, which would provide shielding of construction-related noise 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. 8.

Construction-related noise levels from the related projects would be intermittent and temporary, and it is anticipated that, as with the Project, the related projects would comply with the construction hours and other relevant provisions set forth in the LAMC. Noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through proposed mitigation measures for each individual related project and compliance with locally adopted and enforced noise ordinances. Based on the above, there would be potential cumulative noise impacts at the nearby sensitive uses (e.g., residential uses) located in proximity to the Project Site and Related Project No. 3, in the event of concurrent construction activities. Because the Project would have a significant and unavoidable impact related to on-site construction noise, the Project's contribution to construction noise impacts would be cumulatively considerable. **As such, the Project's cumulative noise impacts from on-site construction would be significant.**

(ii) Off-Site Construction Noise

Off-site construction haul trucks would have the potential to result in cumulative impacts if the trucks for the related projects and the Project were to utilize the same haul routes. As discussed above, Related Projects Nos. 1 and 2 have been completed and/or under construction, which would not contribute to the off-site construction noise.

As analyzed above in Subsection 3.d.(1).(a).(ii) (see Table IV.F-11 on page IV.F-35), the estimated off-site construction noise levels for the Project would be below the significance thresholds along the anticipated truck routes, including 6th Street, Hope Street, and 8th Street. Any additional number of trucks from the Project and related projects would incrementally increase the noise levels, which would contribute to cumulative impacts. Based on the existing ambient noise levels along the anticipated truck routes, it is estimated that cumulative off-site construction noise impacts could occur (i.e., increase the ambient by 5 dBA or more) if the total truck trips per hour along 8th Street, Hope Street, and 8th Street would exceed 54, 76, and 49 truck trips per hour, respectively. Therefore, if the total number of trucks from the Project and related projects were to add up to 55 truck trips per hour along 6th Street, 77 truck trips along Hope Street, and 50 truck trips along 8th Street, the estimated noise level the truck trips plus the ambient would be would increase the ambient noise levels by 5 dBA and exceed the significance criteria.[54] Based on review of the related projects locations map, there are related projects in the vicinity of the Project Site, including Related Project No. 3 (8th/Grand/Hope Project), Related Project No. 4 (848 South Grand Avenue), Related Project No. 6 (845 South Olive Street), and Related Project No. 8 (949 South Hope Street), which could utilize the same truck routes as the Project. Specifically, Related Project No. 3 would utilize 8th Street (same truck route as the Project) and would generate up to 19 truck trips per hour during the peak

[54] *It is estimated that the noise level along 6th Street (with 55 truck trips per hour), Hope Street (with 77 truck trips per hour), and 9th Street (with 50 truck trips) would be 71.3, 72.8 and 70.9 dBA, respectively. When added to the existing noise levels, the cumulative noise levels would equal to 73.1 (along 6th Street), 74.6 (along Hope Street), and 72.7 dBA (along 9th Street), which would exceed the ambient noise levels of 68.1 69.6, and 67.7 dBA by 5.0 dBA, respectively.*

construction period, which together with the Project (40 truck trips) would exceed the 50 truck trips threshold for 8th Street.[55] Based on the relative locations of Related Project No. 4, Related Project No. 6, and Related Project No. 8, the trucks associated with these related projects could utilize 8th Street. However, they would likely not utilize 6th Street and Hope Street (which are haul route segments for the Project). Therefore, cumulative noise due to construction truck traffic from the Project and other related projects has the potential to increase the ambient noise levels along the truck route by 5 dBA along 8th Street (between Hope Street and SR-110).

In addition, to the off-site trucks the off-site construction associated with the utilities/staging would contribute to the cumulative construction noise impacts in the event of concurrent construction with the Related Project No. 3, as described above. **As such, cumulative noise impacts from off-site construction would be significant.**

(iii) Summary of Cumulative Construction Noise Impacts

As discussed above, on-site and off-site construction activities from the Project and related projects have the potential to result in the temporary generation of noise levels in excess of standards established by the City. **Therefore, cumulative noise impacts from on-site and off-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 would 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 the provisions set forth in the LAMC that limit stationary source noise from equipment, such as rooftop mechanical equipment, noise levels from stationary sources

[55] *City of Los Angeles, 8th/Grand/Hope Project Draft EIR, November 2021.*

would be less than significant at the property line for each related project. In addition, as discussed above, noise impacts associated with operations within the Project Site would be less than significant. **Therefore, based on the distance of the related projects from the Project Site, mandatory compliance with the LAMC, 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 "Existing" conditions to "Cumulative Future Plus Project" conditions to the applicable significance criteria. Cumulative Future Plus Project conditions include traffic volumes from future ambient growth, related projects, and the Project. The calculated traffic noise levels under "Existing" and "Cumulative Future Plus Project" conditions are presented in Table IV.F-27 on page IV.F-68. As shown therein, cumulative traffic volumes would result in increases in noise levels ranging from 0.5 dBA (CNEL) along the roadway segments of Hope Street (between Wilshire Boulevard and 7th Street) to 1.6 dBA (CNEL) along the roadway segment of 7th Street (between Figueroa Street and Flower Street). The estimated cumulative roadway traffic noise level increases along the analyzed roadway segments would be below the 5-dBA significance criterion (applicable when noise levels fall within the conditionally acceptable land use category, i.e., between 60 and 70 dBA CNEL) and the 3-dBA significance criterion (applicable when noise levels fall within the normally unacceptable land use category, i.e., between 70 dBA and 75 dBA CNEL). **Therefore, cumulative noise impacts due to off-site mobile noise sources associated with the Project, future growth, and related projects would be less than significant.**

(iii) Summary of Cumulative Operational Noise Impacts

As discussed above, the Project and related projects would not result in the exposure of persons to, or the generation of noise levels in excess of, the significance criteria established by the City. In addition, the Project and related projects would not result in a substantial permanent increase in ambient noise levels in the vicinity of the Project Site above the levels existing without the Project and the related projects. **Therefore, cumulative operational noise impacts from on-site and off-site sources would be less than significant.**

Table IV.F-27
Cumulative Roadway Traffic Noise Impacts

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] (CNEL (dBA))		Increase in Noise Levels due to Project (CNEL (dBA))	Significant Impact?
		Existing Conditions	Future Cumulative Plus Project		
Flower Street					
Between Wilshire Blvd. and 7th St.	Commercial	71.4	72.7	1.3	No
Between 7th St. and 8th St.	Commercial	71.8	73.0	1.2	No
Between 8th St. and Olympic Blvd.	Residential, Hotel	71.7	72.8	1.1	No
Hope Street					
Between Wilshire Blvd. and 7th St.	Commercial	67.9	68.4	0.5	No
Between 7th St. and 8th St.	Hotel, Religious	68.1	68.7	0.6	No
Between 8th St. and 9th St.	Residential	68.3	69.3	1.0	No
7th Street					
Between Figueroa St. and Flower St.	Commercial	69.8	71.4	1.6	No
Between Flower St. and Hope St.	Residential	70.8	72.1	1.3	No
Between Hope St. and Grand Ave.	Commercial	71.8	73.0	1.2	No
8th Street					
Between Figueroa St. and Flower St.	Residential	71.9	73.2	1.3	No
Between Flower St. and Hope St.	Residential	71.3	72.8	1.5	No
Between Hope St. and Grand Ave.	Residential	71.5	72.8	1.3	No

[a] *See Off-Site Traffic Noise Calculations for Existing Conditions and Future Plus Project Conditions provided in Appendix G of this Draft EIR.*
Source: AES, 2024.

(c) Construction Vibration

(i) On-Site Construction Vibration

As previously discussed, groundborne 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 and 80 feet as related to human annoyance at residential uses). As indicated above, the closest related project, Related Project No. 3, is approximately 85 feet southeast of the Project Site and is located approximately 110 feet from the nearest sensitive receptor location R1. Other related projects are located more than 820 feet from the Project Site. Therefore, based on distance attenuation, potential cumulative vibration impacts with respect to the building damage and human annoyance from the Project and the related projects would be less than significant. **Therefore, the Project would not contribute to a cumulative construction vibration impact with respect to both building damage and human annoyance associated with on-site construction, and the cumulative impact 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. [56] In addition, according to 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 truck routes for the Project (i.e., 6th Street, Hope Street, and 8th Street). These buildings are anticipated to be exposed to groundborne vibration levels of approximately 0.022 PPV. Trucks from the related projects are expected to generate similar groundborne vibration levels. Therefore, the vibration levels generated from off-site construction trucks associated with the Project and other related projects along the anticipated truck route(s) would be below the most stringent building damage significance criterion 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 truck route(s) would be potentially significant with respect to human annoyance. As the Related Project No. 3 could use similar trucks and the same haul route(s) as the Project, it is anticipated that construction trucks would generate similar vibration levels along

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[56] *FTA, Transit Noise and Vibration Impact Assessment, September 2018, Figure 5-w4.*

8th Street. As analyzed above, there are residential uses along 8th Street, where temporary vibration levels could reach 73.7 VdB as the trucks pass by within 22 feet of the sensitive receptors. **Therefore, to the extent that the Related Project No. 3 uses the same haul route as the Project, potential cumulative vibration impacts with respect to human annoyance associated with temporary and intermittent vibration from haul trucks used by the Project and Related Project No. 3 would be potentially significant.**

(iii) Summary of Cumulative Construction Vibration Impacts

As discussed above, due to the rapid attenuation characteristics of groundborne 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 and associated with groundborne 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 associated with the Project and related projects would not generate excessive groundborne vibration levels with respect to building damage, and impacts would be less than significant**.

Cumulative construction vibration impacts from on-site construction activities with respect to human annoyance would be less than significant in the event that concurrent construction of the Project and the related projects were to occur. However, to the extent that other related projects use the same haul route as the Project, potential cumulative human annoyance impacts associated with temporary and intermittent vibration from haul trucks traveling along the designated haul route would be potentially significant.

(d) Operational Vibration

Vibration levels from project operation are generally limited to building mechanical equipment and vehicle circulation and would be limited to the immediate vicinity of the project sites. The related projects (mixed-use and commercial developments) would generate similar vibration levels as the Project. As described above, the nearest related project is located approximately 85 feet from the Project Site and is located approximately 110 feet from the nearest sensitive receptor location R1. Since groundborne vibration decreases rapidly with distance, operation of the related projects would not contribute to cumulative vibration impacts due to the distance between the Project and the related projects. As analyzed above, the Project operation would not result in the generation of excessive groundborne vibration levels that would be perceptible in the vicinity of the Project Site. **Therefore, based on the distance of the related projects from the Project Site and sensitive receptors and the operational vibration levels associated with the Project, cumulative vibration impacts associated with operation of the Project and related projects would be less than significant**.

(2) Mitigation Measures

(a) Construction Noise

As analyzed above, there would be potential cumulative noise impacts at the nearby sensitive uses (e.g., residential uses) located in proximity to the Project Site and Related Project No. 3, in the event of concurrent construction activities. Similar to the Project, 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, beyond these temporary noise barriers, there are no other physical mitigation measures that may be feasible.

As analyzed above, cumulative noise impacts associated with off-site construction trucks from the Project and other related projects could occur along 8th Street. Conventional mitigation measures, such as providing temporary noise barrier walls to reduce the off-site construction truck traffic noise impacts, would not be feasible as the barriers would obstruct the access and visibility to the properties along the anticipated truck routes. There are no other feasible mitigation measures to reduce the temporary significant noise impacts associated with the cumulative off-site construction trucks.

(b) Operational Noise

As discussed above, operation of the Project and related projects would result in a less-than-significant noise impact during operation. Therefore, no mitigation measures are required.

(c) Construction Vibration

Cumulative vibration impacts with respect to building damage associated with on-site and off-site construction activities would be less than significant. Therefore, no mitigation measures are required. However, vibration levels from construction trucks would exceed the significance criterion for human annoyance at vibration sensitive receptors along the anticipated haul routes. There are no feasible mitigation measures to reduce the potential vibration human annoyance impacts.

(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

The Project's proposed mitigation measures would reduce the Project's contribution to on-site cumulative noise to the extent feasible. 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. Because the Project would have a significant and unavoidable impact related to construction noise and contribute to the number of truck trips that would generate noise level increases exceeding the 5-dBA significance criterion, the Project's contribution to construction noise impacts would be cumulatively considerable. **Therefore, cumulative construction noise impacts associated with on-site noise sources and off-site construction traffic would remain significant and unavoidable.**

(b) Operational Noise

Cumulative impacts related to operational noise were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

(c) Construction Vibration

Cumulative vibration impacts associated with respect to building damage from on-site and off-site construction activities were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant. **Even though impacts would be temporary, intermittent, and limited to daytime hours when haul trucks are traveling within 22 feet of a sensitive receptor, cumulative vibration impacts from off-site construction with respect to human annoyance would remain significant and unavoidable.**

(d) Operational Vibration

Cumulative impacts related to operational vibration were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.