

IV. Environmental Impact Analysis

I. Noise

1. Introduction

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

2. Environmental Setting

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

a) Noise and Vibration 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.¹ In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver.

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

¹ California Department of Transportation (Caltrans), Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, September 2013.

amplitude measurement and reflects the way people perceive changes in sound amplitude.² The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 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.³

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

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

(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.⁶ However, generally, background noise levels change gradually throughout the day, corresponding with the addition and subtraction of distant noise sources, such as changes in traffic volume.

² All sound levels measured in decibel (dB), as identified in the noise calculation worksheets included in Appendix I of this Draft EIR and in this section of the Draft EIR, are relative to 2×10^{-5} N/m².

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

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

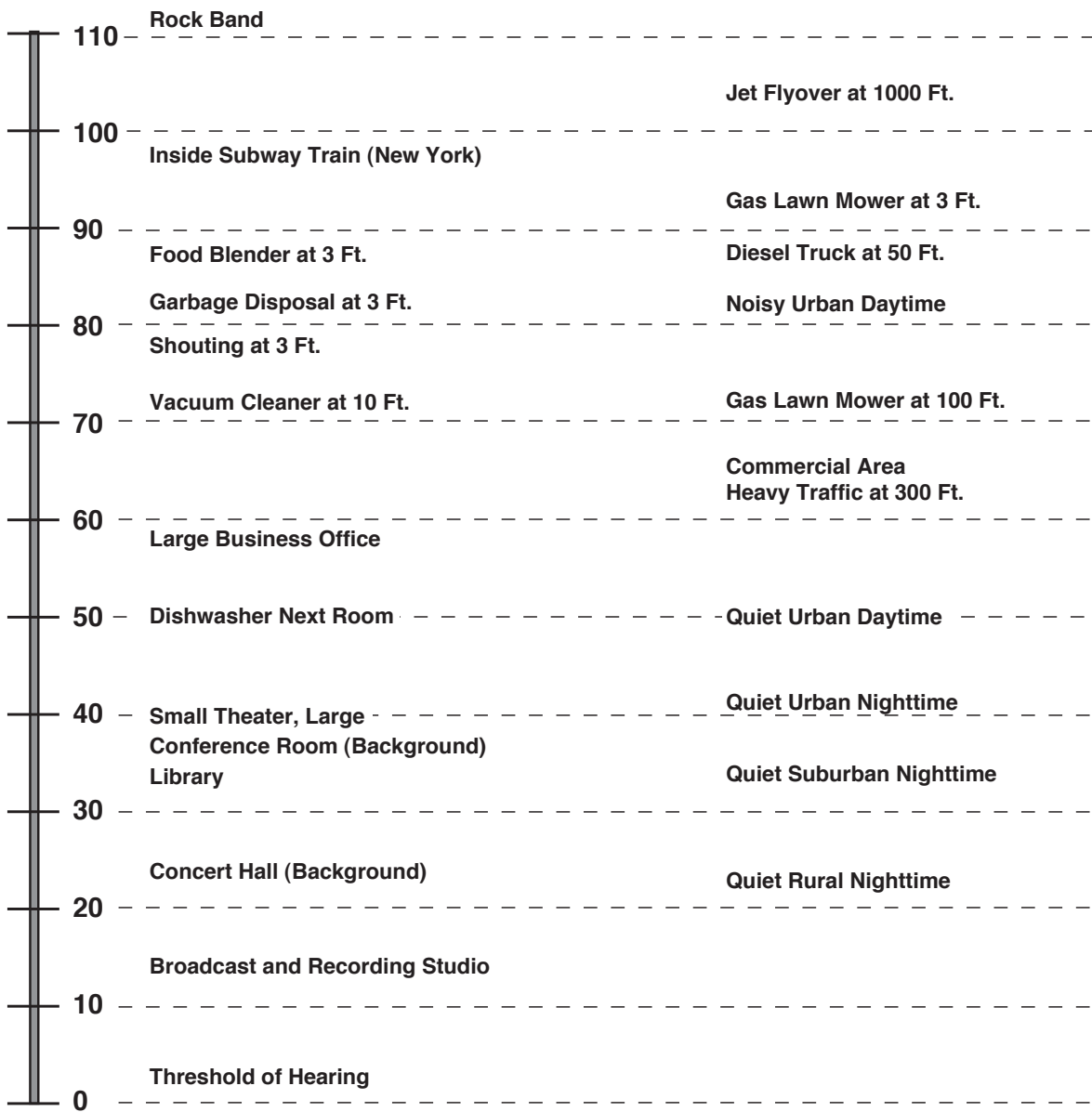
⁵ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.3, September 2013.

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

**NOISE
LEVEL
(dBA, Leq)**

**COMMON INDOOR
NOISE LEVELS**

**COMMON OUTDOOR
NOISE LEVELS**



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SOURCE: State of California, Department of Transportation (Caltrans),
Technical Noise Supplement (TeNS). October 1998. Available:
[http://www.dot.ca.gov/hq/env/noise/pub/Technical Noise Supplement.pdf](http://www.dot.ca.gov/hq/env/noise/pub/Technical%20Noise%20Supplement.pdf)

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Figure IV.I-1
Decibel Scale and Common Noise Sources

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.⁷

- L_{eq}:** The equivalent sound level over a specified period of time, typically, 1 hour (L_{eq}). The L_{eq} may also be referred to as the 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, L₅₀ and L₉₀ 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. to 7:00 A.M. the next day to account for nighttime noise sensitivity. The L_{dn} is also termed the day-night average noise level (DNL).
- CNEL:** The Community Noise Equivalent Level (CNEL) is the time average A-weighted noise level during a 24-hour day that includes an addition of 5 dBA to measured noise levels between the hours of 7:00 P.M. to 10:00 P.M. and an addition of 10 dBA to noise levels between the hours of 10:00 P.M. to 7:00 A.M. the next day to account for noise sensitivity in the evening and nighttime, respectively.

(3) Effects of Noise on People

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

- Subjective effects (e.g., dissatisfaction, annoyance);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., 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

⁷ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.2, September 2013.

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.⁸

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 the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:⁹

- 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

⁸ World Health Organization Team, edited by Berglund, Birgitta; Lindvall, Thomas; Schwela, Dietrich H, Guidelines for Community Noise, 1999.

⁹ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, 2013.

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.¹⁰

(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.”¹¹ 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 According to Caltrans, 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, provides 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

¹⁰ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1.1, September 2013.

¹¹ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.4.1 and 2.1.4.2, September 2013.

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

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

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

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

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 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

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

¹⁷ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Sections 2.1.4.2 and 5.1.1, September 2013.

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

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

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

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 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

²¹ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 7, 2018.

²² Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 5.2, 2018.

²³ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 5.1, 2018.

²⁴ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 5.1, 2018.

²⁵ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 5.1, 2018.

²⁶ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Sections 6.1, 6.2, and 6.3, 2018.

²⁷ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 5.4, 2018.

noise (i.e., the vibration spectrum peak is less than 30 Hz) results in a groundborne noise level that is approximately 50 decibels lower than the velocity level. For groundborne vibration that causes mid-frequency noise (i.e., the vibration spectrum peak is between 30 and 60 Hz), the groundborne noise level will be approximately 35 to 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 regarding Noise at the federal, State, regional, and local levels that apply to the Project. 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 industrial centers, etc. As such, for purposes of determining acceptable

²⁸ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-3 and Table 6-14, , September 2018.

²⁹ United States Environmental Protection Agency, EPA Identifies Noise Levels Affecting Health and Welfare, 1974.

sound levels to determine and evaluate intrusive noise sources and increases, this document utilizes the City of Los Angeles Noise Regulations, discussed below.

(b) *Federal Transit Administration Vibration Standards*

There are no federal vibration standards or regulations adopted by any agency that are applicable to evaluating vibration impacts from land use development projects, such as the Project. However, the FTA has adopted vibration criteria for use in evaluating vibration impacts from construction activities.³⁰ The vibration damage criteria adopted by the FTA are shown in **Table IV.I-1, Construction Vibration Damage Criteria**.

**TABLE IV.I-1
CONSTRUCTION VIBRATION DAMAGE CRITERIA**

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12
SOURCE: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.	

The FTA has also adopted standards associated with human annoyance for determining the groundborne vibration and noise impacts from ground-borne noise on the following three off-site land-use categories: Vibration Category 1 – High Sensitivity, 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.I-2, Groundborne Vibration and Groundborne Noise Impact Criteria for General Assessment**. No thresholds have been adopted or recommended for commercial or office uses.

³⁰ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 7-5, page 186, 2018.

³¹ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.

TABLE IV.I-2
GROUNDBORNE VIBRATION AND GROUNDBORNE NOISE IMPACT CRITERIA FOR
GENERAL ASSESSMENT

Land Use Category	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c
Category 1: Buildings 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 use.	75 VdB	78 VdB	83 VdB

^a Frequent Events" is defined as more than 70 vibration events of the same source per day.

^b Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

^c Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day.

^d This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.

SOURCE: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

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

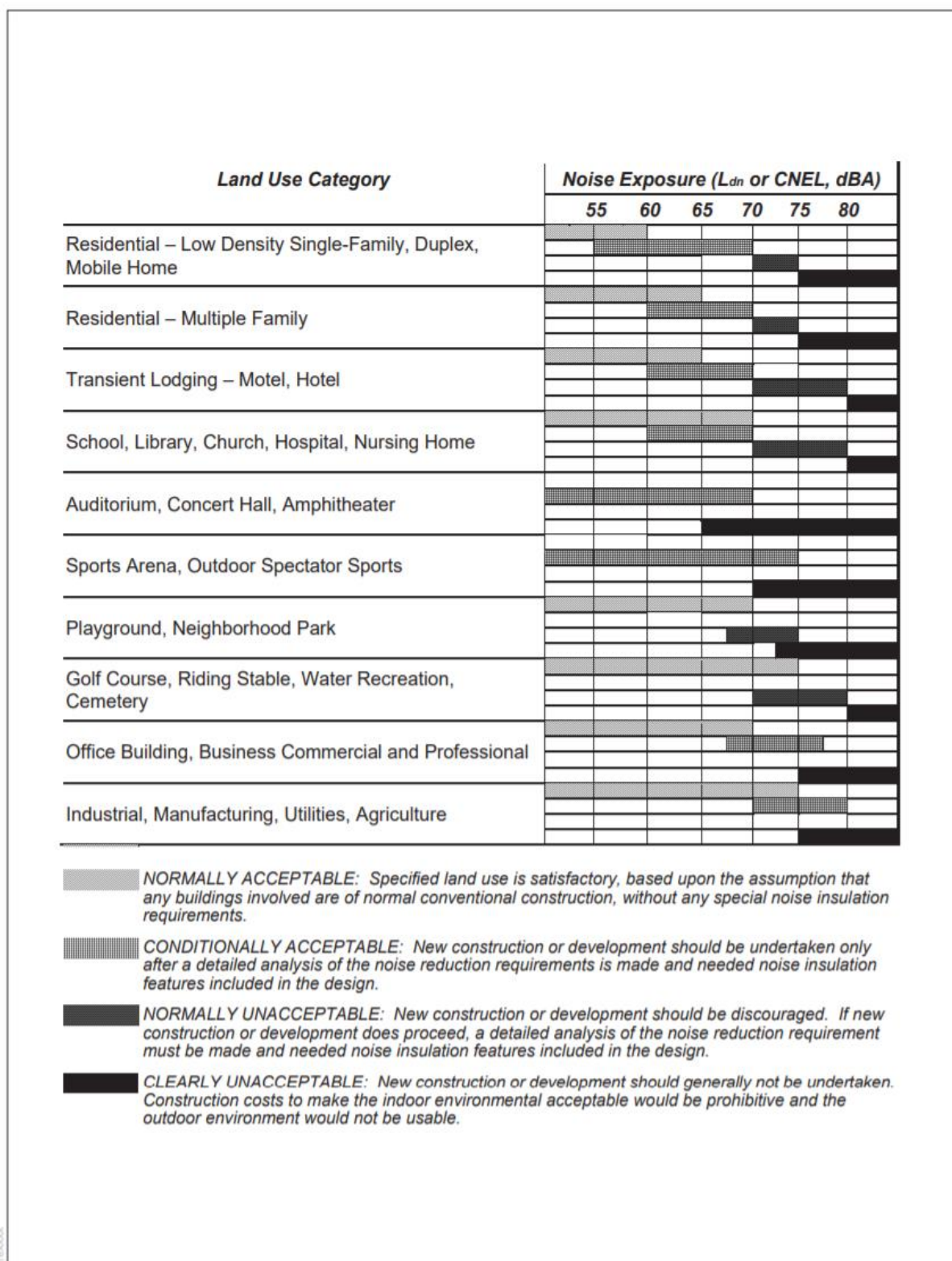
(2) State

(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.I-2, Guidelines for Noise Compatible Land Use**.³³ The purpose of these guidelines is to maintain acceptable noise levels in a community setting for different land use types.

³² United States Department of Labor. Occupational Safety and Health Act, 1970.

³³ State of California, Governor's Office of Planning and Research, General Plan 2017 Guidelines, page 377, 2017.



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

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Figure IV.I-2
Guidelines for Noise Compatible Land Use

Noise levels are divided into four general categories, which vary in range according to land use type: “normally acceptable,” “conditionally acceptable,” “normally unacceptable,” and “clearly unacceptable.” The City has developed its own compatibility guidelines in the Noise Element of the General Plan (Noise Element) based in part on OPR Guidelines. California Government Code Section 65302 requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(f) requiring a noise element to be included in the general plan. The noise element must 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 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 the Regional Planning Commission has the responsibility for acting as the Airport Land Use Commission (ALUC) and for coordinating the airport planning of public agencies within the county. The ALUC coordinates planning for the areas surrounding public use airports. The Comprehensive Land Use Plan provides for the orderly expansion of Los Angeles County's public use airports and the area surrounding them. It is intended to provide for the adoption of land use measures that will minimize the public's exposure to excessive noise and safety hazards. In formulating the Comprehensive Land Use Plan, the Los Angeles County ALUC has established provisions for safety, noise insulation, and the regulation of building height within areas adjacent to each of the public airports in the County.

(4) Local

(a) *Los Angeles Municipal Code*

The City of Los Angeles Noise Regulations are provided in Chapter XI of the Los Angeles Municipal Code (LAMC). LAMC Section 111.02 provides procedures and criteria for the measurement of the sound level of “offending” noise sources. In accordance with the LAMC, a noise source that causes a noise level increase of 5 dBA over the existing average ambient noise level as measured at an adjacent property line creates a noise violation. This standard applies to radios, television sets, air conditioning, refrigeration, heating, pumping and filtering equipment, powered equipment intended for repetitive use

in residential areas, and motor vehicles driven on-site. To account for people's increased tolerance for short-duration noise events, the Noise Regulations provide a 5-dBA allowance for a noise source that causes noise lasting more than 5 but less than 15 minutes in any one-hour period, and an additional 5 dBA allowance (for a total of 10 dBA) for a noise source that causes noise lasting 5 minutes or less in any one-hour period.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.I-3, City of Los Angeles Presumed Ambient Noise Levels**. For example, for residential-zoned areas, the presumed ambient noise level is 50 dBA during the daytime and 40 dBA during the nighttime.

**TABLE IV.I-3
CITY OF LOS ANGELES PRESUMED AMBIENT NOISE LEVELS**

Zone	Daytime Hours (7 A.M. to 10 P.M.) dBA (Leq)	Nighttime Hours (10 P.M. to 7 A.M.) dBA (Leq)
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 112.02 limits increases in noise levels from air conditioning, refrigeration, heating, pumping and filtering equipment. Such equipment may not be operated in such manner as to create any noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than 5 dB.

LAMC Section 112.05 sets a maximum noise level for construction equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. Compliance with this standard shall not apply where compliance therewith is technically infeasible.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, 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

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

³⁵ In accordance with the City's Noise Ordinances, "technically feasible" means that the established noise limitations can be complied with at a project site, with the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques employed during the operation of equipment.

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

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

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

(b) City of Los Angeles General Plan Noise Element

The Noise Element policies include the CNEL guidelines for land use compatibility, as shown in **Table IV.I-4, City of Los Angeles Land Use Compatibility for Community Noise**, 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 The following table summarizes these guidelines, which are based on OPR guidelines from 1990.

³⁶ City of Los Angeles, General Plan, Noise Element adopted February 3, 1999. Pages 1.1-2.4.

³⁷ City of Los Angeles. General Plan, Noise Element adopted February 3, 1999. Page I-1.

TABLE IV.I-4
CITY OF LOS ANGELES LAND USE COMPATIBILITY FOR COMMUNITY NOISE

Land Use	Community Noise Exposure CNEL (dBA)			
	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 and 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, 2006 L.A. CEQA Thresholds Guide, 2006.

c) Existing Conditions

(1) Noise-Sensitive Receptor Locations

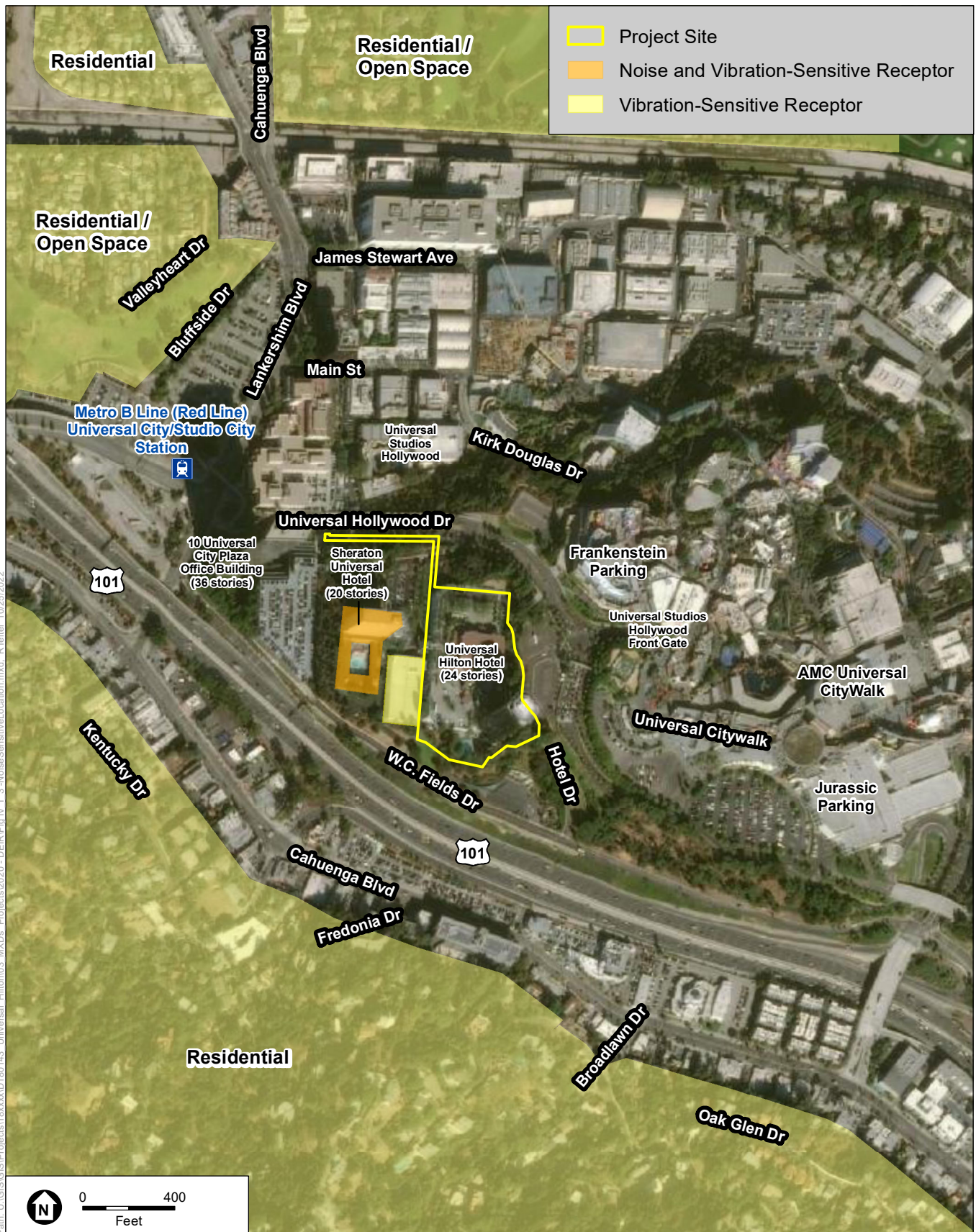
Some land uses are considered more sensitive to noise than others due to the types of activities typically involved at the receptor locations and the effect that noise can have on those activities and the persons engaged in them. The City of Los Angeles 2006 L.A. CEQA Thresholds Guide states that residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks are generally more sensitive to noise than commercial and industrial land uses.³⁸ It should also be noted that the 2006 L.A. CEQA Thresholds Guide contains screening criteria, including (1) whether construction activities occur within 500 feet of a noise-sensitive use; and (2) whether construction occurs 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 anytime on Sunday. A “no” response to these questions indicates that there would normally be no significant construction noise impacts from the project.³⁹

The Project Site is in an active, urban area that serves as both a commercial center for Studio City and the surrounding communities and as a global tourist and entertainment center with offices and multiple hotels. The only existing noise-sensitive use within 500 feet of the Project Site is the Sheraton Hotel with guest rooms⁴⁰ located approximately 190 feet west of the Hilton property boundary, as shown in **Figure IV.I-3, Sensitive Receptors**. Other more distant sensitive receptors include residential and open space uses approximately 1,550 feet to the northwest of the Project Site; residential uses approximately 1,100 feet to the southwest of the Project Site; residential uses approximately 760 feet to the south of the Project Site; and residential uses approximately 1,100 feet to the southeast of the Project Site. For informational purposes only, the Existing Hotel Building was analyzed as a noise receptor because the Hilton will remain operational during construction of the Project. The Existing Hotel Building is approximately 40 feet north of the Project construction area.

³⁸ City of Los Angeles, 2006 L.A. CEQA Thresholds Guide, 2006

³⁹ City of Los Angeles, L.A. CEQA Thresholds Guide, page I.1-3, 2006.

⁴⁰ Hotel rooms are located on Floors 2 through 14 with rooms facing east towards the Project Site. Due to topographical differences between the Sheraton and the Project Site, Floor 4 of the Sheraton Hotel is roughly at the same elevation as the Project Site's Plaza level. Thus, Floors 1 through 3 of the Sheraton Hotel are at a lower elevation than the Project Site's Plaza level.



SOURCE: DigitalGlobe, 2016

Hilton Universal City Project

Figure IV.I-3
Sensitive Receptors

(2) Vibration-Sensitive Receptor Locations

Typically, groundborne vibration generated by man-made activities (i.e., rail and roadway traffic, operation of mechanical equipment and typical construction equipment) diminishes rapidly with distance from the vibration source. Construction activities, such as vibratory pile driving, would have the greatest effect on vibration-sensitive land uses. Energy is lost during the transfer of energy from one particle to another, and, as a result, vibration becomes less perceptible with increasing distance from the source. Therefore, with respect to potential structural damage, structures in close proximity (adjacent) to the Project Site are considered vibration-sensitive. As shown in Figure IV.I-3, the Sheraton Hotel parking garage and the Sheraton Hotel tower are considered vibration-sensitive with respect to structural damage. As shown in Table IV.I-1, the structural category/construction type (i.e., reinforced-concrete, engineered concrete, non-engineered timber, and building susceptible to damage) determines the vibration damage criteria for a specific building/structure.⁴¹ For informational purposes only, the Existing Hotel Building was analyzed as a vibration receptor related to structural damage because the Hilton will remain operational during construction of the Project. The Existing Hotel Building is approximately 40 feet north of the Project construction area.

With respect to human annoyance, sensitive land uses include buildings where use of vibration-sensitive equipment is used (e.g., hospitals, research, and manufacturing), residential land uses and buildings where people normally sleep, schools, churches, and doctor's offices. Industrial or commercial (including office) uses are not considered vibration-sensitive.⁴² As shown in Figure IV.I-3, the Sheraton Hotel tower is considered a vibration-sensitive land use with respect to human annoyance since it is a structure where normally people sleep. The parking garage for the Sheraton Hotel is detached from the Sheraton Hotel tower structure where people sleep. As such, since the parking garage is not part of the building where people normally sleep or conduct other vibration-sensitive activities, the parking garage is not considered a vibration-sensitive land use. Therefore, while all adjacent buildings to the Project Site have been considered vibration-sensitive for structural damage, the Sheraton Hotel parking garage has not been considered a vibration-sensitive land use for human annoyance. For informational purposes only, the Existing Hotel Building was analyzed as a vibration receptor for human annoyance because the Hilton will remain operational during construction of the Project. The Existing Hotel Building is approximately 40 feet north of the Project construction area.

⁴¹ Where the structural category/type of a vibration-sensitive receptor is unclear, the analysis herein utilizes a conservative assumption. For example, although structures where industrial processes take place would generally be constructed of concrete, the threshold for non-engineered timber and masonry has been applied due to the uncertainty of building construction.

⁴² Federal Transit Administration, Transit Noise and Vibration Impact Assessment, Table 6-1.

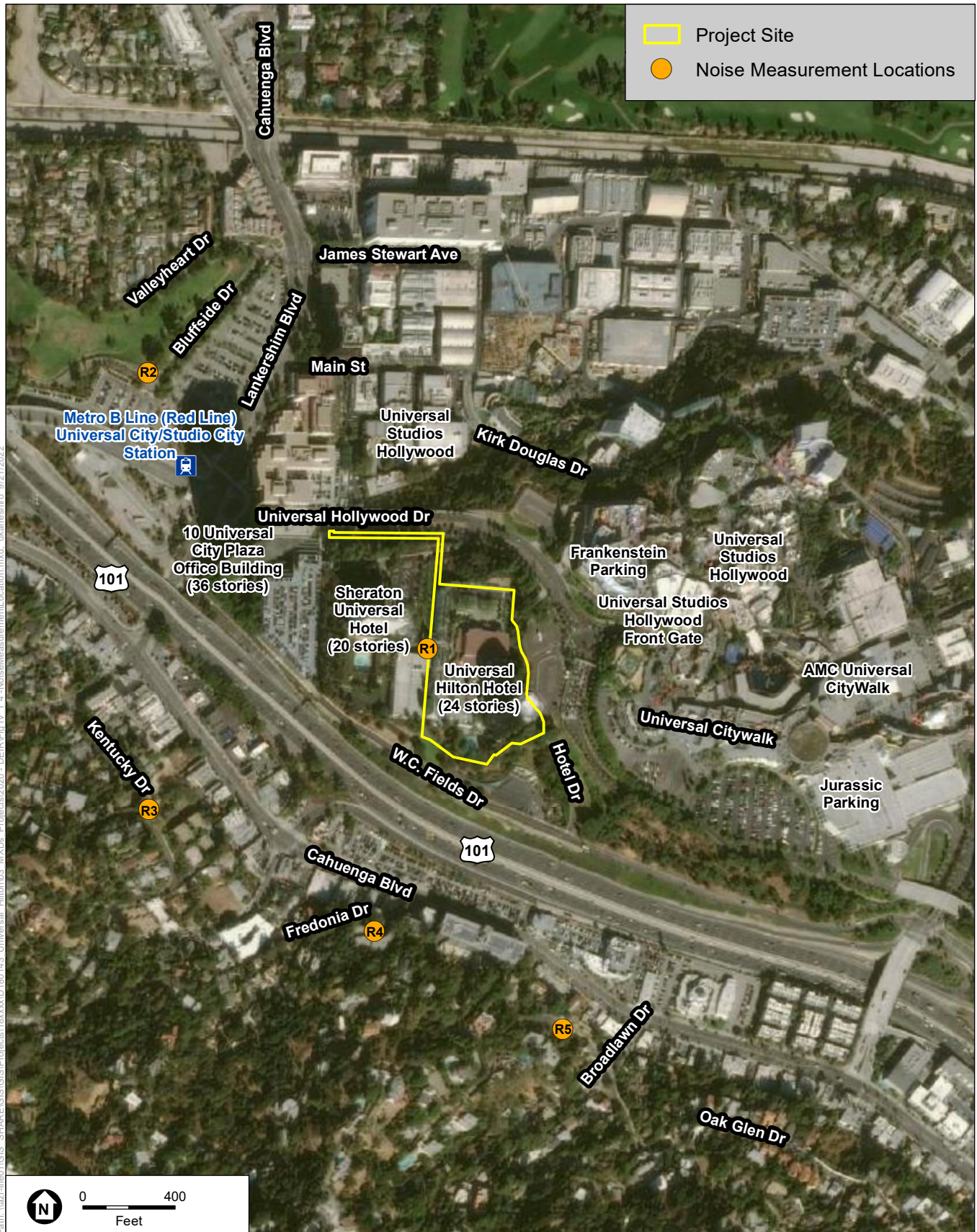
(3) Ambient Noise Levels

The predominant existing noise source surrounding the Project Site is traffic noise from the Hollywood Freeway to the south. Secondary noise sources include the Universal Studios theme park; general commercial-related activities, such as loading dock/delivery truck activities, trash compaction, and refuse service activities; and nearby restaurants and bars.

Ambient noise measurements were taken at five locations, representing the nearby land uses in the vicinity of the Project Site to establish ambient noise levels. The measurement locations, along with existing development, are shown on **Figure IV.I-4**. One long-term (24-hour) measurement was taken at location R1 from Tuesday, September 25, through Wednesday, September 26, 2018⁴³, and short-term (15-minute) noise measurements were taken at locations R2 through R5 on Tuesday, September 25, 2018. The long term measurement was conducted at R1 to capture daytime, nighttime, and 24-hour ambient noise levels. R1 is the closest sensitive receptor to the Project Site and is the most susceptible to operational noise from the Project, which includes mechanical equipment, open space, and parking facilities that may generate noise levels during both day- and nighttime hours. Short-term measurements (15 minutes) at R1 through R5 also provide representative daytime ambient noise levels for receptors and were conducted in accordance with Los Angeles Municipal Code Section 111.00⁴⁴. The Existing Hotel Building is not considered a sensitive receptor because it is located on the Project Site and is a part of the Project (e.g., the Project proposes improvements to the existing uses on the Project Site). However, for informational purposes only, the Existing Hotel Building (R6) is analyzed as a receptor because the Hotel would remain operational during Project construction. Noise measurements were not conducted at the Existing Hotel Building and measurement location R1 is assumed to be representative of the noise levels at the Existing Hotel Building as this measurement was taken on the Project Site boundary.

⁴³ Ambient noise levels taken in September 2018 are representative of the Project Site's noise environment. Ambient noise levels during the COVID-19 State of Emergency from early 2020 through early 2023 were considered atypical due to reduced vehicular traffic and, in the case of the Universal Hilton, less pedestrian traffic and fewer guests visiting the hotel and nearby theme park. Thus, the ambient noise measurements taken before the COVID-19 State of Emergency are representative of typical ambient noise levels than would have been measured during COVID-19 restrictions.

⁴⁴ LAMC, Section 111.00. Available at: https://codelibrary.amlegal.com/codes/los_angeles/latest/lamc/0-0-0-193850



SOURCE: DigitalGlobe, 2016

Hilton Universal City Project

Figure IV.I-4
Noise Measurement Locations

The ambient noise measurements were conducted using the Larson-Davis 820 Precision Integrated Sound Level Meter (SLM). The Larson-Davis 820 SLM is a Type 1 standard instrument as defined in the American National Standard Institute S1.4. All instruments were calibrated and operated according to the applicable manufacturer specification. The microphone was placed at a height of five feet above grade at the following locations, as shown in Figure IV.I-4, *Noise Measurement Locations*:

- Measurement Location R1: This measurement location represents the existing noise environment at the Project Site's western boundary and is considered representative of the noise environment of the existing Universal Sheraton Hotel adjacent to the west, approximately 190 feet from the Project boundary.
- Measurement Location R2: This measurement location represents the existing noise environment at South Weddington Park and the residential uses approximately 1,550 feet northwest of the Project Site.
- Measurement Location R3: This measurement location represents the existing noise environment at the residential uses approximately 1,100 feet west of the Project Site along Kentucky Drive near the intersection of Fredonia Drive.
- Measurement Location R4: This measurement location represents the existing noise environment of the residential uses approximately 760 feet south of the Project Site along Fredonia Drive, just south of Cahuenga Boulevard.
- Measurement Location R5: This measurement location represents the existing noise environment of the residential uses approximately 1,100 feet southeast of the Project Site along Oak Glen Drive near the intersection of Broadlawn Drive.
- Existing Hotel Building (R6): As mentioned above, the Existing Hotel Building was analyzed as a receptor and is identified as receptor location R6. The Existing Hotel Building is approximately 40 feet north of the Project Site and noise levels are assumed to be similar to those measured at location R1.

A summary of the noise measurement data is provided in **Table IV.I-5, Summary of Ambient Noise Measurements**. Daytime noise levels ranged from 56.3 dBA to 63.0 dBA L_{eq} , and nighttime noise levels ranged from 54.4 dBA to 60.1 dBA L_{eq} .

**TABLE IV.I-5
SUMMARY OF AMBIENT NOISE MEASUREMENTS**

Location, Duration, Existing Land Uses and, Date of Measurements	Measured Ambient Noise Levels (dBA) ^a			
	Daytime (7 A.M. to 10 P.M.) Hourly L _{eq}	Daytime Average Hourly L _{eq}	Nighttime (10 P.M. to 7 A.M.) Hourly L _{eq}	Nighttime Average Hourly L _{eq}
R1 9/25/2018 to 9/26/2018 (10:24 A.M. to 9:24 A.M.)/Tuesday to Wednesday	56.3 – 61.3	59.6	54.4 – 60.1	57.5
R2 9/25/2018 (10:39 A.M. to 10:54 A.M.)/Tuesday	57.7	N/A	N/A	N/A
R3 9/25/2018 (8:59 A.M. to 9:14 A.M.)/Tuesday	62.1	N/A	N/A	N/A
R4 9/25/2018 (9:20 A.M. to 9:35 A.M.)/Tuesday	63.0	N/A	N/A	N/A
R5 9/25/2018 (11:03 A.M. to 11:18 A.M.)/Tuesday	61.9	N/A	N/A	N/A
R6^b 9/25/2018 to 9/26/2018 (10:24 A.M. to 9:24 A.M.)/Tuesday to Wednesday	56.3 – 61.3	59.6	54.4 – 60.1	57.5

^a Detailed measured noise data, including hourly L_{eq} levels, are included in Appendix I.

^b R6 represents the Existing Hotel Building and it is assumed that noise levels are the same as R1 due to the location of this measurement on the Project Site boundary.

SOURCE: ESA, 2022.

(4) Existing Roadway Noise Levels

Existing roadway CNEL noise levels were calculated for 17 roadway segments located in the vicinity of the Project Site. The roadway segments selected for analysis are considered to be those that are expected to be the most directly impacted by Project-related traffic, which, for the purpose of this analysis, include the roadways that are located near and immediately adjacent to the Project Site. These roadways, when compared to roadways located farther away from the Project Site, would experience the greatest percentage increase in traffic generated by the Project (as distances are increased from the Project Site, traffic is spread out over a greater geographic area and its effects are reduced).

Existing roadway CNEL noise levels were calculated using the Federal Highway Administration's (FHWA's) Highway Noise Prediction Model (FHWA-TNM)⁴⁵ and traffic volumes at the study intersections analyzed in the Project's 2024 Transportation Analysis (TA) Addendum prepared by Linscott, Law & Greenspan, Engineers, April 2023.⁴⁶ The model calculates the average noise level at specific locations based on traffic volumes, average speeds, and site environmental conditions. The noise levels along these roadway segments are presented in **Table IV.I-6, Calculated Existing Vehicular Traffic Noise Levels**. As shown in Table IV.I-6, the ambient noise environment of the Project vicinity can be characterized by 24-hour CNEL levels attributable to existing traffic on local roadways. The calculated CNEL (at a distance of 50 feet from the roadway centerline) from actual existing traffic volumes on the analyzed roadway segments ranged from 51.5 dBA to 75.8 dBA for residential areas and commercial areas.

**TABLE IV.I-6
CALCULATED EXISTING VEHICULAR TRAFFIC NOISE LEVELS**

Roadway Segment	Adjacent Land Use	Existing Noise Exposure Compatibility Category^{b,c}	Existing CNEL (dBA)^a
Barham Blvd n/o Cahuenga Blvd E	Single-Family Residential/Multi-Family Residential	Clearly Unacceptable	75.8
Barham Blvd s/o Cahuenga Blvd E	Commercial	Conditionally Acceptable	73.8
Cahuenga Blvd between Lankershim Blvd and Regal Pl	Commercial	Conditionally Acceptable	74.1
Cahuenga Blvd between Regal Pl and Universal Studios Blvd	Commercial/Religious	Normally Unacceptable	72.9
Cahuenga Blvd E e/o Barham Blvd	Single-Family Residential	Normally Unacceptable	72.8
Cahuenga Blvd W e/o Universal Studios Blvd	Commercial/Educational	Conditionally Acceptable/Normally Unacceptable	70.7
Cahuenga Blvd w/o Lankershim Blvd	Commercial/Hotel	Conditionally Acceptable/Normally Unacceptable	72.1
Campo de Cahuenga Way between Metro Driveway and Lankershim Blvd	Public Transit	Normally Acceptable	67.9

⁴⁵ The traffic noise model which was developed based on calculation methodologies provided in the Caltrans TeNS document and traffic data provided in the Project's 2023 TA Addendum provided in Appendix K-4 to this Draft EIR. This methodology, considered an industry standard, allows for the definition of roadway configurations, barrier information (if any), and receiver locations.

⁴⁶ Linscott, Law & Greenspan, Engineers, *2023 Transportation Analysis Addendum for the Hilton Universal City Project*, April 2023. Appendix K-4 of this Draft EIR.

**TABLE IV.I-6
CALCULATED EXISTING VEHICULAR TRAFFIC NOISE LEVELS**

Roadway Segment	Adjacent Land Use	Existing Noise Exposure Compatibility Category^{b,c}	Existing CNEL (dBA)^a
Campo de Cahuenga Way between US-101 NB/SB On/Off Ramp and Metro Driveway	Freeway Underpass	Normally Acceptable	68.4
Campo de Cahuenga Way w/o US-101 NB/SB On/Off Ramp	Commercial/Single-Family Residential	Conditionally Acceptable	68.2
Lankershim Blvd between Universal Hollywood Dr and US-101 NB Off Ramp	Commercial	Conditionally Acceptable	71.0
Lankershim Blvd between US-101 NB Off Ramp and Cahuenga Blvd	Commercial	Conditionally Acceptable	70.2
Lankershim Blvd n/o Universal Hollywood Dr	Commercial/Multi-family Residential	Conditionally Acceptable/Normally Unacceptable	72.5
Lankershim Blvd s/o Cahuenga Blvd	Commercial/Single-Family Residential	Normally Acceptable/Conditionally Acceptable	63.1
Metro Driveway n/o Campo de Cahuenga Way	Commercial	Normally Acceptable	59.7
Metro Driveway s/o Campo de Cahuenga Way	Commercial	Normally Acceptable	51.5
Regal Pl n/o Cahuenga Blvd	Freeway On/Off Ramp	Normally Acceptable	69.5
Regal Pl s/o Cahuenga Blvd	Commercial/Single-Family Residential/Multi-Family Residential	Normally Acceptable/Conditionally Acceptable/Normally Acceptable	62.5
Universal Hollywood Dr between Lankershim Blvd and Hilton Driveway	Hotel/Theme Park/Commercial	Normally Unacceptable/Conditionally Acceptable	70.7
Universal Hollywood Dr s/o Hilton Driveway	Hotel/Theme Park/Commercial	Conditionally Acceptable/Normally Acceptable	65.5
Universal Studios Blvd between US-101 SB On Ramp and Cahuenga Blvd W	Commercial	Normally Acceptable	66.3
Universal Studios Blvd between W.C. Fields Dr and US-101 SB On Ramp	Commercial	Normally Acceptable	68.5
Universal Studios Blvd n/o W.C. Fields Dr	Commercial	Normally Acceptable	64.5

**TABLE IV.I-6
CALCULATED EXISTING VEHICULAR TRAFFIC NOISE LEVELS**

Roadway Segment	Adjacent Land Use	Existing Noise Exposure Compatibility Category^{b,c}	Existing CNEL (dBA)^a
US-101 NB Off Ramp e/o Lankershim Blvd	Freeway On/Off Ramp	Normally Acceptable	70.0
US-101 NB/SB On/Off Ramp n/o Campo de Cahuenga Way	Freeway On/Off Ramp	Normally Acceptable	71.3
US-101 NB/SB On/Off Ramp s/o Campo de Cahuenga Way	Freeway On/Off Ramp	Normally Acceptable	67.6
US-101 SB On Ramp e/o Universal Studios Blvd	Freeway On/Off Ramp	Normally Acceptable	67.2
W.C. Fields Dr between Universal Studios Blvd and Barham Blvd	Commercial/Single-Family Residential/Open Space	Conditionally Acceptable/Conditionally Acceptable/Normally Acceptable	68.2
W.C. Fields Dr w/o Universal Studios Blvd	Commercial/Hotel	Normally Acceptable/Conditionally Acceptable	66.8

^a Calculated based on existing traffic volumes.

^b Based on noise levels calculated at specific distances to the centerline of each analyzed roadway segment.

^c See Table IV.I-5 for a description of the compatibility categories.

SOURCE: ESA, 2023.

(5) Existing Groundborne Vibration Levels

Aside from periodic construction work occurring throughout the City, field observations noted that other sources of groundborne vibration in the Project Site vicinity are primarily limited to heavy-duty vehicular travel (e.g., refuse trucks, delivery trucks, etc.) on local roadways. Trucks traveling at a distance of 50 feet typically generate groundborne vibration velocity levels of 65 VdB (approximately 0.0068 in/sec PPV).⁴⁷

(6) Existing Groundborne Noise Levels

As stated earlier, groundborne noise levels would generally be 20 to 50 decibels lower than the velocity level depending on the frequency level of the source.⁴⁸ With a background groundborne vibration level in residential areas of 50 VdB or lower, groundborne noise levels would be approximately 0 to 30 dBA. A bus traveling at a distance of 50 feet would generate groundborne noise levels of approximately 23 to 38

⁴⁷ FTA, Transit Noise and Vibration Impact Assessment, Figure 5-4.

⁴⁸ FTA, Transit Noise and Vibration Impact Assessment, p. 146.

dBA. The approximate level of human perception of groundborne noise is 25 dBA for low frequency vibration (near 30 Hz) and 40 dBA for mid-frequency vibration (near 60 Hz).⁴⁹

3. Project Impacts

a) Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, a project would have a significant impact related to noise and vibration if it would result in the:

- 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;***
- b) Generation of excessive groundborne vibration or groundborne noise levels; or***
- (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.***

For this analysis, the Appendix G Thresholds are relied upon. The analysis utilizes factors and considerations identified in the City's 2006 L.A. CEQA Thresholds Guide, and the FTA's groundborne vibration and noise criteria for assessing potential impacts relating to building damage and human annoyance were used, as appropriate, to assist in answering the Appendix G Threshold questions. The factors to evaluate noise impacts are listed below.

(1) Construction Noise

The 2006 L.A. CEQA Thresholds Guide identifies the following criteria to evaluate construction noise:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA 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 L_{eq} or more at a noise-sensitive use; or
- Construction activities of any duration would exceed the ambient noise level by 5 dBA L_{eq} at a noise-sensitive use between the hours of 9:00 P.M. and 7:00 A.M.

⁴⁹ FTA, Transit Noise and Vibration Impact Assessment, p. 120.

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

As discussed in Section II, *Project Description*, of this Draft EIR, construction of the Project is anticipated to begin in 2024 with construction occurring for approximately 30 months with full buildout and operations anticipated to begin in 2027. Therefore, since Project construction activities would occur over a period longer than 10 days for all phases, the corresponding significance threshold used in the construction noise analysis presented in this section of the Draft EIR is an increase in the ambient exterior noise levels of 5 dBA L_{eq} or more at a noise-sensitive use.

(2) Operational Noise

The following criteria are applied to the Project, as set forth in the 2006 L.A. CEQA Thresholds Guide and the City's Noise Regulations, with the more restrictive provisions applied, to evaluate operational noise. The Project would have a significant impact from operations if:

- The Project causes the ambient noise levels measured at the property line of affected uses to increase by 3 dBA CNEL to or within the “normally unacceptable” or “clearly unacceptable” categories; or
- The Project causes the ambient noise levels measured at the property line of affected uses to increase by 5 dBA CNEL or more increase in noise level; or
- Project-related operational on-site (i.e., non-roadway) noise sources, such as outdoor building mechanical/electrical equipment, outdoor activities, or parking facilities, increase the ambient noise level (L_{eq}) at noise-sensitive uses by 5 dBA L_{eq} .

In summary, for operational noise, the significance threshold for on-site operations is an increase in ambient noise level of 5 dBA L_{eq} at an adjacent property line, in accordance with the LAMC. The LAMC does not apply to the off-site traffic (i.e., vehicle traveling on public roadways). Therefore, the significance threshold for off-site traffic noise associated with Project operations is based on the 2006 L.A. CEQA Thresholds Guide. In addition, the significance threshold for composite noise levels (on-site and off-site sources) are also based on the 2006 CEQA L.A. Thresholds Guide as, again, the LAMC does not apply to off-site traffic noise. Therefore, the significance thresholds used for determining impacts related to off-site operational noises and composite operational noise are an increase in the ambient noise level of 5 dBA CNEL or 3 dBA CNEL, depending on the land use category, at the affected noise-sensitive land use.

(3) Groundborne Vibration Standards and Guidelines

The City has not adopted criteria to assess vibration impacts during construction. Thus, for this Project, the City has determined that the use of FTA's criteria for structural damage and human annoyance, as described in Tables IV.I-1 and IV.I-2, respectively, is appropriate to evaluate potential vibration impacts related to Project construction and

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

- Project construction activities that cause groundborne vibration levels to exceed the potential structural damage threshold of 0.5-in/sec PPV at the nearest off-site buildings or structures of Building Category I, Reinforced-concrete, steel, or timber (no plaster).
- Project construction activities that cause groundborne vibration levels to exceed the potential structural damage threshold of 0.3-in/sec PPV at the nearest off-site buildings of Building Category II, Engineered concrete and masonry (no plaster).
- Project construction activities that cause groundborne vibration levels to exceed the potential structural damage threshold of 0.2-in/sec PPV at the nearest off-site buildings of Building Category III, Non-engineered timber and masonry buildings.
- Project construction activities that cause groundborne vibration levels to exceed the potential structural damage threshold of 0.12-in/sec PPV at the nearest off-site buildings of Building Category IV, Buildings extremely susceptible to building damage.

Based on FTA guidelines, construction and operational 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 and operational activities cause groundborne vibration levels to exceed 72 VdB at off-site sensitive uses, including residential and hotel uses.
- Project construction and operational activities cause groundborne vibration levels to exceed 75 VdB at off-site institutional uses.

b) Methodology

(1) On-Site Construction Noise

On-site construction noise impacts were evaluated by determining the noise levels generated by the different types of construction activity anticipated, calculating the construction-related noise level generated by the mix of equipment assumed for all construction activities at nearby sensitive receptor locations, and comparing these construction-related noise levels to existing ambient noise levels (i.e., noise levels without construction noise) at those receptor locations. Construction activities include demolition of the existing uses on the Project Site and construction of the buildings and any infrastructure improvements needed to serve the Project.

Project construction includes construction of the Project Site, which includes the Hotel Expansion Building, Meeting Room Addition, circulation, canopy, landscaping, and construction of the parking garage. Construction of the Project Site (except for the parking garage) includes the following eight construction stages: (1) demolition, (2) site

preparation (3) grading/excavation, (4) trenching, (5) foundations, (6) building construction, (7) paving, and (8) architectural coating. Construction of the parking garage includes the following six construction stages: (1) demolition, (2) grading/excavation, (3) foundations, (4) building construction, (5) paving, and (6) architectural coating. Various construction phases during hotel and parking garage construction would overlap. Overlapping phases are presented in **Table IV.I-7, Project Construction Equipment and Associated Noise Levels**, below. Since construction of the Project as a whole would last more than 10 days, based on the criteria provided in the 2006 L.A. CEQA Thresholds Guide, the construction noise significance threshold used in this analysis is an increase in the ambient exterior noise level of 5 dBA L_{eq} or more at a noise-sensitive use.

**TABLE IV.I-7
PROJECT CONSTRUCTION EQUIPMENT AND ASSOCIATED NOISE LEVELS**

Type of Equipment	Reference Noise Level at 50 Feet, L_{max}	Estimated Usage Factor
Bore/Drill Rig	84	20%
Compactor (ground)	80	20%
Compressor (air)	80	40%
Concrete Saw	90	20%
Crane	85	16%
Crawler Tractor	84	40%
Drum Mixer	80	50%
Dumper/Tender	84	40%
Excavator	85	40%
Forklift	75	10%
Generator	82	50%
Jackhammer	85	20%
Paver	85	50%
Paving Equipment	85	50%
Pumps	77	50%
Roller	85	20%
Skid Steer Loader	80	40%
Surfacing Equipment	85	20%
Tractor/Loader/Backhoe	80	40%
Trencher	82	50%
Vacuum Street Sweeper	80	10%
Vibratory Pile Driver	95	20%

SOURCE: FHWA, 2005

Types of construction equipment expected to be used during Project construction could produce maximum noise levels of 74 dBA L_{max} to 95 dBA L_{max} at a reference distance of 50 feet from the noise source according to FHWA reference noise levels. Table IV.I-7 lists

the construction equipment type and number assumed for each Project construction stage and FHWA reference noise levels (L_{max}) at 50 feet. These maximum noise levels would occur when equipment is operating at full power. Construction equipment does not typically operate at full power consistently throughout the duration of a given construction stage. The estimated usage factor for the equipment is also shown in Table IV.I-7 and represents the percentage of a specified time period (i.e., an hour) that a piece of equipment is expected to be operational, allowing for the calculation of an average noise level (dBA L_{eq}). The usage factors are based on FHWA's Roadway Construction Noise Model (RCNM) User's Guide.⁵⁰

Over the course of a construction day, the highest noise levels would be generated when multiple pieces of construction equipment would operate concurrently. The estimated noise levels at the sensitive receptors were calculated using the FHWA's RCNM and were based on a maximum concurrent operation of equipment, which is considered a worst-case evaluation because the Project would typically use less overall equipment on a daily basis and, as such, would generate lower noise levels.

(2) Off-Site Roadway Noise (Construction and Operation)

Roadway noise levels were projected using the FHWA's Highway Noise Prediction Model (FHWA-TNM) model and the roadway traffic volume provided in the TA Addendum for the Project.⁵¹ This method allows for the definition of roadway configurations, barrier information (if any), and receiver locations. Roadway noise attributable to Project development was calculated and compared to baseline noise levels that would occur under the "without Project" condition.

(3) On-Site Stationary Point-Source Noise (Operation)

Stationary point-source noise levels were evaluated by identifying the noise levels generated by outdoor stationary noise sources, such as rooftop mechanical equipment, parking structure automobile operations, and loading/refuse collection area activity; calculating the hourly L_{eq} noise level from each noise source at sensitive receiver property lines; and comparing such noise levels to existing ambient noise levels.

For purposes of providing a conservative noise analysis for outdoor spaces, the maximum occupant load of the outdoor seating and pool area on the Basement level, North and South Plazas, and rooftop Restaurant/Bar and rooftop pool area was calculated based on an occupancy load factor of 15 square feet per person for an assembly area without fixed seats, and the maximum occupant load of the pool areas was calculated based on an occupancy load factor of 50 square feet per person, according to the California Building

⁵⁰ FHWA, Roadway Construction Noise Model User's Guide.

⁵¹ Linscott, Law & Greenspan, Engineers, *2023 Transportation Analysis Addendum for the Hilton Universal City Project*, April 2023. Appendix K-4 of this Draft EIR,

Code Table 1004.5 Maximum Floor Area Allowances Per Occupant.⁵² Although this occupancy load factor provides an overestimation of the occupancy load and associated noise within passive landscaped areas, it has been applied to the square footage of the Project's outdoor spaces to provide a conservative worst-case noise analysis.

Actual capacities for the Project outdoor spaces would be lower and, in some cases substantially lower, due to design considerations, such as building ingress/egress limitations, elevator and stairwell capacities, fire escape route capacities, and other capacity considerations. Noise from female adults, male adults, and children talking at a raised level is approximately 63 dBA, 65 dBA, and 65 dBA, respectively, at a distance of 3 feet.⁵³ As a conservative analysis, it is assumed that each outdoor space would be at full capacity and that half of the visitors would be adults (half male and half female) and half would be children. Of the adults and children, half would be talking simultaneously (assuming approximately half of the occupants talking and the other half listening). For outdoor spaces that would include amplified sound/music, it was assumed that the Project would comply with the requirements of LAMC Section 112.01⁵⁴ to ensure that the maximum noise generated by amplified speakers would not exceed the ambient noise level by more than 5 dBA, which falls within the significance threshold identified above.

Sources of noise within the Project's parking structure would primarily include vehicular movements and engine noise, doors opening and closing, and intermittent car alarms. Noise levels within the parking structure would fluctuate with the amount of automobile and human activity. For purposes of providing a conservative analysis of parking facility noise, the peak hour trips for the Project were used.

For outdoor mechanical equipment, it was assumed that the Project would comply with the requirements of LAMC Section 112.02 to ensure that the maximum noise generated by any and all outdoor mechanical equipment would not exceed the ambient noise level by more than 5 dBA, which falls within the significance threshold identified above.

Operational noise, based on the above methodology and assumptions, would result in potentially significant impacts if noise levels exceed the significance threshold identified in Subsection 3.a, *Thresholds of Significance*, above.

(4) Composite Noise (Operations)

Combined noise levels from each operational noise source were estimated by logarithmically adding together the noise levels from all the operational noise sources at the maximum impacted noise-sensitive receptor locations, assuming simultaneous contribution of noise from each source. As discussed previously, the dBA scale is based

⁵² California Building Standards Commission, 2019 Title 24, Part 2, Volume 1 – California Building Code.

⁵³ *American Journal of Audiology* Vol.7 21-25 October 1998. doi:10.1044/1059-0889(1998/012).

⁵⁴ LAMC Section 112.01 prohibits the use of noise amplification devices in excess of the measured ambient noise level plus 5 dBA.

on logarithms, where a doubling of sound energy corresponds to a 3 dBA increase (e.g., if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA). Composite noise sources include off-site roadway noise and on-site stationary point-source noise, as listed above.

(5) Groundborne Vibration (Construction and Operation)

Groundborne vibration impacts were evaluated for potential building damage and human annoyance impacts by identifying the Project's potential vibration sources, estimating the distance between the Project's vibration sources and the nearest structure and vibration annoyance receptor locations, and making a significance determination based on the significance thresholds described below.

The FTA guidance classifies the vibration impact levels based on whether the vibration-producing events are frequent, occasional, or infrequent. "Frequent Events" is defined as more than 70 vibration events of the same source per day. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. The values listed above are applicable to "Frequent Events." For the purposes of providing a conservative analysis, the vibration analysis provided herein for potential human annoyance compares the estimated vibration levels generated during construction and operation of the Project to the 72 VdB significance threshold for off-site residential uses for "Frequent Event." The vibration analysis for the Project conservatively used the closest distance to construction activity and the construction phase with the equipment mix that would result in the greatest potential vibration.

Construction activities may generate groundborne vibration from transient sources due to the temporary and sporadic use of vibration-generating equipment and from haul trucks traveling on roadways. Operation of the Project has no potential to cause structure damage to the Project's own buildings or to off-site buildings that are farther away because the Project would not include any equipment that would generate substantial groundborne vibration levels. Construction and operational activities may generate groundborne vibration levels that could be felt by people as a result of trucks and vehicles driving to and from the Project Site, or from the operation of typical commercial-grade stationary mechanical and electrical equipment such as air handling units, condenser units, and exhaust fans, which could produce groundborne vibration.

(6) Groundborne Noise

According to the FTA, airborne noise levels would be higher than the groundborne noise levels that result from groundborne vibration.⁵⁵ Unless indoor receptors have substantial sound insulation (e.g., recording studio) and would be exposed to vibration velocities great enough to cause substantial levels of groundborne noise, groundborne noise does not need to be assessed. There are no substantially insulated indoor receptors located

⁵⁵ Federal Transit Administration, Transit Noise and Vibration Impact Assessment, p. 124.

within the area surrounding the Project Site; therefore, the effects of airborne noise would still be higher than groundborne noise levels. Accordingly, impacts related to groundborne noise are not analyzed herein.

c) Project Design Features

The Project would implement the following Project Design Features during construction and operation of the Project:

NOI-PDF-1 (Construction Equipment Maintenance): During plan check for each phase of the Project, the contractor will provide a statement to the City indicating their powered construction equipment (including combustion engines), fixed or mobile, will be properly maintained to ensure that no additional noise, due to worn or improperly maintained parts, would be generated.

NOI-PDF-2 (Mechanical Equipment Noise): All outdoor mounted building mechanical equipment and/or ventilation systems not fully enclosed will be designed to not exceed the noise level limits specified in the LAMC through the use of quiet fans, duct silencers, parapets, enclosures, mufflers, or similar noise attenuation methods.

NOI-PDF-3 (Impact Pile Drivers Prohibited): The Project will not require or allow the use of impact pile drivers. Lower noise- and vibration-generating augured, drilled, or vibratory piles will be permitted.

d) Analysis of Project Impacts

Threshold a) *Would the project result in the 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 Impacts

Construction noise is analyzed for on-site construction noise sources, which include the use of construction equipment, and off-site construction noise sources, which include construction trucks and vehicles traveling on roadways.

(i) On-Site Construction Noise

(a) Off-Site Receptors

Project construction activities would be required to comply with the City's Ordinance Nos. 144,331 and 161,574, which prohibit the emission or creation of noise beyond 75 dBA at

50 feet from the equipment, unless technically infeasible.⁵⁶ In addition, the Project would be subject to LAMC Section 91.106.4.8 (Construction Site Notice, City's Ordinance 178,048), which requires a construction site notice to be provided that includes the following information: job site address, permit number, name and phone number of the contractor and owner or owner's agent, hours of construction allowed by code or any discretionary approval for the site, and City telephone numbers where violations can be reported.

Construction of the Project would require the use of heavy equipment during demolition, site preparation, grading/excavation, drainage/utilities/trenching, foundation concrete pour, building construction, architectural coating, and paving stages at the Project Site. During each stage of development, a variety of equipment would be used. As such, construction noise levels on and near the Project Site would fluctuate depending on the type, number, and duration of use of various pieces of construction equipment operating at a given time. Multiple pieces of construction equipment would not all operate at the same point on the Project Site. Accordingly, and to present a conservative analysis, instead of assuming the equipment is on average located in the center of the Project construction area (which is a typical assumption in construction noise analyses), it has been assumed that the loudest equipment types would operate at the point nearest to the closest sensitive receptor (Sheraton Hotel) to the Project Site boundary and that the remaining equipment would operate at further distances from the receptor (see Appendix I for construction noise calculations).

Table IV.I-8, *Estimate of Construction Noise Levels (L_{eq}) at Sensitive Receptors*, shows the estimated construction noise levels that would occur at the sensitive receptors during a peak day of construction. The construction noise analysis takes into account the distance from the Project Site to the sensitive receptors. The maximum construction noise levels would occur when the specified construction activity would be occurring within construction areas nearest to the receptor. As shown in Table IV.I-9, construction noise levels were estimated to reach a maximum of 81.4 dBA L_{eq} during the overlap of foundations for the Hotel Expansion Building and Meeting Room Addition, paving associated with the Hotel Expansion Building and Meeting Room Addition and circulation improvements (e.g., service road, surface parking, and North and South Plaza reconfigurations) and building construction of the parking garage. Although individual and overlapping construction phases would result in varying noise levels, ranging from 51.1 to 84.1 at R1, each of these phases would be shorter in duration than the overall construction period. Construction phases range from approximately two weeks for demolition required for the parking garage to 16 months for construction of the Hotel Expansion Building and Meeting Room Addition. As paving for the parking garage is only anticipated to occur for one month, the maximum noise level of 81.4 dBA L_{eq} at R1 would occur during this time. The intent of overlapping construction phases is to reduce the overall timeline of construction, resulting in the corresponding reduction in the length of

⁵⁶ As provided in LAMC Section 112.05, technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques during the operation of the equipment.

time associated with construction-related Project impacts. Similarly, the foundations phase for the Hotel Expansion Building and Meeting Room Addition is anticipated to last approximately three months. Therefore, the noise level at R4 would be above the threshold for this phase, but this construction noise impact would be temporary and would be short-term, when compared to the overall construction schedule. As construction activities are completed near the Project Site boundary and construction activities move toward the interior of the Project Site, the construction noise levels at the receptor would decrease. As shown in Table IV.I-8, maximum construction noise levels would exceed the significance thresholds at R1 and R3 through R5. **Construction of the Project would generate construction noise levels that would temporarily exceed the applicable significance thresholds at R1 and R3 through R5. Therefore, the Project would result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City, and, as such, on-site construction noise impacts would be potentially significant.**

**TABLE IV.I-8
ESTIMATE OF CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS**

Construction Phases	R1	R2	R3	R4	R5	R6 (Existing Hotel Building)
Hotel Expansion Building and Meeting Room Addition (Hotel)						
Demolition	75.1	49.8	62.8	65.1	62.0	78.3
Site Preparation	70.7	44.4	57.4	60.1	56.9	74.1
Grading/Excavation	72.2	47.1	60.2	62.3	59.3	75.3
Trenching	75.3	49.1	62.2	64.8	61.6	78.7
Foundations	79.3	56.7	67.0	69.3	66.2	83.7
Building Construction	75.6	50.1	63.1	65.6	62.4	78.9
Paving	74.9	49.8	62.9	65.2	62.0	78.1
Architectural Coating	66.0	46.9	53.7	56.2	53.0	78.1
Parking Garage (Garage)						
Demolition	74.5	47.7	61.2	64.2	61.3	62.0
Grading/Excavation	73.3	50.0	63.1	65.9	63.1	63.1
Foundations	70.9	45.8	59.0	62.0	59.1	59.5
Building Construction	73.0	47.1	60.5	63.5	60.6	61.2
Paving	72.9	47.1	60.5	63.5	60.6	61.0
Architectural Coating	65.1	37.8	51.4	54.5	51.5	52.4
Overlapping Phases						
Demo (Hotel) + Demo (Garage)	77.9	51.8	65.1	67.7	64.7	78.4
Demo (Hotel) + Grading (Garage)	77.3	52.9	66.0	68.5	65.6	78.4
Site Prep (Hotel) + Grading (Garage)	75.2	51.1	64.1	66.9	64.0	74.4

TABLE IV.I-8
ESTIMATE OF CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS

Construction Phases	R1	R2	R3	R4	R5	R6 (Existing Hotel Building)
Grading (Hotel) + Trenching (Hotel) + Grading (Garage)	78.6	53.7	66.8	69.4	66.4	80.4
Grading (Hotel) + Trenching (Hotel) + Grading (Garage) + Foundations (Garage)	79.3	54.3	67.4	70.1	67.1	80.4
Grading (Hotel) + Trenching (Hotel) + Foundations (Garage)	78.0	52.3	65.4	68.0	64.9	80.4
Foundations (Hotel) + Paving (Hotel) + Building Construction (Garage)	81.3	57.9	69.1	71.5	68.4	84.8
Building Construction (Hotel) + Building Construction (Garage) + Arch Coating (Garage)	77.8	52.0	65.2	67.9	64.8	79.0
Building Construction (Hotel) + Paving (Garage)	77.5	51.9	65.0	67.6	64.6	79.0
Maximum Noise Level	81.3	57.9	69.1	71.5	68.4	84.8
Ambient Noise Level (dBA)	59.6	57.7	62.1	63.0	61.9	59.6
Threshold (Ambient + 5 dBA)	64.6	62.7	67.1	68	66.9	64.6
Exceeds Threshold?	Yes	No	Yes	Yes	Yes	N/A

^a Threshold exceedances are shaded grey.

^b Significance thresholds are the measured daytime noise levels shown in Table IV.I-4 plus 5 dBA L_{eq} .

SOURCE: ESA, 2023

(b) Existing Hotel Building

The Existing Hotel Building is not considered a sensitive receptor because it is located on the Project Site and is a part of the Project (e.g., the Project proposes improvements to the existing uses on the Project Site). However, for informational purposes only, the Existing Hotel Building (R6) was analyzed as a receptor because the Hotel would remain operational during Project construction. As shown in Table IV.I-9, construction noise levels were estimated to reach a maximum of 84.8 dBA L_{eq} during the overlap of foundations for the Hotel Expansion Building and Meeting Room Addition, paving associated with the Hotel Expansion Building and Meeting Room Addition and circulation improvements (e.g., service road, surface parking, and North and South Plaza reconfigurations) and building construction of the parking garage. The construction noise levels would be over the threshold for the Hotel Expansion Building and Meeting Room Addition and all overlapping phases. However, a significance determination has not been made given that the Existing Hotel Building is part of the Project Site, not considered a sensitive receptor, and is not subject to CEQA analysis.

(ii) *Off-Site Construction Truck Noise*

Construction truck trips would occur throughout the construction period and would be associated with hauling material and excavated soil from the Project Site and delivering concrete and other construction materials to the Project Site. For purposes of this off-site construction noise analysis, the overlapping of the concrete pour and foundations stages were analyzed, which represents the worst-case day with the most construction traffic. Construction trips were estimated with a maximum of approximately 70 worker trips and 50 haul truck trips per hour (assuming a maximum of 400 haul truck trips per day evenly distributed over an eight-hour work day). Consistent with normal construction practices, it is assumed that all worker trips would occur during a single hour twice per day (morning and evening) and that concrete and haul trucks would be evenly distributed over an eight-hour work day.

Project haul trucks (e.g., trucks hauling dirt) would be required to use City-approved haul truck routes. Demolition materials would be hauled to the Savage Canyon Landfill in the City of Whittier. The haul route for trucks traveling to the Project Site on southbound US-101 would exit onto Cahuenga Boulevard, travel north on Lankershim Boulevard, and then east on Universal Hollywood Drive to the Project Site. Trucks traveling to the Project Site on northbound US-101 would exit Universal Studios Boulevard and travel northwest on W.C. Fields Drive to Hotel Drive to the Project Site. Outbound trips would follow the same routes to US-101. Although haul trucks could travel to the Project Site along two different routes, it would be speculative to assume how hourly haul truck trips would be distributed across two routes, when the City may only approve one haul truck route, requiring all trucks to travel along one route. Therefore, the noise levels along both haul routes have been calculated assuming that all hourly haul trucks would travel on both routes as a conservative analysis. Concrete trucks and worker vehicles would not be subject to the City-approved haul route. Because concrete trucks and worker vehicles would come from a variety of locations, it would be speculative to assume which roadways would be traveled by concrete trucks and worker vehicles.

Therefore, the off-site construction noise analysis associated with the maximum daily worker and truck trips assumes that trucks would travel on all segments that are considered for the operational traffic analysis. This analysis represents worst-case construction traffic conditions, and the studied segments encompass the possible haul routes for the haul trucks. As shown in **Table IV.I-9, *Estimate of Off-Site Construction Traffic Noise Levels***, the Project's construction trips would increase existing traffic noise levels by a maximum of 3.1 dBA L_{eq} along W.C. Fields Drive west of Universal Studios Boulevard. This increase in noise level would be below the threshold of a 5-dBA increase in ambient levels, and the increase in sound level would be lower at the remaining roadway segments analyzed. **Therefore, the Project would not result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City, and off-site construction traffic noise impacts would be less than significant.**

**TABLE IV.I-9
OFF-SITE CONSTRUCTION TRAFFIC NOISE IMPACTS – EXISTING PLUS CONSTRUCTION**

Roadway Segment	Existing Land Uses Located Along Roadway Segment	Peak Hour Noise Level (dBA L _{eq})			
		Existing (A)	Existing Plus Project (B)	Project Increment (B-A)	Exceed Threshold?
Barham Blvd n/o Cahuenga Blvd E	Single-Family Residential/Multi-Family Residential	75.5	75.6	0.1	No
Barham Blvd s/o Cahuenga Blvd E	Commercial	73.5	73.6	0.1	No
Cahuenga Blvd between Lankershim Blvd and Regal Pl	Commercial	73.8	74.4	0.6	No
Cahuenga Blvd between Regal Pl and Universal Studios Blvd	Commercial/Religious	72.6	72.7	0.1	No
Cahuenga Blvd E e/o Barham Blvd	Single-Family Residential	72.5	72.6	0.1	No
Cahuenga Blvd W e/o Universal Studios Blvd	Commercial/Educational	70.4	70.5	0.1	No
Cahuenga Blvd w/o Lankershim Blvd	Commercial/Hotel	71.8	71.9	0.1	No
Campo de Cahuenga Way between Metro Driveway and Lankershim Blvd	Public Transit/Museum	67.6	67.8	0.2	No
Campo de Cahuenga Way between US-101 NB/SB On/Off Ramp and Metro Driveway	Open Space	68.1	68.3	0.2	No
Campo de Cahuenga Way w/o US-101 NB/SB On/Off Ramp	Commercial/Single-Family Residential	67.9	68.1	0.2	No
Lankershim Blvd between Universal Hollywood Dr and US- 101 NB Off Ramp	Commercial	70.7	71.5	0.8	No
Lankershim Blvd between US-101 NB Off Ramp and Cahuenga Blvd	Commercial	69.9	70.8	0.9	No
Lankershim Blvd n/o Universal Hollywood Dr	Commercial/Multi-Family Residential	72.2	72.2	0.1	No
Lankershim Blvd s/o Cahuenga Blvd	Commercial/Single-Family Residential	62.8	63.4	0.5	No

**TABLE IV.I-9
OFF-SITE CONSTRUCTION TRAFFIC NOISE IMPACTS – EXISTING PLUS CONSTRUCTION**

Roadway Segment	Existing Land Uses Located Along Roadway Segment	Peak Hour Noise Level (dBA L _{eq})			
		Existing (A)	Existing Plus Project (B)	Project Increment (B-A)	Exceed Threshold?
Regal PI n/o Cahuenga Blvd	Freeway On/Off Ramp	69.2	70.8	1.6	No
Regal PI s/o Cahuenga Blvd	Commercial/ Single-Family Residential/Multi-Family Residential	62.2	64.1	1.9	No
Universal Hollywood Dr between Lankershim Blvd and Hilton Driveway	Hotel/Theme Park/ Commercial	70.4	71.6	1.2	No
Universal Hollywood Dr s/o Hilton Driveway	Hotel/Theme Park/ Commercial	65.2	67.9	2.7	No
Universal Studios Blvd between US-101 SB On Ramp and Cahuenga Blvd W	Commercial	66.0	66.2	0.2	No
Universal Studios Blvd between W.C. Fields Dr and US-101 SB On Ramp	Commercial	68.2	69.4	1.2	No
Universal Studios Blvd n/o W.C. Fields Dr	Commercial	64.2	64.4	0.2	No
US-101 NB Off Ramp e/o Lankershim Blvd	Freeway On/Off Ramp	69.7	70.0	0.3	No
US-101 NB/SB On/Off Ramp n/o Campo de Cahuenga Way	Freeway On/Off Ramp	71.0	71.2	0.2	No
US-101 NB/SB On/Off Ramp s/o Campo de Cahuenga Way	Freeway On/Off Ramp	67.3	67.7	0.5	No
US-101 SB On Ramp e/o Universal Studios Blvd	Freeway On/Off Ramp	66.9	67.4	0.5	No
W.C. Fields Dr between Universal Studios Blvd and Barham Blvd	Commercial/ Single-Family Residential/Open Space	67.9	68.3	0.3	No
W.C. Fields Dr w/o Universal Studios Blvd	Commercial/Hotel	66.5	69.6	3.1	No

SOURCE: ESA, 2022.

(b) *Operational Noise Impacts*(i) *On-Site Operational Noise*(a) *Fixed Mechanical Equipment*(i) *Off-Site Receptors*

As part of the Project, new mechanical equipment (e.g., air conditioners, fans, and related equipment) would be located on the Project Site. Project mechanical equipment for the Hotel Expansion Building would be located within a mechanical room on the roof. Mechanical equipment for the Meeting Room Addition would also be located on the roof. Emergency generators would be located within an electrical room within the existing parking garage structure and would not contribute to noise levels due to their enclosed, underground location. In addition, these generators would only be used during required maintenance and testing or an emergency and are, therefore, exempt from the LAMC Noise Regulations (LAMC Section 112.04 b). As required in NOI-PDF-2 (Mechanical Equipment 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 (Section 112.02 of the LAMC). Mechanical equipment compliance will be achieved through the use of quiet fans, duct silencers, parapets, enclosures, mufflers, or similar noise attenuation methods. According to the FHWA, noise barriers can provide noise level reductions of at least 10 dBA with dense concrete barriers providing reductions of up to 40 dBA.⁵⁷ Therefore, a noise level reduction of 15 dBA has been assumed due to Project implementation of Project Design Feature NOI-PDF-2 which includes enclosures and other forms of noise attenuation. **Table IV.I-10, Mechanical Equipment Noise Levels**, shows the estimated noise levels expected from the Hotel Expansion Building and Meeting Room Addition. As shown, the mechanical equipment noise levels would not result in an exceedance of the threshold for sensitive receptors at the Sheraton Hotel (R1). Receptors located at a further distance from the Project Site would experience even lower noise levels than those shown in Table IV.I-10. Therefore, impacts would also be less than significant at receptor locations R2 through R5. **As such, the Project would not result in the generation of ambient noise levels in the vicinity of the Project in excess of standards established by the City and noise impacts from mechanical equipment would be less than significant.**

⁵⁷ Federal Highway Administration, *Noise Barrier Design Handbook*, Section 3.4.2, https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/design03.cfm. Accessed July 16, 2021.

**TABLE IV.I-10
FIXED MECHANICAL EQUIPMENT NOISE LEVELS**

Receptor Location	Existing Ambient Noise Levels ^a dBA (L _{eq})	Estimated Noise from Project Mechanical Equipment ^b dBA (L _{eq})	Ambient + Project Noise Levels, dBA (L _{eq})	NOI-PDF-2 Noise Reductions	Noise Level after NOI-PDF-2	Significance Threshold ^c	Exceedance over Significance Threshold	Significant Impact?
Sheraton Hotel (R1)	57.5	48.7	58.0	-15	43.0	62.5	0.0	No
Existing Hotel Building (R6)	57.5	63.8	64.8	-15	49.8	62.5	0.0	N/A

NOTES:

^a The ambient noise level is based on the measured daytime and evening noise levels shown in Table IV.G-6, and the lower value (daytime or evening) is used for the purposes of impact determination.

^b Exterior reference noise levels for air condenser units, fans, and related equipment, the primary sources of noise from fixed mechanical equipment, would be 81.9 dBA L_{eq} measured at a distance of 5 feet (based on noise data from large shopping center projects in Southern California). Refer to City of Moreno Valley, Moreno Valley Walmart Noise Impact Analysis, Table 9-1, Page 71, February 10, 2015; and City of Pomona, Pomona Ranch Plaza Walmart Expansion Project, Table 4.4-5, Pg. 4.4-33, August 2014. Assumes mechanical equipment noise generated by the closest source to each sensitive receptor.

^c Significance thresholds are equivalent to the measured daytime or evening ambient noise levels, whichever is lower plus 5 dBA, per the City of Los Angeles Noise Regulations.

SOURCE: ESA, 2023.

(ii) *Existing Hotel Building*

As required in NOI-PDF-2 (Mechanical Equipment 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 (Section 112.02 of the LAMC). Mechanical equipment compliance would be achieved through the use of quiet fans, duct silencers, parapets, enclosures, mufflers, or similar noise attenuation methods. Table IV.I-10 shows the estimated noise levels expected from the Hotel Expansion Building and Meeting Room Addition. As shown, the mechanical equipment noise levels would not result in an exceedance of the threshold for receptors at the Existing Hotel Building (R6) with implementation of NOI-PDF-2.

(b) *Outdoor Spaces*

(i) *Off-Site Receptors*

As discussed in Chapter II, *Project Description*, of this Draft EIR, the Project would incorporate outdoor spaces and amenities, as well as common and private outdoor space and recreational amenities for use by Project hotel guests and employees. Although certain outdoor spaces are located on upper floors/rooftops, due to the height of the Sheraton Hotel and to ensure a conservative analysis, the outdoor space noise calculations do not account for the height when considering the distance of outdoor spaces to the Sheraton Hotel. Therefore, the noise levels at the proposed outdoor spaces are considered level with the Sheraton Hotel as a receptor rather than assuming any noise reduction that may occur due to the vertical offset height of the source compared to the receptor.

Listed below are the Project's proposed outdoor uses and the assumptions applied to the analysis. It is assumed that all outdoor spaces, including rooftop open spaces, would operate with various gathering and event uses (i.e., parties, receptions, etc.) from 6:00 A.M. to 11:00 P.M. typically, with potential gathering and event uses extending to 2:00 A.M. Therefore, these spaces are analyzed as having the potential for nighttime use (defined as between the hours of 10:00 P.M. and 7:00 A.M.). In addition to the active uses for specified spaces described below, these outdoor areas would support a variety of passive activities.

(a) *North Plaza*

As described in Chapter II, *Project Description*, of this Draft EIR, the existing motorcourt and porte cochere entryway to the Existing Ancillary Hotel Building and landscaping (collectively, the North Plaza) would be reconfigured and would include two courtyard areas. Although the main North Plaza courtyard area would be open for passive use only, the occupant load for the approximately 7,845-square-foot space has been conservatively estimated to be 1,069 people. It is assumed that this area would typically operate during nighttime hours until 11:00 P.M. The reconfigured North Plaza would also include a new yard directly north of the Meeting Room Addition. Although the new yard would be open for passive use only, the occupant load for the approximately 2,800-square-foot space

has been conservatively estimated to be 400 people. It is also assumed that this area would operate during nighttime hours.

(b) *Pool Deck (Basement Level)*

A pool deck would be located on the Basement Level of the Hotel Expansion Building and would feature a restaurant with an indoor/outdoor dining area, pool deck, and pool totaling approximately 13,076 square feet, with a maximum occupied area of approximately 10,281 square feet, and at a distance of approximately 350 feet from the Sheraton Hotel building façade. The occupant load for the outdoor area at the Basement Level is estimated at 685 people. It is assumed that this area would operate during nighttime hours (11:00 a.m. to 2:00 a.m., consistent with LAMC requirements) and would include amplified background music.

(c) *Pool Deck (Rooftop/Level 18)*

A pool deck would be located on rooftop of the Hotel Expansion Building at a distance of approximately 350 feet from the Sheraton Hotel building façade. The occupant load for the approximately 9,750-square-foot outdoor area, with a maximum occupied area of 5,395 square feet, is estimated at 360 people. It is assumed that this area would operate during nighttime hours (11:00 a.m. to 2:00 a.m., consistent with LAMC requirements) and would include amplified background music.

(d) *Outdoor Noise*

Table IV.I-11, *Estimated Outdoor Maximum Noise Levels (L_{eq})*, shows the estimated maximum noise levels from activities or events occurring within the Project's outdoor spaces at the Sheraton Hotel (R1) as the closest receptor. As indicated in Table IV.I-11, the estimated maximum noise levels from the Project's outdoor spaces would range from 59.8 dBA L_{eq} from the rooftop pool deck to 61.3 dBA L_{eq} from the main North Plaza. The main source of noise levels from all four outdoor spaces would be from the amplification of sound/music. Noise levels associated with all outdoor spaces would not exceed the threshold of a 5-dBA increase in ambient noise at receptor location R1 during daytime or nighttime hours. Composite noise levels of activities are described below. Receptors located at a further distance from the Project Site would experience even lower noise levels than those shown in Table IV.I-11, and impacts would be less than significant at receptor locations R2 through R5. **Therefore, the Project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City, and noise impacts from use of outdoor spaces would be less than significant.**

TABLE IV.I-11
ESTIMATED OUTDOOR MAXIMUM NOISE LEVELS (L_{EQ})

Outdoor/Event (primary noise source) ^a	Receptor Location	Estimated Outdoor Event Related Noise Levels Day, (L _{eq})	Estimated Outdoor Event Related Noise Levels Night, (L _{eq})	Existing Ambient Noise Levels, dBA (L _{eq})	Ambient + Project Noise Levels, dBA (L _{eq})	Significance Threshold, dBA (L _{eq})	Exceed Significance Threshold	Existing Ambient Noise Levels, dBA (L _{eq})	Ambient + Project Noise Levels, dBA (L _{eq})	Significance Threshold, dBA (L _{eq})	Exceed Significance Threshold
				Daytime				Nighttime			
Main North Plaza (1,069 people)	R1	56.3	56.3	59.6	61.3	64.6	No	57.5	60.0	62.5	No
	R6	57.9	57.9	59.6	61.8	64.6	N/A	57.5	60.7	62.5	N/A
North Plaza New Yard (400 people)	R1	40.5	40.5	59.6	59.7	64.6	No	57.5	57.6	62.5	No
	R6	39.6	39.6	59.6	59.6	64.6	N/A	57.5	57.6	62.5	N/A
Pool Deck Basement Level (685 people & amplified music)	R1	37.2	37.2	59.6	59.6	64.6	No	57.5	57.5	62.5	No
	R6	48.0	48.0	59.6	59.9	64.6	N/A	57.5	58.0	62.5	N/A
Pool Deck Rooftop (360 people & amplified music)	R1	47.1	47.1	59.6	59.8	64.6	No	57.5	57.9	62.5	No
	R6	55.7	55.7	59.6	61.1	64.6	N/A	57.5	59.7	62.5	N/A

^a A speaker volume of 80 dBA at 25 feet from the speaker has been assumed for the North Plaza and both Pool Decks.

^b Noise shielding is assumed to provide a 20-dBA reduction at the Pool Deck on the Basement Level from the hotel building and existing parking garage.

^c Noise shielding is assumed to provide a 10-dBA reduction at the Pool Deck Rooftop from the hotel building.

SOURCE: ESA, 2023.

(ii) *Existing Hotel Building*

Table IV.I-11 shows the estimated maximum noise levels from activities or events occurring within the Project's outdoor spaces at the Existing Hotel Building (R6) as the closest receptor. As indicated in Table IV.I-11, the estimated maximum noise levels from the Project's outdoor spaces would range from 57.6 dBA L_{eq} to 61.8 dBA L_{eq} from the North Plaza. The main source of noise levels from all four outdoor spaces (North Plaza, South Plaza, Basement Level Pool, and Rooftop Pool) would be from the amplification of sound/music. Noise levels associated with all outdoor spaces would not exceed the threshold of a 5-dBA increase in ambient noise at receptor location R6 during daytime or nighttime hours. Composite noise levels of activities are described below.

(c) *Parking Facilities*

As discussed in Chapter II, *Project Description*, of the Draft EIR, the Project proposes a horizontal and vertical expansion of the existing parking garage and surface parking along the existing service road on the east side of the Project Site, along the eastern and northern edges of the North Plaza, and along the western boundary of the Project Site (127 spaces, 570 feet from the Sheraton Hotel). The surface parking spaces along the existing service road on the east would be shielded from the Sheraton Hotel by the existing Hotel buildings. The intervening Existing Hotel Building and Existing Ancillary Hotel Building would block noise occurring from vehicles during operations on the east side of the Project Site using the service road. These large intervening structures can reduce noise by 20 to 25 dBA.⁵⁸ Therefore, Project impacts associated with the service road parking would be less than significant and are not assessed further. For the purpose of providing a conservative analysis, the noise level that would be generated from vehicles entering and exiting the Project's Meeting Room Addition and parking garage, as well as the noise level from surface parking in the North Plaza and along the western boundary of the Project Site, have been estimated based on the number of peak hour trips that would be generated by the Project. The methodology recommended by FTA for the general assessment of parking facility noise sources is discussed in the Methodology Section.

Sources of noise within the parking structures would primarily include vehicular movements and engine noise, doors opening and closing, and intermittent car alarms. Since the parking levels would be fully enclosed on all sides, noise generated within the parking structures would be effectively shielded from off-site sensitive receptor locations in the immediate vicinity of the Project Site. However, for the purpose of providing a conservative analysis, parking facility noise has been estimated based on the number of peak hour trips generated by the Project. The estimated noise levels at the Sheraton Hotel from the parking garage and surface parking in the North Plaza and along the western boundary of the Project Site would be 41 dBA L_{eq} at the Sheraton Hotel (R1) and 35 dBA L_{eq} at the Existing Hotel Building (R6), which would be below the existing ambient noise

⁵⁸ FHWA, Noise Barrier Design Handbook, Chapter 3, https://www.fhwa.dot.gov/Environment/noise/noise_barriers/design_construction/design/design03.cfm, accessed December 2022.

levels. As such, the estimated noise levels would not exceed the significance thresholds at R1 or R6. Receptors located at a further distance from the Project Site would experience even lower noise levels than those shown in Table IV.I-11, and impacts would be less than significant at receptor locations R2 through R5. **As such, the Project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City, and impacts from parking structure noise would be less than significant.**

(ii) *Off-site Project Traffic*

(a) Existing Plus Project Conditions

Existing roadway noise levels were calculated along various roadway segments near the Project Site. Roadway noise attributable to Project development was calculated using the traffic noise model previously described and was compared to baseline noise levels that would occur under the “No Project” condition.

Project impacts are shown in **Table IV.I-12, Off-Site Traffic Noise Impacts – Existing Plus Project Conditions**. As indicated, the maximum increase in Project-related traffic noise levels over existing traffic noise levels would be 0.5 dBA CNEL, which would occur along Universal Hollywood Drive between Lankershim Boulevard and the Project Driveway. This increase in noise level would be below the threshold of a 5-dBA CNEL increase in existing traffic noise levels, and the increase in sound level would be lower at the remaining roadway segments analyzed. **Therefore, the Project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City, and Project-related traffic noise increases would be less than significant.**

(b) Future (2027) Plus Project Conditions

Future (2027) roadway noise levels were calculated along various roadway segments near the Project Site. Roadway noise attributable to Project development was calculated using the traffic noise model previously described and was compared to baseline noise levels that would occur under the “No Project” condition.

Project impacts are shown in **Table IV.I-13, Off-Site Traffic Noise Impacts – Future (2027) Plus Project Conditions**. As indicated, the maximum increase in Project-related traffic noise levels over existing traffic noise levels would be 0.5 dBA CNEL, which would occur along W.C. Fields Drive between Universal Studios Blvd and Barham Blvd. This increase in noise level would be below the threshold of a 5-dBA CNEL increase in Future No Project traffic noise levels, and the increase in sound level would be lower at the remaining roadway segments analyzed. **Therefore, the Project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City, and Project-related traffic noise increases would be less than significant.**

TABLE IV.I-12
OFF-SITE TRAFFIC NOISE IMPACTS – EXISTING PLUS PROJECT CONDITIONS

Roadway Segment	Existing Land Uses Located Along Roadway Segment	CNEL (dBA)			
		Existing (A)	Existing Plus Project (B)	Project Increment (B-A)	Exceed Threshold?
Barham Blvd n/o Cahuenga Blvd E	Single-Family Residential/Multi-Family Residential	75.8	75.8	0.0	No
Barham Blvd s/o Cahuenga Blvd E	Commercial	73.8	73.8	0.0	No
Cahuenga Blvd between Lankershim Blvd and Regal Pl	Commercial	74.1	74.1	0.0	No
Cahuenga Blvd between Regal Pl and Universal Studios Blvd	Commercial/Religious	72.9	72.9	0.0	No
Cahuenga Blvd E e/o Barham Blvd	Single-Family Residential	72.8	72.8	0.0	No
Cahuenga Blvd W e/o Universal Studios Blvd	Commercial/Educational	70.7	70.7	0.0	No
Cahuenga Blvd w/o Lankershim Blvd	Commercial/Hotel	72.1	72.1	0.0	No
Campo de Cahuenga Way between Metro Driveway and Lankershim Blvd	Public Transit	67.9	68.1	0.2	No
Campo de Cahuenga Way between US-101 NB/SB On/Off Ramp and Metro Driveway	Freeway Underpass	68.4	68.5	0.2	No
Campo de Cahuenga Way w/o US-101 NB/SB On/Off Ramp	Commercial/Single-Family Residential	68.2	68.3	0.1	No
Lankershim Blvd between Universal Hollywood Dr and US-101 NB Off Ramp	Commercial	71.0	71.1	0.1	No
Lankershim Blvd between US-101 NB Off Ramp and Cahuenga Blvd	Commercial	70.2	70.2	0.1	No
Lankershim Blvd n/o Universal Hollywood Dr	Commercial/Multi-family Residential	72.5	72.5	0.1	No
Lankershim Blvd s/o Cahuenga Blvd	Commercial/Single-Family Residential	63.1	63.1	0.0	No

TABLE IV.I-12
OFF-SITE TRAFFIC NOISE IMPACTS – EXISTING PLUS PROJECT CONDITIONS

Roadway Segment	Existing Land Uses Located Along Roadway Segment	CNEL (dBA)			
		Existing (A)	Existing Plus Project (B)	Project Increment (B-A)	Exceed Threshold?
Regal Pl n/o Cahuenga Blvd	Freeway On/Off Ramp	69.5	69.6	0.1	No
Regal Pl s/o Cahuenga Blvd	Commercial/Single-Family Residential/Multi-Family Residential	62.5	62.5	0.0	No
Universal Hollywood Dr between Lankershim Blvd and Hilton Driveway	Hotel/Theme Park/Commercial	70.7	71.2	0.5	No
Universal Hollywood Dr s/o Hilton Driveway	Hotel/Theme Park/Commercial	65.5	65.8	0.3	No
Universal Studios Blvd between US-101 SB On Ramp and Cahuenga Blvd W	Commercial	66.3	66.4	0.1	No
Universal Studios Blvd between W.C. Fields Dr and US-101 SB On Ramp	Commercial	68.5	68.6	0.1	No
Universal Studios Blvd n/o W.C. Fields Dr	Commercial	64.5	64.5	0.0	No
US-101 NB Off Ramp e/o Lankershim Blvd	Freeway On/Off Ramp	70.0	70.1	0.1	No
US-101 NB/SB On/Off Ramp n/o Campo de Cahuenga Way	Freeway On/Off Ramp	71.3	71.4	0.1	No
US-101 NB/SB On/Off Ramp s/o Campo de Cahuenga Way	Freeway On/Off Ramp	67.6	67.6	0.0	No
US-101 SB On Ramp e/o Universal Studios Blvd	Freeway On/Off Ramp	67.2	67.4	0.2	No
W.C. Fields Dr between Universal Studios Blvd and Barham Blvd	Commercial/Single-Family Residential/Open Space	68.2	68.4	0.2	No
W.C. Fields Dr w/o Universal Studios Blvd	Commercial/Hotel	66.8	67.4	0.6	No
SOURCE: ESA, 2023.					

TABLE IV.I-13
OFF-SITE TRAFFIC NOISE IMPACTS – FUTURE (2027) PLUS PROJECT CONDITIONS

Roadway Segment	Existing Land Uses Located Along Roadway Segment	CNEL (dBA)			
		Future (2027) Baseline (A)	Future (2027) Plus Project (B)	Project Increment (B-A)	Exceed Threshold?
Barham Blvd n/o Cahuenga Blvd E	Single-Family Residential/Multi-Family Residential	76.2	76.2	0.0	No
Barham Blvd s/o Cahuenga Blvd E	Commercial	74.2	74.2	0.0	No
Cahuenga Blvd between Lankershim Blvd and Regal Pl	Commercial	74.7	74.7	0.0	No
Cahuenga Blvd between Regal Pl and Universal Studios Blvd	Commercial/Religious	73.5	73.5	0.0	No
Cahuenga Blvd E e/o Barham Blvd	Single-Family Residential	73.2	73.2	0.0	No
Cahuenga Blvd W e/o Universal Studios Blvd	Commercial/Educational	71.7	71.5	-0.3	No
Cahuenga Blvd w/o Lankershim Blvd	Commercial/Hotel	72.6	72.6	0.0	No
Campo de Cahuenga Way between Metro Driveway and Lankershim Blvd	Public Transit	69.3	69.4	0.1	No
Campo de Cahuenga Way between US-101 NB/SB On/Off Ramp and Metro Driveway	Freeway Underpass	69.6	69.7	0.1	No
Campo de Cahuenga Way w/o US-101 NB/SB On/Off Ramp	Commercial/Single-Family Residential	68.9	69.0	0.0	No
Lankershim Blvd between Universal Hollywood Dr and US-101 NB Off Ramp	Commercial	72.0	72.1	0.1	No
Lankershim Blvd between US-101 NB Off Ramp and Cahuenga Blvd	Commercial	70.9	70.9	0.0	No
Lankershim Blvd n/o Universal Hollywood Dr	Commercial/Multi-family Residential	73.3	73.4	0.0	No
Lankershim Blvd s/o Cahuenga Blvd	Commercial/Single-Family Residential	63.7	63.7	0.0	No

TABLE IV.I-13
OFF-SITE TRAFFIC NOISE IMPACTS – FUTURE (2027) PLUS PROJECT CONDITIONS

Roadway Segment	Existing Land Uses Located Along Roadway Segment	CNEL (dBA)			
		Future (2027) Baseline (A)	Future (2027) Plus Project (B)	Project Increment (B-A)	Exceed Threshold?
Regal PI n/o Cahuenga Blvd	Freeway On/Off Ramp	70.0	70.1	0.1	No
Regal PI s/o Cahuenga Blvd	Commercial/Single-Family Residential/Multi-Family Residential	63.2	63.2	0.0	No
Universal Hollywood Dr between Lankershim Blvd and Hilton Driveway	Hotel/Theme Park/Commercial	72.2	72.6	0.4	No
Universal Hollywood Dr s/o Hilton Driveway	Hotel/Theme Park/Commercial	68.5	68.6	0.2	No
Universal Studios Blvd between US-101 SB On Ramp and Cahuenga Blvd W	Commercial	67.1	66.4	-0.7	No
Universal Studios Blvd between W.C. Fields Dr and US-101 SB On Ramp	Commercial	69.6	69.7	0.1	No
Universal Studios Blvd n/o W.C. Fields Dr	Commercial	65.7	65.7	0.0	No
US-101 NB Off Ramp e/o Lankershim Blvd	Freeway On/Off Ramp	71.6	71.6	0.1	No
US-101 NB/SB On/Off Ramp n/o Campo de Cahuenga Way	Freeway On/Off Ramp	72.2	72.3	0.1	No
US-101 NB/SB On/Off Ramp s/o Campo de Cahuenga Way	Freeway On/Off Ramp	67.9	67.9	0.0	No
US-101 SB On Ramp e/o Universal Studios Blvd	Freeway On/Off Ramp	68.9	69.0	0.1	No
W.C. Fields Dr between Universal Studios Blvd and Barham Blvd	Commercial/Single-Family Residential/Open Space	68.5	68.6	0.2	No
W.C. Fields Dr w/o Universal Studios Blvd	Commercial/Hotel	67.1	67.7	0.6	No

SOURCE: ESA, 2023.

(iii) *Composite Noise Level Impacts from On-Site Project Operations/Activities*

(a) Off-Site Receptors

An evaluation of the combined noise from the Project's various noise sources (i.e., composite noise level) was conducted to conservatively ascertain the potential maximum Project-related noise level increase that may occur at the Sheraton Hotel (R1). Receptor locations R2 through R5 are all located at a greater distance from the Project Site and would experience lower noise levels than at R1. On-site noise sources associated with the Project would include fixed mechanical equipment, outdoor spaces, surface parking, and parking structure. As discussed above, the proposed emergency generator would be located within a parking level that would be completely enclosed. However, potential noise from an emergency generator is included in the overall composite noise level as a conservative estimate of all potential noise sources.

Table IV.I-14, *Composite Noise Levels from Project Operations*, shows combined Project operational noise level at the Sheraton Hotel. This analysis conservatively assumes that the Project's operational noise sources would generate maximum noise levels simultaneously. As shown in Table IV.I-14, relative to the existing noise environment, the Project would not exceed the 5-dBA over ambient level threshold during daytime or nighttime hours at the Sheraton Hotel. Receptors located at a further distance from the Project Site would experience even lower noise levels than those shown in Table IV.I-14 and impacts would be less than significant at receptor locations R2 through R5. Therefore, the Project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established by the City, and the Project's operational composite noise would be less than significant.

(b) Existing Hotel Building

The Existing Hotel Building is not considered a sensitive receptor because it is located on the Project Site and is a part of the Project (e.g., the Project proposes improvements to the existing uses on the Project Site). However, for informational purposes only, the Existing Hotel Building (R6) was analyzed as a receptor because the Hotel would remain operational during Project construction. An evaluation of the combined noise from the Project's various noise sources (i.e., composite noise level) was conducted to conservatively ascertain the potential maximum Project-related noise level increase that may occur at the Existing Hotel Building (R6). On-site noise sources associated with the Project would include the same sources as listed above for off-site receptors.

Table IV.I-15 shows combined Project operational noise level at the Existing Hotel Building. This analysis conservatively assumes that the Project's operational noise sources would generate maximum noise levels simultaneously. As shown in Table IV.I-15, relative to the existing noise environment, the Project would not exceed the 5-dBA over ambient level threshold during daytime or nighttime hours at the Existing Hotel Building.

**TABLE IV.I-14
COMPOSITE NOISE LEVELS FROM PROJECT OPERATION**

	Daytime Noise Levels, dBA Leq	Nighttime Noise Levels, dBA, Leq	Daytime Noise Levels, dBA Leq	Nighttime Noise Levels, dBA, Leq
Operational Noise Sources	R1 (Sheraton Hotel)		R6 (Existing Hotel Building)	
Existing (Ambient) Noise Level (A)	59.6	57.5	59.6	57.5
Project Composite Noise Sources				
Fixed Mechanical Equipment	48.7	48.7	49.8	49.8
Emergency Generators	36.7	36.7	44.3	44.3
North Plaza (Main)	56.3	56.3	57.9	57.9
North Plaza (New Yard)	40.5	40.5	39.6	39.6
Pool Deck (Basement Level)	37.1	37.1	48.0	48.0
Pool Deck (Rooftop)	47.1	47.1	55.7	55.7
Parking	40.5	40.5	35.2	35.2
Project Composite Noise Level (B)	57.4	57.4	60.7	60.7
Existing Plus Project Composite Noise Level	61.7	60.5	63.2	62.4
Project Increment (C-A)	2.1	3.0	3.6	4.9
Exceeds Threshold?	No	No	N/A	N/A

SOURCE: ESA, 2023.

(2) Mitigation Measures

(a) Construction

The following mitigation measures would reduce on-site construction-related noise levels:

NOI-MM-1: Noise Barriers. The Project shall provide a temporary 20-foot-tall construction noise barrier equipped with noise blankets or equivalent noise reduction materials rated to achieve sound level reductions of at least 15 dBA along the western boundary of the Hilton Property from the start of demolition through the completion of architectural coating activities. The barrier shall be placed on top of the Project parking structure at the same level as the existing Project building entrance.

NOI-MM-2: Construction Equipment Noise Shielding and Muffling Devices. Contractors shall ensure that all construction equipment, fixed or mobile, are equipped with properly operating and maintained noise shielding and muffling devices, consistent with manufacturers' specifications. The construction contractor

shall keep documentation on-site demonstrating that the equipment has been maintained in accordance with the manufacturers' specifications. The contractor shall use muffler systems that provide a minimum reduction of 8 dBA compared to the same equipment without an installed muffler system, reducing maximum construction noise levels. The contractor shall also keep documentation on-site prepared by a noise consultant verifying compliance with this measure.

(b) *Operation*

Impacts regarding the Project's operational noise were determined to be less than significant. Therefore, no mitigation measures are required.

(3) **Level of Significance After Mitigation**

(a) *Construction – Noise*

(i) *On-Site Construction Noise*

(a) *Off-Site Receptors*

Construction noise levels with implementation of mitigation measures are shown in **Table IV.I-15, *Estimate of Mitigated Construction Noise Levels at Sensitive Receptors***. Mitigation Measure NOI-MM-1 would provide at least a 15-dBA noise reduction at two levels of the Sheraton Hotel guest rooms (R1), the fourth level that is located at the same elevation as the existing building entrance of the Project Site, as well as the next level above that (fifth level). All levels of the Sheraton Hotel located below the Plaza level of the Project Site (fifth level and below) would be shielded from construction noise due to the difference in elevation between the Sheraton Hotel and the Project Site blocking the line-of-sight to the construction activities and would not be impacted by Project construction activities. As described above, construction noise impacts would be less than significant for receptor location R2 without implementation of a noise barrier due to the receptor's distance from the Project Site and difference in elevation. Receptor locations R1 (levels 6 through 17) and R3 through R5 would not benefit from implementation of a noise barrier because the receptors are at a higher elevation than the Project Site and would have a direct line-of-sight to the construction area (R3 through R5). Therefore, noise barrier reductions are not taken for receptor locations R1 (Levels 6 through 17) through R5. Implementation of Mitigation Measure NOI-MM-2 requires that construction equipment be equipped with noise mufflers. Absorptive mufflers are generally considered commercially available, state-of-the-art noise reduction for heavy duty equipment.⁵⁹ Mitigation Measure NOI-MM-2 requires that muffler systems provide a minimum reduction of 8 dBA compared to the same equipment without an installed muffler system.⁶⁰

⁵⁹ United Muffler Corp, <https://www.unitedmuffler.com/>. Accessed October 2022.

⁶⁰ According to FHWA, use of adequate mufflers systems can achieve reductions in noise levels of up to 10 dBA. Federal Highway Administration. Special Report – Measurement, Prediction, and Mitigation: Chapter 4 Mitigation. https://www.fhwa.dot.gov/Environment/noise/construction_noise/special_report/hcn04.cfm. Accessed October 2022.

Mitigation Measure NOI-MM-2 would result in noise level reductions at all sensitive receptor locations. Implementation of Mitigation Measure NOI-MM-1 would reduce impacts for the fourth and fifth levels of the Sheraton Hotel (R1), where the noise barrier would completely block the line-of-sight of construction equipment on the Project Site. The precise number of upper floors impacted by on-site Project construction activities would vary based on the location of construction activity and final barrier placement. It is estimated that the lower five levels of the Sheraton Hotel, at a minimum, would have their line-of-sight of construction equipment on the Project Site completely blocked by the noise barrier, which, with a minimum reduction of 23 dBA, would reduce construction noise levels at the lower levels below the significance threshold. Receptor locations R3 through R5 would also be below the significance threshold with implementation of Mitigation Measure NOI-MM-2. In addition, while impacts for receptor location R2 would be less than significant without mitigation, Mitigation Measure NOI-MM-2 would further reduce construction noise impacts at receptor location R2. For Levels 6 through 17 of the Sheraton Hotel, although a noise barrier would be ineffective, Mitigation Measure NOI-MM-2 would provide a reduction of 8 dBA. However, Project construction noise would not be reduced to less than significant when construction phases overlap. As noted above, overlapping construction phases are implemented to reduce the total number of construction days, reducing the length of time construction impacts would occur. It is not feasible to install noise barriers with height sufficient block the line-of-sight for all noise-sensitive receptors located at higher elevations receptor locations R1 (levels 6 through 17) and R3 through R5] due to barrier foundation and wind load restrictions. Due to the dynamic nature of construction, mobile barriers and mobile barrier heights above what is implemented under Mitigation Measure NOI-MM-1 would not be feasible and could pose a safety risk to workers. There are no additional feasible measures that would reduce on-site construction noise impacts to a less-than-significant level, and no other technically feasible measures are available as defined in Section 112.05 of the LAMC. Therefore, the Project's on-site construction activities, although temporary, would be significant and unavoidable at the adjacent Sheraton Hotel (R1). Impacts at receptor locations R3, R4, and R5 would be reduced to less-than-significant levels with implementation of Mitigation Measure NOI-MM-2.

TABLE IV.I-15
ESTIMATE OF MITIGATED CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS

Construction Phases	R1 (Sheraton Upper Levels) ^a	R1 (Sheraton Lower Levels) ^b	R2 ^c	R3	R4	R5	R6 (On-Site)
Hotel Expansion Building and Meeting Room Addition (Hotel)							
Demolition	67.1	52.1	26.8	39.8	42.1	39.0	70.3
Site Preparation	62.7	47.7	21.4	34.4	37.1	33.9	66.1
Grading/Excavation	64.2	49.2	24.1	37.2	39.3	36.3	67.3

TABLE IV.I-15
ESTIMATE OF MITIGATED CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS

Construction Phases	R1 (Sheraton Upper Levels) ^a	R1 (Sheraton Lower Levels) ^b	R2 ^c	R3	R4	R5	R6 (On-Site)
Trenching	67.3	52.3	26.1	39.2	41.8	38.6	70.7
Foundations	71.3	56.3	33.7	44.0	46.3	43.2	75.7
Building Construction – Hotel	67.6	52.6	27.1	40.1	42.6	39.4	70.9
Paving	66.9	51.9	26.8	39.9	42.2	39.0	70.1
Architectural Coating	58.0	43.0	23.9	30.7	33.2	30.0	70.1
Parking Garage (Garage)							
Demolition	66.5	51.5	24.7	38.2	41.2	38.3	54.0
Grading/Excavation	65.3	50.3	27.0	40.1	42.9	40.1	55.1
Foundations	62.9	47.9	22.8	36.0	39.0	36.1	51.5
Building Construction	65.0	50.0	24.1	37.5	40.5	37.6	53.2
Paving	64.9	49.9	24.1	37.5	40.5	37.6	53.0
Architectural Coating	57.1	42.1	14.8	28.4	31.5	28.5	44.4
Overlapping Phases							
Demo (Hotel) + Demo (Garage)	69.9	54.9	43.8	57.1	59.7	56.7	70.4
Demo (Hotel) + Grading (Garage)	69.3	54.3	44.9	58.0	60.5	57.6	70.4
Site Prep (Hotel) + Grading (Garage)	67.2	52.2	43.1	56.1	58.9	56.0	66.4
Grading (Hotel) + Trenching (Hotel) + Grading (Garage)	70.6	55.6	45.7	58.8	61.4	58.4	72.4
Grading (Hotel) + Trenching (Hotel) + Grading (Garage) + Foundations (Garage)	71.3	56.3	46.3	59.4	62.1	59.1	72.4
Grading (Hotel) + Trenching (Hotel) + Foundations (Garage)	70.0	55.0	44.3	57.4	60.0	56.9	72.4
Foundations (Hotel) + Paving (Hotel) + Building Construction (Garage)	73.3	58.3	49.9	61.1	63.5	60.4	76.8
Building Construction (Hotel) + Building Construction (Garage) + Arch Coating (Garage)	69.8	54.8	44.0	57.2	59.9	56.8	71.0
Building Construction (Hotel) + Paving (Garage)	69.5	54.5	43.9	57.0	59.6	56.6	71.0
Maximum Noise Level	73.3	58.3	49.9	61.1	63.5	60.4	76.8

TABLE IV.I-15
ESTIMATE OF MITIGATED CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS

Construction Phases	R1 (Sheraton Upper Levels) ^a	R1 (Sheraton Lower Levels) ^b	R2 ^c	R3	R4	R5	R6 (On-Site)
Ambient Noise Level (dBA)	59.6	59.6	57.7	62.1	63.0	61.9	59.6
Threshold (Ambient + 5 dBA) ^d	64.6	64.6	62.7	67.1	68.0	66.9	64.6
Exceeds Threshold? ^e	Yes	No	No	No	No	No	N/A

^a Upper levels are defined as Levels 6 through 17.

^b Lower levels are defined as Levels 1 through 5.

^c Impacts to receptor R2 are less than significant without mitigation.

^d Significance Thresholds are the measured daytime noise levels shown in Table IV.I-4 plus 5 dBA Leq.

^e Threshold exceedances are shaded grey.

SOURCE: ESA, 2022

(b) Existing Hotel Building

Mitigation is only required for potentially significant impacts under CEQA; however, the application of mitigation measures to guests of the Existing Hotel Building on the Project Site is discussed below for informational purposes. Construction noise levels with implementation of mitigation measures are shown in Table IV.I-16 below. Mitigation Measure NOI-MM-1 would not provide a noise reduction at the Existing Hotel Building because this existing building is located on the Project Site, construction of the Project would occur on all sides of the Existing Hotel Building, and the Existing Hotel Building stands at a height of approximately 258 feet. The proposed Hotel Expansion Building would reach a height of approximately 222 feet. The efficacy of noise barriers is limited to the height relative to the receptor and barriers can achieve a 5 dBA reduction when tall enough to break the line of sight from the receptor.⁶¹ Therefore, noise barrier reductions are not taken for R6. Implementation of Mitigation Measure NOI-MM-2 requires that construction equipment be equipped with noise mufflers. Absorptive mufflers are generally considered commercially available, state-of-the-art noise reduction for heavy duty equipment.⁶² Mitigation Measure NOI-MM-2 requires that muffler systems provide a minimum reduction of 8 dBA compared to the same equipment without an installed muffler

⁶¹ FHWA. 2017. Highway Traffic Noise Analysis and Abatement Policy and Guidance. Highway Traffic Noise Abatement - Polguide - Regulations And Guidance - Noise - EnvironMent - FHWA (dot.gov) Accessed May 2023.

⁶² United Muffler Corp, <https://www.unitedmuffler.com/>. Accessed October 2022.

system.⁶³ Mitigation Measure NOI-MM-2 would result in noise level reductions at all receptor locations. Project construction noise would be greater than the ambient noise level plus 5 dBA at R6.

(ii) *Off-Site Construction Traffic Noise*

Noise impacts from construction vehicles traveling off-site 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.

(b) *Operational Noise*

Impacts regarding the Project's 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.

Threshold b) Would the project result in generation of excessive groundborne vibration or groundborne noise?

(1) **Impact Analysis**

(a) *Structural Damage*

(i) *Construction*

(a) *Off-Site Receptors*

Construction activities at the Project Site have the potential to generate varying levels of groundborne vibration, depending on the construction procedures and the construction equipment used (e.g., vibratory pile driver, backhoe, dozer, drill rig, bulldozer, jackhammer, and haul trucks). The PPV vibration velocities for several types of construction equipment measured at increasing distances are identified in **Table IV.I-16, Construction Vibration Impacts – Structural Damage**. Table IV.I-16 provides the estimated vibration velocity levels at the nearest off-site structures to the Project Site, which include the Sheraton Hotel Parking Garage and the Sheraton Hotel. All other buildings in the area would be located at greater distances from the Project Site and would experience lower vibration velocities from on-site construction activity. It is assumed that both structures are constructed of reinforced-concrete, steel, or timber construction, which is Building Category I (see Table IV.I-1) with a significance threshold of 0.5 in/sec PPV. As a worst case analysis, it has been conservatively assumed that a vibratory pile driver would be required for construction of the Hotel Expansion Building. The distance of potential pile driver use has been measured from the location of the Hotel Expansion Building to the nearest affected structures, including the Sheraton parking garage approximately 30 feet

⁶³ According to FHWA, use of adequate mufflers systems can achieve reductions in noise levels of up to 10 dBA. Federal Highway Administration. Special Report – Measurement, Prediction, and Mitigation: Chapter 4 Mitigation. https://www.fhwa.dot.gov/Environment/noise/construction_noise/special_report/hcn04.cfm. Accessed October 2022.

from pile driver activity and the Sheraton Hotel approximately 200 feet from pile driver activity. The distance of vibratory equipment, except for pile drivers, has been measured to the Project Site boundary (the nearest point of potential equipment activity to the receptor). As indicated in Table IV.I-16, the estimated vibration velocity levels from construction equipment would not exceed the significance threshold of 0.5 in/sec PPV at either the Sheraton parking garage or the Sheraton Hotel as the two closest structures. **Therefore, the Project would not result in the generation of excessive groundborne vibration, and vibration impacts associated with structural damage from on-site construction activities would be less than significant.**

(b) Existing Hotel Building

Table IV.I-16 also provides the estimated vibration velocity levels at the on-site Existing Hotel Building. It is assumed the structure is constructed of reinforced-concrete, steel, or timber construction, which is Building Category I (see Table IV.I-1) with a significance threshold of 0.5 in/sec PPV. As a worst case analysis, it has been conservatively assumed that a vibratory pile driver would be required for construction of the Hotel Expansion Building. The distance of potential pile driver use has been measured from the location of the Hotel Expansion Building to the Existing Hotel Building, which is approximately 40 feet from pile driver activity. The distance of vibratory equipment has been measured to the Project Site boundary (the nearest point of potential equipment activity to the receptor). As indicated in Table IV.I-16, the estimated vibration velocity levels from construction equipment would not exceed the significance threshold of 0.5 in/sec PPV at the Existing Hotel Building.

(ii) Operation

Project operation would include typical commercial-grade stationary mechanical and electrical equipment, such as air handling units, condenser units, and exhaust fans, which would produce vibration. In addition, the primary sources of transient vibration would include passenger vehicle circulation within the proposed parking area. Groundborne vibration generated by each of the above-mentioned activities would generate approximately up to 0.005 in/sec PPV adjacent to the Project Site.⁶⁴ The potential vibration levels from all Project operational sources at the closest existing sensitive receptor locations would be less than the significance threshold of 0.5 in/sec PPV for potential Category I building damage. **As such, the Project would not result in the generation of excessive groundborne vibration, and vibration impacts associated with operation of the Project would be less than significant.**

⁶⁴ This vibration estimate is based on data presented in the USDOT Federal Transit Administration, 2006; which are included in Appendix I of this Draft EIR.

TABLE IV.I-16
CONSTRUCTION VIBRATION IMPACTS – STRUCTURAL DAMAGE

Off-Site Structure ^a	Distance to Source	Estimated Vibration Velocity Levels at the Nearest Off-Site Structures from the Source of Vibration (in/sec PPV) ^b						Significance Threshold ^c	Exceeds Significance Thresholds?
		Vibratory Pile Driver	Large Bulldozer	Drill Rig	Loaded Trucks	Jack-hammer	Small Bulldozer		
<i>FTA Reference Vibration Levels</i>	<i>25 feet</i>	<i>0.170</i>	<i>0.089</i>	<i>0.089</i>	<i>0.076</i>	<i>0.035</i>	<i>0.003</i>	--	--
Sheraton Parking Garage	30 feet	0.129 ^d	0.068	0.068	0.058	0.027	0.002	0.5	No
Sheraton Hotel	200 feet	0.0008 ^d	0.004	0.004	0.003	0.002	0.000	0.5	No
Existing Hotel Building	40 feet	0.084	0.044	0.044	0.038	0.017	0.001	0.5	N/A

^a Represents off-site building structures located nearest the Project Site.

^b Vibration level calculated based on FTA reference vibration level at 25-foot reference distance.

^c FTA criteria for reinforced-concrete, steel, or timber (no plaster) structures (0.5 in/sec PPV).

^d It is assumed that vibratory piling driving would occur for the construction of the Hotel Expansion Building. The distances of the Hotel Expansion Building to the Sheraton Parking Garage and the Sheraton Hotel building are approximately 30 feet and 200 feet, respectively.

SOURCE: FTA, Transit Noise and Vibration Impact Assessment; ESA, 2023.

(b) *Human Annoyance*(i) *Construction*(a) *Off-Site Receptors*

With respect to human annoyance, the FTA's *Transit Noise and Vibration Impact Assessment* identifies Category 2 uses, or buildings where people normally sleep (i.e., the Sheraton Hotel) as sensitive receptors. As discussed above, per FTA guidance, the significance criteria for human annoyance is 72 VdB for Category 2 uses for frequent events, assuming a minimum of 70 vibration events occurring during a typical construction day. **Table IV.I-17, Construction Vibration Impacts – Human Annoyance**, provides the estimated vibration levels at the Sheraton Hotel due to construction equipment operation and compares the estimated vibration levels to the specified significance criteria for human annoyance. The distance of vibratory equipment, except for pile drivers, has been measured to the Project Site boundary (the nearest point of potential equipment activity to the receptor). As a worst-case analysis, it has been conservatively assumed that a vibratory pile driver would be required for the construction of the Hotel Expansion Building. The distance of potential pile driver use has been measured from the location of the Hotel Expansion Building to the Sheraton Hotel building. As indicated in Table IV.I-17, the estimated groundborne vibration levels from construction equipment would not exceed the significance criteria for human annoyance at the Sheraton Hotel building. As described above, the detached Sheraton Hotel parking garage is not considered a sensitive use with respect to human annoyance. **Therefore, the Project would not result in the generation of excessive groundborne vibration, and vibration impacts with respect to human annoyance resulting from temporary vibration from construction equipment would be less than significant.**

As described above, construction trucks would travel on southbound US-101 would exit onto Cahuenga Boulevard, travel north on Lankershim Boulevard, and then east on Universal Hollywood Drive to the Project Site. Trucks traveling to the Project Site on northbound US-101 would exit Universal Studios Boulevard and travel northwest on W.C. Fields Drive to Hotel Drive to the Project Site. The vibration generated by a typical heavy-duty truck could reach up to approximately 75 VdB at a distance of 50 feet, exceeding the human annoyance threshold of 72 VdB for residential uses, when roads are rough, geologic conditions promoting efficient vibration propagation, or when vehicles have stiff suspension systems.⁶⁵ There are no sensitive uses along the haul routes that would be located closer than 50 feet from the roadway. **Therefore, the Project would not result in the generation of excessive groundborne vibration, and vibration impacts to any vibration sensitive receptors, including the adjacent Sheraton Hotel, with respect to human annoyance that would result from temporary and intermittent off-site vibration from construction trucks traveling along the local roadway network, would be less than significant.**

⁶⁵ Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, 2018, Figure 5-4.

TABLE IV.I-17
CONSTRUCTION VIBRATION IMPACTS – HUMAN ANNOYANCE

Off-Site Structure ^a	Distance to Source	Estimated Vibration Velocity Levels at the Sheraton Hotel from the Project Construction Equipment (VdB) ^b						Significance Threshold ^c	Exceed Significance Thresholds?
		Vibratory Pile Driver	Large Bulldozer	Drill Rig	Loaded Trucks	Jack-hammer	Small Bulldozer		
<i>FTA Reference Vibration Levels</i>	25	92.6	86.9	86.9	85.6	78.8	57.5	--	--
Sheraton Hotel	200	65.5 ^d	59.9	59.9	58.5	51.7	30.4	72	No
Existing Hotel Building	40	86.4	80.8	80.8	79.5	72.7	51.4	72	N/A

^a Represents off-site building structures located nearest to the Project Site

^b Vibration level calculated based on FTA reference vibration level at 25-foot reference distance.

^c FTA criteria for residences or buildings where people normally sleep (72 VdB).

^d It is assumed that vibratory piling driving would occur for the construction of the Hotel Expansion Building. The distance of the Hotel Expansion Building to the Sheraton Hotel building is approximately 200 feet.

SOURCE: FTA, Transit Noise and Vibration Impact Assessment, 2018; ESA, 2023.

(b) Existing Hotel Building

Table IV.I-17 provides the estimated vibration levels at the Existing Hotel Building due to construction equipment operation and compares the estimated vibration levels to the specified significance criteria for human annoyance. The distance of vibratory equipment, has been measured from the Hotel Expansion Building to the Existing Hotel Building (the nearest point of potential equipment activity to the receptor). As a worst case analysis, it has been conservatively assumed that a vibratory pile driver would be required for the construction of the Hotel Expansion Building. The distance of potential pile driver use has been measured from the location of the Hotel Expansion Building to the Existing Hotel Building, at a distance of approximately 40 feet. As indicated in Table IV.I-17, the estimated groundborne vibration levels from construction equipment would exceed the significance criteria for human annoyance at the Existing Hotel Building. As described for noise impacts above, this analysis is provided for informational purposes only and no significance conclusion is made.

(ii) Operation

Project operation would include typical commercial-grade stationary mechanical and electrical equipment, such as air handling units, condenser units, and exhaust fans, which would produce vibration at low levels that would not cause damage or annoyance impacts to the Project buildings or on-site occupants and would not cause vibration impacts to the off-site environment. According to America Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), pumps or compressor would generate groundborne vibration levels of 0.5 in/sec PPV at 1 foot.⁶⁶ This analysis assumes that Project mechanical equipment, including air handling units, condenser units, and exhaust fans, would be located within enclosed mechanical rooms on basement levels and building rooftops. Therefore, due to the underground and/or enclosed locations of these pieces of equipment, groundborne vibration from operation would be absorbed by the surrounding materials of the buildings and parking structure. Groundborne vibration from the operation of such mechanical equipment would be less than the 0.5-in/sec structural damage threshold and the 72-VdB human annoyance threshold and would not impact any of the off-site vibration sensitive receptors. **Therefore, the Project would not result in the generation of excessive groundborne vibration, and vibration impacts to any vibration sensitive receptors, including the adjacent Sheraton Hotel, with respect to human annoyance that would result from the Project operation, would be less than significant.**

(2) Mitigation Measures

Construction- and operation-related vibration impacts were determined to be less than significant. Therefore, no mitigation measures are required.

⁶⁶ America Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Heating, Ventilating, and Air-Conditioning Applications, 1999.

(3) Level of Significance After Mitigation

Construction- and operation-related vibration impacts 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?

As discussed in Subsection VI.6, *Impacts Found not to be Significant*, and in the Initial Study (**Appendix A**) of this Draft EIR, the nearest airport is the Burbank Bob Hope Airport located approximately 3.75 miles north of the Project Site. **Therefore, the Project would not expose people residing or working in the Project Site area to excessive noise levels for a project within the vicinity of a public use airport or private airstrip, and no impact would occur with respect to Threshold (c). As such, no further analysis is required.**

e) Cumulative Impacts

(1) Impact Analysis

(a) Construction – Noise

(i) On-Site Construction Noise

The potential for cumulative construction noise impacts from on-site construction activities to occur is based on the distance between the Project and each of the related projects. Noise from construction activities would normally affect the areas immediately adjacent to each of the construction sites, specifically areas that are less than 500 feet from a construction site (500 feet is the distance identified in the 2006 L.A. CEQA Thresholds Guide as the screening criterion with respect to construction activities) (i.e., cumulative noise impacts could occur at receptor locations that are within 500 feet from two different construction sites). Therefore, based on the 500-foot screening criterion distance, the cumulative construction noise impacts analysis is limited to related projects within 1,000 feet of the Project Site. The 1,000-foot distance is based on an assumption that a noise-sensitive receptor would be located halfway between the Project Site and the related project.

As discussed in Section III, *General Description of Environmental Setting*, subsection III.2, Related Projects, of this Draft EIR, there are 15 related projects identified in the vicinity of the Project Site. One development project is situated within 1,000 feet, which is the screening distance noted above, from the Project Site: NBC Universal Evolution Plan (Related Project No.1). Related Project No. 1 consists of a plan for the future development of the Universal City area. The southwestern portion of Related Project No.

1 is within 500 feet of both the Project Site and the Sheraton Hotel property. The portion of Related Project No. 1 located north of the Sheraton Hotel property and north of Universal Hollywood Drive is designated as Business District. A 1-acre landscaped slope adjacent to both the Sheraton Hotel property and the Project Site, the area adjacent to Project Site to the east, and the property to the east of Universal Hollywood Drive are designated for hotel uses.⁶⁷ As stated above, the purpose of Related Project No. 1 is to guide future development of the Universal City area. While there are no near-term plans for development proposed within 500 feet of the Project Site and the Sheraton Hotel, because areas adjacent to the Project Site are designated for hotel and Business District-related uses, it is conservatively assumed that future construction activities could occur in these areas. Further, in the unlikely event that potential construction within Related Project No. 1 occurs within 500 feet of the Project Site and the Sheraton Hotel at the same time as Project construction, there could be potential for the overlapping of construction activities that could cumulatively add to the Project's construction noise that may potentially impact the Sheraton Hotel. **Therefore, since the Project-level on-site construction noise impacts are already considered significant and unavoidable, any noise increase generated by construction activities as part of Related Project No. 1 could contribute to the Project's on-site construction noise impacts at the Sheraton Hotel. As such, cumulative noise impacts on the Sheraton Hotel would be potentially significant.**

(ii) *Off-Site Construction Noise*

If construction of related projects would overlap with Project construction and construction trucks would utilize the same roadway network as the Project, cumulative off-site construction noise level increases could occur in the Project area. As shown in Table IV.I-10, the Project would not result in any significant off-site construction noise impacts due to construction trips. The roadway in the vicinity of the Project site that would have off-site construction noise levels from Project construction trucks closest to the significance threshold would be W.C. Fields Drive west of Universal Studios Boulevard and would include up to 50 truck trips per hour, generating a noise level of approximately 69.6 dBA L_{eq} and would result in a 3.1-dBA increase over ambient noise levels. Related projects contributing an additional 61 truck trips per hour on the same roadway segment at the same time as the Project would generate a noise level of approximately 67.0 dBA L_{eq} . When adding the noise levels together, along with the ambient noise level of 66.5 dBA L_{eq} , the cumulative noise level would be approximately 71.5 dBA L_{eq} ,⁶⁸ which is equal to the significance threshold of 5 dBA over ambient noise levels. Therefore, related projects contributing more than 61 truck trips would result in a cumulatively considerable contribution to off-site construction noise, and impacts would be significant. This is not likely to happen as the related projects individually have grading and excavation areas

⁶⁷ County of Los Angeles. Universal Studios Specific Plan, April 30, 2013, Exhibit 7B.

⁶⁸ Calculated as ambient noise level (66.5 dBA L_{eq}), plus Project (67.8 dBA L_{eq}), plus related projects (67.0 dBA L_{eq}) contributing off-site construction noise along the same roadway (W.C. Fields Drive in the vicinity of the Project site): $66.5 + 67.8 + 67.0 = 71.5$ dBA L_{eq} .

smaller than the Project. Nonetheless, it is conservatively assumed that truck traffic from multiple related projects could potentially overlap on some days and generate noise in excess of the significance threshold. **Therefore, given that it is possible that the Project and related projects could contribute to cumulative off-site construction traffic noise levels and could exceed a significance threshold with sufficiently high cumulative traffic levels, cumulative off-site construction traffic noise impacts would be potentially significant.**

(b) *Operations – Noise*

(i) *On-Site Operational Noise*

With respect to on-site noise sources, as is the case for the Project, compliance with the LAMC-required provisions that limit noise from stationary sources, such as mechanical equipment, would ensure that noise levels would be less than significant at the property line for Related Project No. 1. In addition, on-site noise generated by Related Project No. 1 would be sufficiently low and sufficiently distant from the Project Site and the Sheraton Hotel that it would not result in an additive increase to Project-related noise levels, resulting in cumulative noise impacts. **Therefore, the Project, when considered together with related projects, would not result in a cumulatively considerable contribution and would have a less-than-significant cumulative impact with regard to on-site operational noise sources.**

(ii) *Off-Site Operational Noise*

Cumulative off-site noise impacts would occur primarily as a result of increased traffic on local roadways due to operation of the Project and the related projects, as traffic is the greatest source of operational noise in the Project Site area. Cumulative off-site traffic-generated noise impacts were assessed based on a comparison of the noise levels generated by the future cumulative plus Project traffic volumes to the noise levels generated by the existing base traffic volumes. The future cumulative plus Project traffic volumes represent an estimate of the ambient background growth, related projects traffic, and the Project traffic volumes. Therefore, the cumulative increase represents the increase in traffic volumes attributed to ambient background growth, related project traffic, and the Project traffic volumes over existing conditions. The results of that comparison are provided in **Table IV.I-18, Off-Site Traffic Noise Impacts – Future (2027) Project Cumulative Increment.**

TABLE IV.I-18
OFF-SITE TRAFFIC NOISE IMPACTS – FUTURE (2027) PROJECT CUMULATIVE INCREMENT

Roadway Segment	Existing Land Uses Located Along Roadway Segment	CNEL (dBA)				
		Existing (A)	Future (2027) Plus Project (B)	Increase Over Existing (B-A)	Project Increment	Exceed Threshold?
Barham Blvd n/o Cahuenga Blvd E	Single-Family Residential/Multi-Family Residential	75.8	76.2	0.4	0.0	No
Barham Blvd s/o Cahuenga Blvd E	Commercial	73.8	74.2	0.4	0.0	No
Cahuenga Blvd between Lankershim Blvd and Regal PI	Commercial	74.1	74.7	0.6	0.0	No
Cahuenga Blvd between Regal PI and Universal Studios Blvd	Commercial/Religious	72.9	73.5	0.6	0.0	No
Cahuenga Blvd E e/o Barham Blvd	Single-Family Residential	72.8	73.2	0.5	0.0	No
Cahuenga Blvd W e/o Universal Studios Blvd	Commercial/Educational	70.7	71.5	0.8	0.0	No
Cahuenga Blvd w/o Lankershim Blvd	Commercial/Hotel	72.1	72.6	0.5	0.0	No
Campo de Cahuenga Way between Metro Driveway and Lankershim Blvd	Public Transit	68.0	69.4	1.4	0.2	No
Campo de Cahuenga Way between US-101 NB/SB On/Off Ramp and Metro Driveway	Freeway Underpass	68.4	69.7	1.3	0.2	No
Campo de Cahuenga Way w/o US-101 NB/SB On/Off Ramp	Commercial/Single-Family Residential	68.2	69.0	0.8	0.1	No
Lankershim Blvd between Universal Hollywood Dr and US-101 NB Off Ramp	Commercial	71.0	72.1	1.1	0.1	No
Lankershim Blvd between US-101 NB Off Ramp and Cahuenga Blvd	Commercial	70.2	70.9	0.8	0.1	No
Lankershim Blvd n/o Universal Hollywood Dr	Commercial/Multi-family Residential	72.5	73.4	0.9	0.1	No
Lankershim Blvd s/o Cahuenga Blvd	Commercial/Single-Family Residential	63.1	63.7	0.6	0.0	No

TABLE IV.I-18
OFF-SITE TRAFFIC NOISE IMPACTS – FUTURE (2027) PROJECT CUMULATIVE INCREMENT

Roadway Segment	Existing Land Uses Located Along Roadway Segment	CNEL (dBA)				
		Existing (A)	Future (2027) Plus Project (B)	Increase Over Existing (B-A)	Project Increment	Exceed Threshold?
Regal PI n/o Cahuenga Blvd	Freeway On/Off Ramp	69.5	70.1	0.6	0.1	No
Regal PI s/o Cahuenga Blvd	Commercial/Single-Family Residential/Multi-Family Residential	62.5	63.2	0.8	0.0	No
Universal Hollywood Dr between Lankershim Blvd and Hilton Driveway	Hotel/Theme Park/Commercial	70.7	72.6	1.9	0.5	No
Universal Hollywood Dr s/o Hilton Driveway	Hotel/Theme Park/Commercial	65.5	68.6	3.1	0.3	No
Universal Studios Blvd between US-101 SB On Ramp and Cahuenga Blvd W	Commercial	66.3	66.4	0.1	0.1	No
Universal Studios Blvd between W.C. Fields Dr and US-101 SB On Ramp	Commercial	68.5	69.7	1.2	0.1	No
Universal Studios Blvd n/o W.C. Fields Dr	Commercial	64.5	65.7	1.1	0.0	No
US-101 NB Off Ramp e/o Lankershim Blvd	Freeway On/Off Ramp	70.0	71.6	1.6	0.1	No
US-101 NB/SB On/Off Ramp n/o Campo de Cahuenga Way	Freeway On/Off Ramp	71.3	72.3	0.9	0.1	No
US-101 NB/SB On/Off Ramp s/o Campo de Cahuenga Way	Freeway On/Off Ramp	67.6	67.9	0.3	0.0	No
US-101 SB On Ramp e/o Universal Studios Blvd	Freeway On/Off Ramp	67.2	69.0	1.8	0.2	No
W.C. Fields Dr between Universal Studios Blvd and Barham Blvd	Commercial/Single-Family Residential/Open Space	68.2	68.6	0.4	0.2	No
W.C. Fields Dr w/o Universal Studios Blvd	Commercial/Hotel	66.8	67.7	0.9	0.6	No

SOURCE: ESA, 2023.

The maximum cumulative noise increase where there are sensitive receptors from the Project plus related project traffic and ambient background growth would be 3.1 dBA CNEL, which would occur along Universal Hollywood Drive, south of the Project driveway. This increase in noise level would be below the threshold of a 5-dBA CNEL increase in existing traffic noise. Cumulative increases along all other roadway segments would be below significance thresholds. **Therefore, the Project would not result in a cumulatively considerable increase in off-site traffic noise levels under future year 2027 conditions. Accordingly, cumulative impacts would be less than significant.**

(c) Construction – Groundborne Vibration

Due to rapid attenuation characteristics of ground-borne vibration, only related projects located adjacent to the same sensitive receptors would result in cumulatively considerable vibration impacts. The portion of Related Project No. 1 that is adjacent to both the Project Site and the Sheraton Hotel property consists of a landscaped slope south of Universal Hollywood Drive. Should this site be developed, it is located approximately 267 feet from the Sheraton Hotel and approximately 375 feet from the Sheraton Hotel parking structure. At these distances, operation of vibratory construction equipment within this 1-acre area would not exceed structural damage or human annoyance thresholds. Other areas Related Project No. 1 are located at even greater distances from the Sheraton Hotel property. Therefore, future development of Related Project No. 1 would be sufficiently distant from the Project Site and the Sheraton Hotel that it would not result in vibration that could combine with Project construction activities to cumulatively impact the Sheraton Hotel. **Therefore, construction of the Project, when considered together with Related Project No. 1, would not result in a cumulatively considerable contribution and would have a less-than-significant cumulative impact with regarding to groundborne vibration.**

(d) Operation – Groundborne Vibration

The portion of Related Project No. 1 that is adjacent to both the Project Site and the Sheraton Hotel property consists of a 1-acre area south of Universal Hollywood Drive. This area is located approximately 267 feet from the Sheraton Hotel and approximately 375 feet from the Sheraton Hotel parking structure. Due to the rapid attenuation characteristics of groundborne vibration and distance from each of the related projects to the Project Site, there is no potential for cumulative operational impacts related to structural damage or human annoyance as a result of groundborne vibration. **Therefore, operation of the Project, when considered together with Related Project No. 1, would not result in a cumulatively considerable contribution and would have a less-than-significant cumulative impact with regard to groundborne vibration.**

(2) Mitigation Measures

Refer to Mitigation Measures NOI-MM-1 and NOI-MM-2, which would help to reduce cumulative construction noise impacts.

Cumulative impacts related to construction vibration (both structural and human annoyance), and operational noise and vibration (both structural and human annoyance) would be less than significant. Therefore, no additional mitigation measures are required.

(3) Level of Significance After Mitigation

(a) On-Site Construction Noise

Cumulative construction noise impacts associated with on-site construction equipment could be significant in the event that construction activities as part of related projects occur within 1,000 feet of the Project Site. The Project would implement Mitigation Measures NOI-MM-1 and NOI-MM-2 to reduce construction noise impacts. Implementation of these mitigation measures would reduce the Project's construction noise impacts at receptor locations R1 (Sheraton Hotel Levels 1 through 5), R2, R3, R4, and R5 to less than significant at the Project-level. However, construction noise impacts at elevated noise-sensitive receptor locations at R1 (Sheraton Hotel Levels 6 through 17) would be significant and unavoidable.

Although it is expected that the related projects with identified significant impacts would implement mitigation that would reduce construction noise impacts similar to the Project, overlapping construction activities could result in significant cumulative impacts. As previously explained, the Project and the related projects could contribute to construction noise at the ground-level noise-sensitive uses located on levels 6 through 17 of the Sheraton Hotel (R1) that may exceed the significance threshold. Thus, it is conservatively concluded that the Project's contribution to cumulative construction noise associated with on-site construction equipment would be cumulatively considerable and would represent a significant and unavoidable cumulative impact.

(b) Off-Site Construction Traffic Noise

Cumulative construction noise impacts associated with off-site construction truck traffic from multiple related projects could potentially overlap with the Project on some days and generate noise in excess of the significance thresholds.

For Project-related haul trucks, impacts would be less than significant. However, if the related projects would contribute 61 truck trips per hour or more and travel along the same roadway segments as the Project, the combined off-site construction noise from Project haul trucks and related project trucks could exceed the significance threshold. It should be noted that approval of the haul route is included in required approvals for the Project, as listed in Chapter II, *Project Description*, and other related projects would require similar approvals.

Residential land uses comprise the majority of existing noise-sensitive uses within the Project Site area that could be impacted by the increase in traffic generated noise levels. Construction of sound barriers would be inappropriate for residential land uses that face the roadway as it would be impractical and create aesthetic and access concerns. **Thus, given that it is possible that the Project and related projects could contribute to**

cumulative off-site construction traffic noise levels and could exceed a significance threshold with sufficiently high cumulative traffic levels, it is conservatively concluded that the Project's contribution to cumulative construction noise associated with off-site construction truck traffic would be cumulatively considerable and would represent a significant and unavoidable cumulative impact.

(c) *Operational Noise and Construction/Operational
Groundborne Vibration*

The Project's contribution to short-term cumulative noise impacts related to construction vibration (both structural and human annoyance), and operational noise and vibration (both structural and human annoyance) would not be cumulatively considerable, and cumulative impacts would be less than significant. Therefore, no mitigation measures were required or included for these issues, and the impact levels remain less than significant.

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