IV. Environmental Impact Analysis

I. Noise

1. Introduction

This section analyzes potential noise and groundborne vibration impacts that could result from the Project. The analysis describes the existing noise environment within the Project Site area, estimates future noise and groundborne vibration levels at surrounding land uses associated with construction and operation of the Project, assesses the potential for significant impacts resulting from these future levels, and identifies mitigation measures to address any potential significant impacts. An evaluation of the potential cumulative noise impacts of the Project and related projects is also provided. Noise worksheets and technical information and data used in this analysis are included in the *Noise and Groundborne Vibration Technical Appendix*, prepared by ESA, which is included in Appendix I of this Draft EIR.

2. Environmental Setting

a) Noise and Groundborne Vibration Overview

Because of the technical nature of noise and groundborne vibration impacts, a brief overview of basic noise principals and descriptors is provided below.

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).[1] Noise is generally defined as unwanted sound (i.e., loud, unexpected, or annoying sound). Sound is a process that consists of three components: a noise of sound (or noise), a receiver, and the propagation path between the two.[2] 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.[3]

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement.[4] The dB scale is a logarithmic scale that describes the physical

[1] California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.1, September 2013. Provided in Appendix I of this Draft EIR.

[2] California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.1, September 2013. Provided in Appendix I of this Draft EIR.

[3] California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.1, September 2013. Provided in Appendix I of this Draft EIR.

[4] California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.3.2, September 2013. Provided in Appendix I of this Draft EIR.

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 pain.[5] Pressure waves traveling through air exert a force registered by the human ear as sound.[6]

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound.[7] Typically, sound does not consist of a single frequency but, rather, a broad band of frequencies varying in levels of magnitude, with audible frequencies of the sound spectrum ranging from 20 to 20,000 Hz.[8] The typical human ear is not equally sensitive to this frequency range and 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.[9] 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.[10] 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*.

(1) Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time; a noise level is a measure of noise at a given instant in time. However, noise levels rarely persist at that level over a long period of time. Rather, community noise varies continuously over a period of time with respect to the sound sources contributing to the community noise environment.[11] The background noise level changes throughout a typical day but does so gradually, corresponding to the addition and subtraction of distant noise sources, such as changes in traffic volume.[12] What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.[13]

5 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.3.6, September 2013. Provided in Appendix I of this Draft EIR.

6 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.1, September 2013. Provided in Appendix I of this Draft EIR.

7 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.3.1, September 2013. Provided in Appendix I of this Draft EIR.

8 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.3.7, September 2013. Provided in Appendix I of this Draft EIR.

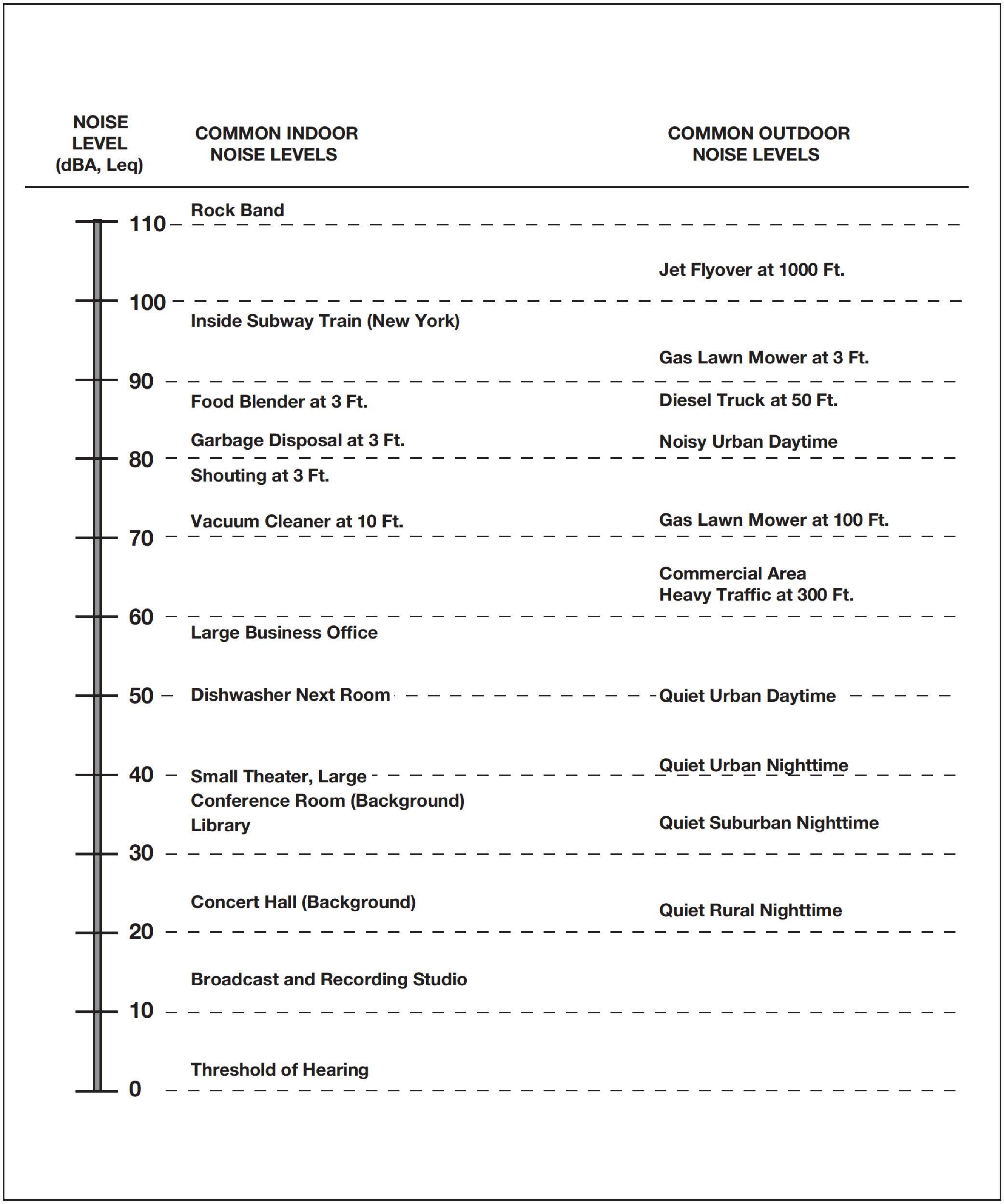
9 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.3.6, September 2013. Provided in Appendix I of this Draft EIR.

10 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.1.3.6, September 2013. Provided in Appendix I of this Draft EIR.

11 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.2.2, September 2013. Provided in Appendix I of this Draft EIR.

12 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.2.2, September 2013. Provided in Appendix I of this Draft EIR.

13 California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.2.2, September 2013. Provided in Appendix I of this Draft EIR.



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

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 instant to instant, requiring the noise exposure to be measured over periods of time to characterize an existing community noise environment.[14] The following noise descriptors are used to characterize environmental noise levels over time, which are applicable to the Project.[15]

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

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

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

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

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

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

(2) 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:[16]

- Subjective effects (e.g., dissatisfaction, annoyance)
- Interference effects (e.g., communication, sleep, and learning interference)
- Stress effects (e.g., startle response, contributor to stress-related diseases such as hypertension, anxiety, and heart disease)
- Physical effects (e.g., hearing loss)

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[14] California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.2.2.2, September 2013. Provided in Appendix I of this Draft EIR.

[15] California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.2.2.2, September 2013. Provided in Appendix I of this Draft EIR.

[16] California Department of Transportation, Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, Section 2.2.4, September 2013. Provided in Appendix I of this Draft EIR.

Although exposure to high noise levels has been demonstrated to cause physical and stress-related effects, environmental noise exposure can interrupt ongoing activities causing community annoyance.[17] Subjective and interference effects interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and sleep.[18] Sleep interference effects can include both awakening and arousal to a lesser state of sleep.[19]

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.[20] For human reactions to sound, people find high noise levels more objectionable than low-level noise; have better sensitivity to high frequency noise than low frequency noise; tend to compare a new intruding noise source to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment); and may find noise objectionable in a certain environment but not in others (e.g., traffic noise may not be objectionable to people in an office but might be objectionable while sleeping at home or studying in a library).[21] 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:[22]

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

These relationships occur in part because of the logarithmic nature of sound and the decibel scale. The human ear perceives sound in a non-linear fashion; therefore, the dBA scale was developed.[23] Because the dBA scale is based on logarithms, two noise sources do not combine in a simple additive fashion but, rather, logarithmically. Under the

[17] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 3.4, 2018.
[18] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Section 3.4, 2018.
[19] California Department of Transportation, Technical Noise Supplement, Section 2.2.1, September 2013.
[20] California Department of Transportation, Technical Noise Supplement, Section 2.2.1, September 2013.
[21] California Department of Transportation, Technical Noise Supplement, Section 2.2.1, September 2013.
[22] California Department of Transportation, Technical Noise Supplement, Section 2.2.1.1, September 2013.
[23] California Department of Transportation, Technical Noise Supplement, Section 2.2.1.1, September 2013.

dBA scale, a doubling of sound energy corresponds to a 3-dBA increase.[24] In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.[25] Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and ten sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.[26]

(3) Noise Attenuation

When noise propagates over a distance, the noise level reduces with distance at a rate that depends 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." Noise levels generated by stationary point sources, including stationary mobile sources, such as idling vehicles, are attenuated at a rate between 6 dBA for acoustically "hard" sites and 7.5 dBA for "soft" sites for each doubling of distance from the reference measurement, as their energy is continuously spread out over a spherical surface (e.g., for hard surfaces, 80 dBA at 50 feet attenuates to 74 at 100 feet, 68 dBA at 200 feet, etc.).[27] 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.[28] 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.[29] 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).[30]

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.[31] Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading."[32] Noise from line sources (e.g., traffic noise from vehicles) are attenuated at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[33] Therefore, noise due to a line source is attenuated less with distance than that of a point source with increased distance.

24 California Department of Transportation, Technical Noise Supplement, Section 2.2.1.1, September 2013.
25 California Department of Transportation, Technical Noise Supplement, Section 2.2.1.1, September 2013.
26 California Department of Transportation, Technical Noise Supplement, Section 2.2.1.1, September 2013.
27 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.
28 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.
29 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.
30 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.2, September 2013.
31 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.
32 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.
33 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1 and 2.1.4.2, September 2013.

Additionally, 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.[34] Atmospheric temperature inversion (i.e., increasing temperature with elevation) can increase sound levels at long distances (e.g., more than 500 feet). Other factors, such as air temperature, humidity and turbulence, can also have an effect on noise levels.[35]

(4) Groundborne Vibration and Noise Fundamentals

Groundborne 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. Because energy is lost during the transfer of energy from one particle to another, groundborne 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*, common sources of groundborne vibration are trains, heavy trucks traveling on rough roads, and construction activities, such as pile-driving and operation of heavy earth-moving equipment.

Several different methods are used to quantify groundborne vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the groundborne vibration signal in inches per second (in/sec), and is most frequently used to describe groundborne vibration impacts to buildings.[36] 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 groundborne vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS.[37] 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. The PPV crest factor is typically a factor of 1.7 to 6 times greater than RMS vibration velocity.[38] The vibration decibel metric, VdB, acts to compress the range of numbers required to describe groundborne vibration in a logarithmic scale. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for groundborne vibration include buildings where vibration would interfere with operations within the building or cause structural damage (especially older masonry structures), locations where people sleep, and locations with vibration sensitive equipment.[39]

34 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.3, September 2013.
35 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.3, September 2013.
36 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 5.1, 2018.
37 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 5.1, 2018.
38 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 5.1, 2018.
39 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 6.1, 6.2, and 6.3, 2018.

The effects of groundborne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hangings on walls, and rumbling sounds. In extreme cases, the groundborne vibration can cause damage to buildings.[40] Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction or when construction is immediately adjacent to a fragile historic resource.[41] A groundborne vibration level that causes annoyance will be well below the damage threshold for normal buildings.[42]

Groundborne noise is a result of groundborne vibration and 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.[43] The relationship between groundborne vibration and groundborne noise depends on the frequency content of the vibration and the acoustical absorption characteristics of the receiving room. For typical buildings, groundborne vibration that causes low frequency noise (i.e., the vibration spectrum peak is less than 30 Hz) results in a groundborne noise level that is approximately 50 decibels lower than the velocity level. For groundborne vibration that causes mid-frequency noise (i.e., the vibration spectrum peak is 30 to 60 Hz), the groundborne noise level will be approximately 35 to 37 decibels lower than the velocity level.[44] Therefore, for typical buildings, the groundborne noise decibel level is lower than the groundborne vibration velocity level.

b) Regulatory Framework

Various government agencies have established noise regulations and policies to protect people from adverse effects associated with noise and groundborne noise and vibration. The City has adopted a number of regulations and policies, which are based in part on federal and State regulations and are intended to control, minimize, or avoid environmental noise effects. There are no City-adopted regulations or policies that relate to groundborne vibration; therefore, the City has determined to use the groundborne noise and vibration standards and guidelines from the Federal Transit Administration (FTA) are used for this analysis. The regulations and policies that are relevant to the Project's potential construction and operation impacts are discussed below.

(1) Federal

(a) Federal Noise Standards

There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Project.

40 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 5.5, 2018.

41 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 5.5, 2018.

42 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 5.5, 2018.

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

44 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-3 and Table 6-14, pages 126 and 146, 2018.

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

(b) Federal Groundborne Vibration and Noise Standards

There are no federal vibration standards or regulations adopted by an agency that are applicable to evaluating potential groundborne vibration and groundborne noise impacts from land use development projects such as the Project. However, the Federal Transit Administration (FTA) has adopted criteria for use in evaluating groundborne vibration impacts from construction activities.[45] The groundborne vibration damage criteria adopted by the FTA are shown in **Table IV.I-1,** *Construction Groundborne Vibration Damage Criteria*.

TABLE IV.I-1
CONSTRUCTION GROUNDBORNE VIBRATION DAMAGE CRITERIA

Building Category	PPV (in/sec)	Approximate Vibration Level (VdB)[a]
I. Reinforced-concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

[a] RMS velocity in decibels, VdB re 1 micro-in/sec
SOURCE: FTA, Transit Noise and Vibration Impact Assessment Manual, 2018.

The FTA has also adopted criteria for assessing potential human annoyance impacts caused by groundborne vibration for the following three land-use category receptors: Vibration Category 1 – High Sensitivity, Vibration Category 2 – Residential, and Vibration Category 3 – Institutional.[46] 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.[47] Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and optical microscopes.[48] Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels

45 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Table 7-5, page 186, 2018.
46 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.
47 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.
48 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.

and hospitals.[49] Category 3 refers to institutions and offices that have vibration-sensitive equipment and have the potential for activity interference such as schools, churches, doctors' offices. Commercial or industrial locations including office buildings are not included in this category unless there is vibration-sensitive activity or equipment within the building.[50] The groundborne vibration thresholds associated with human annoyance for these three land-use categories are shown in **Table IV.I-2**, *Groundborne Vibration Impact Criteria for General Assessment*. As discussed previously, groundborne noise is a result of groundborne vibration. The FTA criteria for groundborne noise is based on the equivalent groundborne vibration level; therefore, an assessment of the FTA groundborne vibration criteria is also an equivalent assessment of the FTA groundborne noise criteria.

TABLE IV.I-2
GROUNDBORNE VIBRATION 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: FTA, Transit Noise and Vibration Impact Assessment Manual, 2018.

(2) State of California

(a) California Noise Standards

The State of California has established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations, Part 2). The noise insulation standards set an interior standard of 45 dBA CNEL in any habitable room. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

In addition, California Government Code Section 65302(f) requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical

[49] Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.
[50] Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Table 6-1, page 124, 2018.

development, with Section 65302(f) requiring a noise element to be included in the general plan. The noise element must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

(b) California Groundborne Vibration and Noise Standards

The State of California has not adopted statewide standards or regulations for evaluating groundborne vibration or groundborne noise impacts from land use development projects such as the Project.

(3) City of Los Angeles

(a) Los Angeles Municipal Code

The City of Los Angeles Noise Regulations are provided in Chapter XI of the Los Angeles Municipal Code (LAMC). Section 111.02 of the LAMC 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 is considered to create a noise violation. To account for people's greater tolerance for short-duration noise events, the Noise Regulations provide a 5 dBA allowance for a noise source that causes noise lasting more than five minutes but less than 15 minutes in any one-hour period, and an additional 5 dBA allowance (total of 10 dBA) for a noise source that causes noise lasting five minutes or less in any one-hour period.[51]

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 Section 111.03 of the LAMC should be used. The presumed ambient noise levels for such areas 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 (L_{eq})	Nighttime Hours (10 P.M. to 7 A.M.) dBA (L_{eq})
Residential	50	40
Commercial	60	55
Manufacturing (M1, MR1 and MR2)	60	55
Heavy Manufacturing (M2 and M3)	65	65

SOURCE: LAMC, Section 111.03.

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

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 five (5) decibels.

Section 112.05 of the LAMC 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 is required only where "technically feasible."[52] Section 41.40 of the LAMC 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 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 enforces provisions relative to noise generated by people.

Section 113.01 of the LAMC 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 Section 66.00 of LAMC, 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.

(b) Noise Element

The Noise Element of the City's General Plan establishes CNEL guidelines for land use compatibility, which is also provided in the City's L.A. CEQA Thresholds Guide (Thresholds Guide). The overall purpose of the Noise Element of the General Plan is to guide policymakers in making land use determinations and in preparing noise ordinances that would limit exposure of people to excessive noise levels. The following policies and objectives from the Noise Element of the General Plan are applicable to the Project:[53]

Goal: A city where noise does not reduce the quality of urban life.

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

Policy 2.1: Enforce and/or implement applicable City, State, and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.

52 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.

53 City of Los Angeles. Noise Element of the Los Angeles City General Plan, adopted February 3, 1999. Available at: https://planning.lacity.org/odocument/b49a8631-19b2-4477-8c7f-08b48093cddd/Noise_Element.pdf. Accessed September 2019.

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

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

The City's noise compatibility guidelines are provided in **Table IV.I-4**, *City of Los Angeles Land Use Compatibility for Community Noise*.

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

	Community Noise Exposure CNEL (dBA)			
Land Use	**Normally Acceptable [a]**	**Conditionally Acceptable [b]**	**Normally Unacceptable [c]**	**Clearly Unacceptable [d]**
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	—

[a] 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.

[b] 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.

[c] 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.

[d] Clearly Unacceptable: New construction or development should generally not be undertaken.

SOURCE: City of Los Angeles, L.A. CEQA Thresholds Guide (Thresholds Guide), 2006.

(a) Guidelines for Noise Compatible Land Use

The City has adopted local guidelines based, in part, on the community noise compatibility guidelines established by the Governor's Office of Planning and Research for use in assessing the compatibility of various land use types within a range of noise levels. These guidelines are set forth in the Thresholds Guide in terms of CNEL levels. As explained above, these CNEL guidelines for specific land uses are classified into four categories: (1) "normally acceptable," (2) "conditionally acceptable," (3) "normally unacceptable," and (4) "clearly unacceptable."

As shown in Table IV.I-4*,* the categories overlap to some degree. For example, a CNEL value of 60 dBA is the lower limit of what is considered a "conditionally acceptable" noise environment for multi-family residential uses, although the upper limit of what is considered "normally acceptable" for multi-family residential uses is set at 65 dBA CNEL.[54] New development should generally be discouraged within the "normally unacceptable" or "clearly unacceptable" categories. However, if new development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

(b) Groundborne Vibration and Noise

The City of Los Angeles has not adopted standards or regulations addressing groundborne vibration or groundborne noise impacts from land use development projects such as the Project. As such, available guidelines from the FTA are utilized to assess impacts due to groundborne vibration and noise. As discussed above, in most circumstances common groundborne vibrations related to roadway traffic and construction activities pose no threat to buildings or structures.

c) Existing Conditions

As discussed in Chapter II, *Project Description*, of this Draft EIR, the Project Site is located in a highly urbanized area. The predominant source of noise in the vicinity of the Project Site is vehicular traffic on adjacent roadways, particularly along Argyle Avenue and Yucca Street. Ambient noise sources in the vicinity of the Project Site include traffic, transit, and trucks; commercial activities; surface parking lot activities; construction noise from developing properties in the area; and other miscellaneous noise sources associated with typical urban activities.

(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's Thresholds Guide states that residences, schools (pre-school, elementary, middle, and high schools), motels and hotels, libraries, religious institutions, hospitals, nursing homes, auditoriums, concert

[54] City of L.A. CEQA Thresholds Guide, Section I.2, 2006.

halls, amphitheaters, playgrounds, and parks are generally more sensitive to noise than commercial and industrial land uses. [55]

Existing noise sensitive uses within 500 feet of the Project Site include the following as shown in **Figure IV.I-2**, *Noise Measurement Locations and Existing Noise Sensitive Locations*:

- Residential Uses: Existing one- and two-story single-family residences and duplexes are located adjacent and to the east and south of the Project Site along Vista Del Mar Avenue.
- Residential Uses: Existing five-story mixed-use residential and commercial uses are located to the south of the Project Site, south of the vacant parcel and south of Carlos Avenue.
- Residential and Hotel Uses: Existing three-story residential lofts and hotel uses are located to the north of the Project Site, north of Yucca Street.
- Residential Uses: Existing multi-family residential uses are located to the west of the Project Site, west of Argyle Avenue.

All other noise-sensitive uses of the type listed in the Thresholds Guide are located at greater distances from the Project Site (more than 500 feet) and would experience lower noise levels from potential sources of noise on the Project Site. Therefore, noise levels at additional sensitive receptors beyond those identified above were not evaluated.

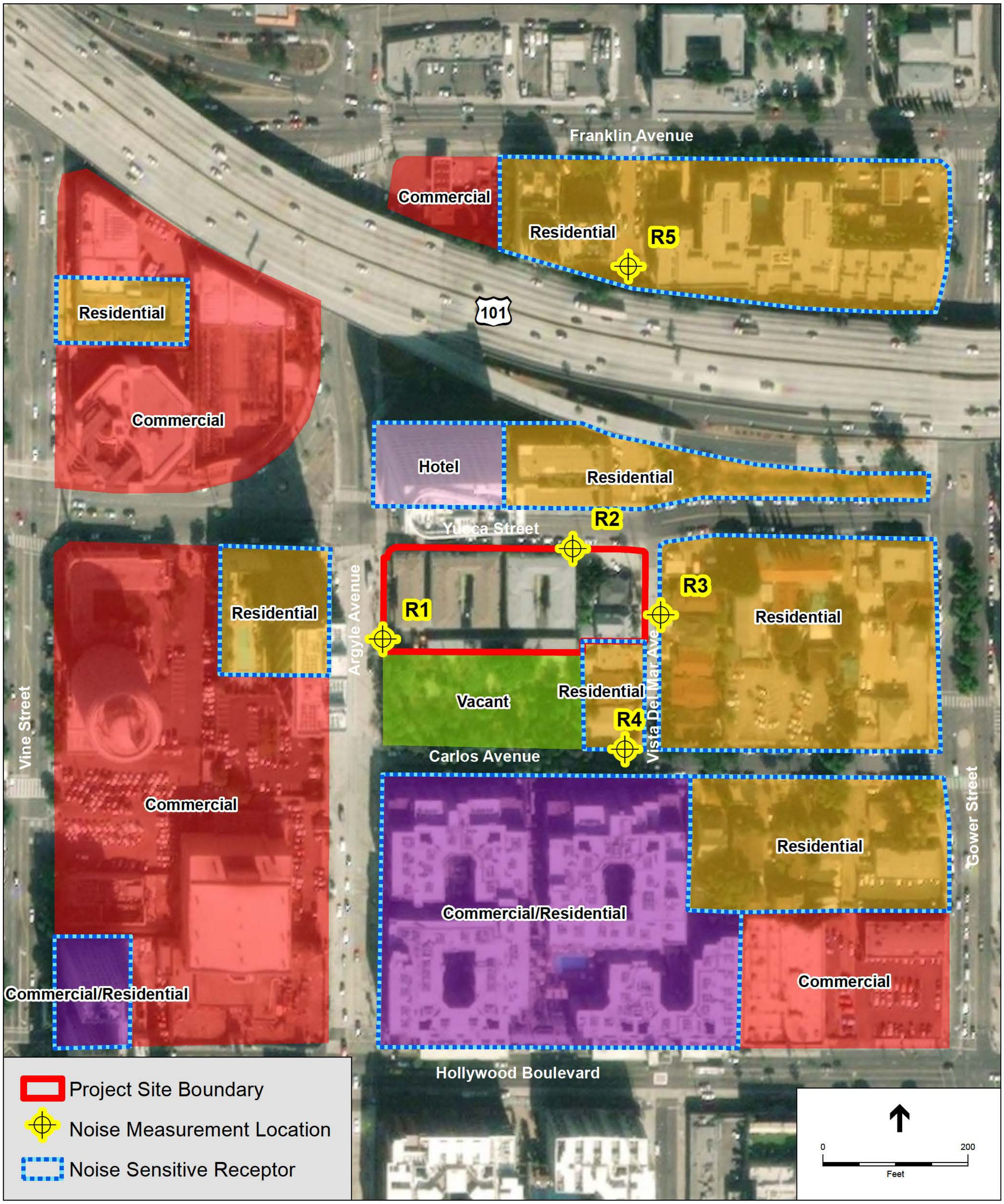
(1) Ambient Noise Levels

The predominant existing noise source surrounding the Project Site is traffic noise from the US 101 Freeway and from Yucca Street to the north, Argyle Avenue to the west, and to a lesser extent, Vista Del Mar Avenue to the east. Secondary noise sources include general commercial-related activities, such as loading dock/delivery truck activities, trash compaction, and refuse service activities, from Capital Records, the Pantages Theater, nearby restaurants and bars, and an auto repair shop.

(2) Ambient Noise Levels

The predominant existing noise source surrounding the Project Site is traffic noise from the US 101 Freeway and from Yucca Street to the north, Argyle Avenue to the west, and to a lesser extent, Vista Del Mar Avenue to the east. Secondary noise sources include general commercial-related activities, such as loading dock/delivery truck activities, trash compaction, and refuse service activities, from Capital Records, the Pantages Theater, nearby restaurants and bars, and an auto repair shop.

55 City of Los Angeles, LA CEQA Thresholds Guide, 2006. pages I.1-3.



SOURCE: NAIP, 2016 (Aerial).

6220 West Yucca Project

Figure IV.I-2
Noise Measurement Locations and
Existing Noise Sensitive Receptor Location

Ambient noise measurements were taken at five locations, representing the nearby land uses in the vicinity of the Project Site to establish conservative ambient noise levels. The measurement locations, along with existing development, are shown on Figure IV.I-2. Long-term (24-hour) measurements were taken at locations R1 and R2 from Thursday, June 11, through Sunday, June 14, 2015 and short-term (15-minute) noise measurements were taken at locations R3 through R5 on Thursday, June 11, 2015. These measurements were taken from Thursday, June 11, through Sunday, June 14, 2015, to characterize the existing noise environment in the Project vicinity.[56]

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 the local grade, at the following locations as shown in Figure IV.I-2:

- Measurement Location R1: This measurement location represents the existing noise environment at the Project Site along Argyle Avenue, and is considered representative of the noise environment of the existing off-site multi-family residential uses at the southwest corner of Yucca Street and Argyle Avenue, approximately 80 feet from the Project Site boundary. The sound level meter was placed on the western boundary of the Project Site.
- Measurement Location R2: This measurement location represents the existing noise environment at the Project Site along Yucca Street, and is considered representative of the noise environment of the existing off-site residential uses and hotel uses on the north side of Yucca Street, approximately 65 feet from the Project Site boundary. The sound level meter was placed on the northern boundary of the Project Site.
- Measurement Location R3: This measurement location represents the existing noise environment at the residential uses east and southeast of the Project Site along Vista Del Mar Avenue, approximately 5 feet from the Project Site boundary. The sound level meter was placed on the eastern boundary of the Project Site.
- Measurement Location R4: This measurement location represents the existing noise environment of the single and multi-family residential uses south of the Project Site along Carlos Avenue, including the multi-family residential uses south of Carlos Avenue, approximately 190 feet from the Project Site boundary. The sound level meter was placed at the northwestern corner of Carlos Avenue and Vista Del Mar Avenue.[57]

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56 Schools serving the Project Site include Cheremoya Avenue Elementary School, Hollywood High School, and Joseph Le Conte Middle School, which are single-track schools within the Los Angeles Unified School District (refer to Section IV.K.3, Public Services – Schools, of this Draft EIR). For the 2014-15 school year, the last day of instruction was June 4, 2015 (refer to LAUSD website at: https://achieve.lausd.net/Page/6653); therefore, school would not have been in session during noise measurements. As a result, the measured noise levels represent a conservative estimate of the typical noise environment. It is expected that if school were in session, ambient noise levels from increased traffic would be higher and thus the threshold would be higher and less conservative than presented herein.

57 The analysis for R4 is utilized to assess impacts to the Eastown Apartments south of the Project Site. Noise levels along Carlos (R4: 56 dBA) are lower than noise levels along Argyle Ave (R1: 65 dBA), so the analysis at R4 along Carlos would provide a conservative assessment of impacts at the Eastown Apartments along Argyle.

- Measurement Location R5: This measurement location represents the existing noise environment of the multi-family residential uses north of the Project Site, approximately 380 feet from the Project Site boundary, and north of, and adjacent to, the US 101 Freeway. The sound level meter was placed at the multi-family residential uses that are located approximately 160 feet south of the southeastern corner of Vista Del Mar Avenue and Franklin Avenue.

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 dBA to 67 dBA L_{eq} and nighttime noise levels ranged from 55 dBA to 63 dBA L_{eq}.

(3) Existing Roadway Noise Levels

Existing roadway CNEL noise levels were calculated for the 26 roadway segments located in the vicinity of the Project Site that were identified for analysis by the City. 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) Traffic Noise Model (TNM) methodology[58] and traffic volumes at the study intersections analyzed in the Project's Traffic Study prepared by Gibson Transportation Consulting, Inc. and provided in Appendix L-2 of this Draft EIR.[59] 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** *Predicted Existing Vehicular Traffic Noise Levels*.

As shown in Table IV.I-6, the ambient noise environment of the Project Site vicinity can be characterized by 24-hour CNEL levels attributable to existing traffic on local roadways. The calculated CNEL (at a distance of approximately 25 feet from the roadway right-of-way) from actual existing traffic volumes on the analyzed roadway segments ranged from 60.9 dBA to 71.6 dBA for residential areas and commercial areas.

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58 The noise prediction model which was developed based on calculation methodologies described in FHWA Traffic Noise Model Technical Manual (1998) and validated with the results from FHWA Traffic Noise Model Version 2.5. Available at: file:///C:/Users/spalomera/Downloads/dot_10000_DS1%20(1).pdf. Accessed September 2019.

59 Gibson Transportation Consulting, Inc. Traffic Study for the 6220 Yucca Street Mixed-Use Project, 2018. Provided in Appendix L-2 of this Draft EIR.

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 Leq
R1 –				
6/11/15 (11:00 A.M. to 11:59 P.M.)/Thursday	64 – 66	65	62 – 63	61
6/12/15 (24 hour)/Friday	63 – 67		59 – 63	
6/13/15 (24 hour)/Saturday	62 – 66		56 – 63	
6/14/15 (24 hour)/Sunday	61 – 66		58 – 62	
R2				
6/11/15 (11:00 A.M. to 11:59 P.M.)/Thursday	59 – 63	61	60	59
6/12/15 (24 hour)/Friday	59 – 63		55 – 62	
6/13/15 (24 hour)/Saturday	59 – 62		57 - 61	
6/14/15 (24 hour)/Sunday	59 – 61		56 – 60	
R3				
6/11/15 (11:00 A.M. to 12:00 P.M.)/Thursday	58	N/A	N/A	N/A
R4				
6/11/15 (11:00 A.M. to 12:00 P.M.)/Thursday	56	N/A	N/A	N/A
R5				
6/11/15 (12:00 P.M. to 1:00 P.M.)/Thursday	71	N/A	N/A	N/A

[a] Detailed measured noise data, including hourly Leq levels, are included in Appendix I.
SOURCE: ESA, 2019.

TABLE IV.I-6
PREDICTED EXISTING VEHICULAR TRAFFIC NOISE LEVELS

Roadway Segment	Adjacent Land Use	Existing Noise Exposure Compatibility Category [b,c]	Existing CNEL (dBA) at Referenced Distances from Roadway Right-of-Way [a] 25 Feet
Franklin Avenue			
Between Cahuenga Boulevard and Vine Street	Residential/ Commercial	Conditionally Acceptable	68.3
Between Argyle Avenue and Gower Street	Residential/ Commercial	Conditionally Acceptable	69.9
Between Gower Street and Beachwood Drive	Residential/ Commercial	Normally Unacceptable	70.2
Between Beachwood Drive and Bronson Avenue	Residential/ Commercial	Normally Unacceptable	70.0
Yucca Street			
Between Cahuenga Boulevard and Ivar Avenue	Commercial	Normally Acceptable	64.5
Between Ivar Avenue and Vine Street	Commercial	Conditionally Acceptable	65.2
Between Vine Street and Argyle Avenue	Commercial	Normally Acceptable	63.8
Between Argyle Avenue and Gower Street	Residential/ Commercial	Conditionally Acceptable	60.9
Hollywood Boulevard			
Between Cahuenga Boulevard and Ivar Avenue	Commercial	Normally Acceptable	68.7
Between Ivar Avenue and Vine Street	Commercial	Normally Acceptable	68.8
Between Vine Street and Argyle Avenue	Residential/ Commercial	Conditionally Acceptable	69.2
Between Argyle Avenue and Gower Street	Residential/ Commercial	Conditionally Acceptable	69.6
Between Gower Street and Bronson Avenue	Commercial	Normally Acceptable	68.8

TABLE IV.I-6
PREDICTED EXISTING VEHICULAR TRAFFIC NOISE LEVELS

Roadway Segment	Adjacent Land Use	Existing Noise Exposure Compatibility Category [b,c]	Existing CNEL (dBA) at Referenced Distances from Roadway Right-of-Way [a] 25 Feet
Argyle Avenue			
Between Franklin Avenue and Yucca Street	Commercial	Normally Acceptable	66.6
Between Yucca Street and Hollywood Boulevard	Residential/ Commercial	Conditionally Acceptable	65.7
Between Hollywood Boulevard and Selma Avenue	Residential/ Commercial	Conditionally Acceptable	65.8
Between Selma Avenue and Sunset Boulevard	Residential/ Commercial	Normally Acceptable	63.7
Vine Street			
Between Franklin Avenue and Yucca Street	Residential/ Commercial	Conditionally Acceptable	68.8
Between Yucca Street and Hollywood Boulevard	Commercial	Normally Acceptable	69.5
Between Hollywood Boulevard and Selma Avenue	Residential/ Commercial	Conditionally Acceptable	69.8
Between Selma Avenue and Sunset Boulevard	Residential/ Commercial	Normally Unacceptable	70.1
Gower Street			
Between Franklin Avenue and Yucca Street	Residential/ Commercial	Conditionally Acceptable	68.4
Between Yucca Street and Hollywood Boulevard	Residential/ Commercial	Conditionally Acceptable	67.8
Between Hollywood Boulevard and Sunset Boulevard	Commercial	Normally Acceptable	67.5
Sunset Boulevard			
Between Vine Street and Argyle Avenue	Commercial	Conditionally Acceptable	71.6
Between Argyle Avenue and Gower Street	Commercial	Conditionally Acceptable	71.6

TABLE IV.I-6
PREDICTED EXISTING VEHICULAR TRAFFIC NOISE LEVELS

Roadway Segment	Adjacent Land Use	Existing Noise Exposure Compatibility Category [b,c]	Existing CNEL (dBA) at Referenced Distances from Roadway Right-of-Way [a] 25 Feet
Cahuenga Boulevard			
Between Franklin Avenue and Yucca Street	Residential/ Commercial	Normally Unacceptable	71.0
Between Yucca Street and Hollywood Boulevard	Commercial	Conditionally Acceptable	70.7
Ivar Avenue			
Between Yucca Street and Hollywood Boulevard	Commercial	Normally Acceptable	64.2
Bronson Avenue			
Between Franklin Avenue and Carlos Avenue	Residential/ Commercial	Conditionally Acceptable	66.2
Between Carlos Avenue and Hollywood Boulevard	Residential/ Commercial	Conditionally Acceptable	66.0
Selma Avenue			
Between Vine Street and Argyle Avenue	Residential/ Commercial	Conditionally Acceptable	61.7

[a] Calculated based on existing traffic volumes.
[b] Based on noise levels at 25 feet distance from the roadway and residential uses if residential uses are shown along roadways.
[c] See Table IV.I-4 for a description of the compatibility categories.
SOURCE: ESA, 2019.

To establish the noise prediction model's accuracy, a traffic model calibration test was performed between 11 A.M. and 12 P.M. on June 11, 2015. The road segments included in the calibration test were along Gower Street, between Yucca Street and Carlos Avenue and Yucca Street, between Argyle Avenue and Gower Street. At the noted locations, a 15-minute noise recording was made concurrent with the logging of actual traffic volumes and auto fleet mix (i.e., standard automobile, medium duty truck, or heavy-duty truck). The traffic counts were entered into the noise model along with the observed speed, lane configuration, and distance to the roadway to calculate the traffic noise levels. The results of the traffic noise model calibration are provided in **Table IV.I-7**, *Traffic Noise Model Calibration Results*. As indicated, the noise model results are within 1 dBA of the measured noise levels, which is within the industry standard tolerance of the noise prediction model.[60] Therefore, the Project-specific traffic noise prediction model is considered accurate and reflective of the Project's physical setting.

TABLE IV.I-7
TRAFFIC NOISE MODEL CALIBRATION RESULTS

Road Segment/ Noise Measurements Locations	Traffic Counts during noise readings, 15-minutes			Measured Traffic Noise Levels, L_{eq} (dBA)	Project Traffic Noise Model Predicted Noise Levels, L_{eq} (dBA)	Difference between Predicted and Measured Levels, dBA
	Autos	Medium Trucks [a]	Heavy Trucks [b]			
Gower Street	265	5	4	66.4	67.4	1.0
Yucca Street	80	1	0	62.1	61.3	-0.8

[a] Medium Truck – 2 axle trucks based on field observations.
[b] Heavy Truck – 3 or more axle trucks and buses based on field observations.
SOURCE: ESA, 2019.

(4) Groundborne 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.[61] The FTA *Transit Noise and Vibration Impact Assessment Manual* provides groundborne vibration structure damage criteria for: (1) reinforced-concrete, steel, or timber (no plaster); (2) engineered concrete and masonry (no plaster); (3) non-engineered timber and masonry buildings; (4) and buildings extremely susceptible to groundborne vibration damage.[62]

The FTA's document also provides groundborne vibration human annoyance criteria. The nearest off-site buildings to the Project Site that could be subjected to Project-related groundborne vibration structural damage and human annoyance impacts are the residential uses located along Vista Del Mar Avenue (less than 50 feet from the Project Site) because those residential uses are located within groundborne vibration and groundborne noise analysis screening distance by FTA[63] and have the potential to experience perceptible groundborne vibration due to short-term construction and long-term Project operations. These uses consist of non-engineered timber and masonry buildings that are residences where people normally sleep.

[60] California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013. Provided in Appendix I of this Draft EIR.
[61] Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Section 7.2, page 182, 2018.
[62] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 7-5, page 186, 2018
[63] Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Table 6-8, page 136, 2018.

(5) Existing Groundborne Noise and 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 limited to heavy-duty vehicular travel (buses, etc.) on local roadways. Rubber-tired vehicles traveling at a distance of 50 feet from a receptor typically generate a groundborne vibration velocity levels of approximately 63 VdB (approximately 0.006 inches per second PPV).[64] Groundborne noise levels would generally be 35 to 37 decibels lower than the velocity level depending on the building land use category.[65]

3. Project Impacts

a) Thresholds of Significance

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

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

Threshold (b): Generation of excessive groundborne vibration or groundborne noise levels?

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?

In assessing the Project's potential impacts related to noise and groundborne vibration and noise in this section, the City has determined to use Appendix G of the State CEQA Guidelines as its thresholds of significance. The factors below from the 2006 L.A. CEQA Thresholds Guide (Thresholds Guide) and the FTA's groundborne vibration and noise criteria for assessing potential impacts relating to building damage and human annoyance will be used where applicable and relevant to assist in analyzing the Appendix G questions. As discussed in Chapter VI (subsection Impacts Found not to be Significant) of this Draft EIR and in the Initial Study (Appendix A of this Draft EIR), the Project Site 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. No further analysis is required for item "c" of Appendix G.

64 Federal Transit Authority, Transit Noise and Vibration Impact Assessment Manual, Figure 6-4, page 137, 2018.

65 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-3, page 126, 2018.

(a) Noise Levels

(i) Construction

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA 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 or more at a noise-sensitive use; or
- Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. or after 6:00 P.M. on Saturday, or at any time on Sunday.

(ii) Operation

- The Project causes the ambient noise level measured at the property line of affected uses to increase 3 dBA in CNEL to or within the "normally unacceptable" or "clearly unacceptable" category, or any 5 dBA CNEL or greater noise increase (see Table IV.I-4).
- 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}.

(b) Groundborne Vibration and Groundborne Noise

The Thresholds Guide does not include factors to assess groundborne vibration or noise impacts during construction or operation.

Thus, for this Project, the City has determined to use the FTA's criteria, stated below, to evaluate potential groundborne vibration and noise impacts related to Project construction and operation.

- <u>Potential Building Damage</u> – Project construction activities cause groundborne vibration levels to exceed 0.2 inches per second PPV at the nearest off-site non-engineered timber and masonry buildings.[66]
- <u>Potential Human Annoyance</u> – Project construction and operational activities cause groundborne vibration and groundborne noise levels to exceed 72 VdB at nearby residential uses.[67]

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

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

b) Methodology

(1) On-Site Construction Noise

On-site construction noise impacts were projected by determining the noise levels expected to be generated by the different types of construction activities anticipated, and calculating the construction-related noise levels produced by the construction equipment assumed at sensitive receptors. More, specifically, the following steps were undertaken to assess construction-period noise impacts.

- Ambient noise levels at surrounding sensitive receptor locations were estimated based on field measurement data (see Table IV.I-5);
- For each type of construction equipment expected to be used during each phase of construction, based on information provided by Webcore Builders, typical noise levels were obtained from the Federal Highway Administration (FHWA) roadway construction noise model (RCNM);
- Distances between construction site locations (noise sources) within the Project Site and surrounding sensitive receptors were measured using Project architectural drawings, Google Earth, and site plans;
- The construction noise levels were then calculated for each construction phase using the FHWA RCNM, conservatively, in terms of hourly L_{eq}, for sensitive receptor locations based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance, assuming that all of the equipment for each construction phase would be in use concurrently and that the loudest equipment would be located at the edge of the Project Site closest to the sensitive receptor locations; and
- Construction noise levels were then compared to the construction noise significance thresholds identified above.

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

Roadway noise levels were projected using the FHWA's Traffic Noise Model (TNM) methodology[68] and the roadway traffic volume provided in the Traffic Study for the Project provided in Appendix L-2 of this Draft EIR.[69] 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. For construction, Project-related noise along the three identified potential haul routes was analyzed.

68 The noise prediction model which was developed based on calculation methodologies described in FHWA Traffic Noise Model Technical Manual (1998) and validated with the results from FHWA Traffic Noise Model Version 2.5. Available at: file:///C:/Users/spalomera/Downloads/dot_10000_DS1%20(1).pdf. Accessed September 2019.

69 Gibson Transportation Consulting, Inc., Traffic Study for the 622 Yucca Street Mixed-Use Project, Hollywood, California, 2018. Provided in Appendix L-2 of this Draft EIR.

(3) Stationary Point-Source Noise (Operation)

Stationary point-source noise levels at the Project Site were evaluated by first identifying the noise levels generated by the Project's open space areas, outdoor stationary noise sources such as rooftop mechanical equipment, parking structure automobile operations, and loading/refuse collection area activity, then calculating the hourly L_{eq} noise level from each noise source at sensitive receptor property lines, and then comparing such noise levels to existing ambient noise levels. More specifically, the following steps were undertaken to calculate the stationary point-source noise impacts:

- Ambient noise levels at surrounding sensitive receptor locations were estimated based on field measurement data (see Table IV.I-5);
- Typical noise levels generated by each type of stationary point-source noise generator, including mechanical equipment, open spaces, loading dock, and parking structure operations, were obtained from measured noise levels for similar equipment/activities, noise levels published in environmental noise assessment documents for land use development projects or scientific journals, or noise levels from equipment manufacturer specifications (see Appendix I, *Noise and Groundborne Vibration Technical Appendix*)
- Distances between stationary point-source noise generators and surrounding sensitive receptor locations were measured using Project architectural drawings, Google Earth, and site plans;
- Stationary point-source noise levels were then calculated for each sensitive receptor location based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance;
- Parking-related noise levels were estimated by using the methodology recommended by the FTA for the general assessment of stationary transit noise sources. Using this methodology, the peak hourly noise level that would be generated by the on-site parking levels was estimated using the following FTA equation for a parking garage:[70]
  - $L_{eq}(h) = SEL_{ref} + 10\log(NA/1000) - 35.6$, where:
    - $L_{eq}(h)$ = hourly L_{eq} noise level at 50 feet;
    - SEL_{ref} = 92 dBA at 50 feet, 1,000 cars in peak activity hour at the center of a parking garage;
    - NA = number of automobiles per hour.
- Noise level increases, if any, were compared to the stationary point-source noise significance thresholds identified above; and
- 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

[70] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 4-13 and Table 4-14, pages 45 and 47, 2018.

ambient noise level by more than 5 dBA, which falls within the significance threshold identified above.

(4) Composite Noise (Operations)

The combined noise levels from all operational noise sources were estimated by logarithmically adding together the noise levels from all of the operational noise sources at the maximally impacted noise-sensitive receptor locations, assuming the simultaneous contribution of noise from each source. As discussed previously, the dBA scale is based 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). The composite noise sources include off-site roadway noise and on-site noise sources. Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to the vibration of floors and walls and is thus addressed within the evaluation of groundborne vibration as discussed in the next subsection below.

(5) Groundborne Vibration and Noise (Construction and Operation)

Groundborne vibration and noise impacts were evaluated for potential building damage and human annoyance impacts by identifying the Project's potential vibration sources, estimating the maximum groundborne vibration and noise levels at the distances between the Project's vibration sources and the nearest structure and groundborne vibration annoyance receptor locations using vibration data from the FTA manual, and making a significance determination based on the significance thresholds described above.

Construction activities may generate groundborne vibration and noise from transient sources due to the temporary and sporadic use of groundborne vibration-generating equipment. Construction of the Project would have the potential to cause structure damage to off-site buildings that are located within 50 feet of the Project Site. 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 or noise levels. Construction and operational activities may generate groundborne vibration and noise levels that could be felt by people as a result of trucks and vehicles driving to and from the Project Site, or as the result of the operation of typical commercial-grade stationary mechanical and electrical equipment used for residential and commercial land uses, such as air handling units, condenser units, and exhaust fans, and that could cause annoyance because groundborne vibration and noise thresholds for human annoyance are much lower than groundborne vibration and noise thresholds for structural damage.

c) Project Design Features

The following Project Design Feature would be incorporated into the Project to reduce its potential noise impacts.

PDF-NOI-1: Generators used during the construction process will be electric or solar powered. Solar generator and electric generator equipment shall be located as far away from sensitive uses as feasible.

PDF-NOI-2: The Project will not use impact pile drivers and will not allow blasting during construction activities.

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) Construction Noise

(a) On-site Construction Noise

Noise impacts from construction activities are generally a function of the noise generated by construction equipment, equipment locations, the sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. Construction is typically undertaken in five stages: (1) demolition; (2) site preparation; (3) grading; (4) building construction phase 1 (framing and structure); and (5) building construction phase 2 (paving/architectural coatings). Each stage involves the use of different kinds of construction equipment and, therefore, has its own distinct noise characteristics. Demolition typically involves the use of concrete saw, excavator, rubber-tired dozer, and tractor/loader/backhoe equipment. Site preparation typically involves the use of tractor/loader/backhoe and rubber-tired dozer equipment. Grading typically involves the use of excavator, rubber-tired loader, rubber-tired dozer, scraper, tractor/loader/backhoe, and drill rig truck equipment. Building construction 1 typically involves the use of crane, forklift, tractor/loader/backhoe, welder, pump, and generator set equipment. Paving, building construction 2, and architectural coatings typically involve the use of paver, paving equipment, roller, air compressor, tractor/loader/backhoe, and generator set equipment. As described above, based on information provided by Webcore Builders, the Project would be constructed using typical construction techniques in the typical five stages; however, as per PDF-NOI-2, no blasting or impact pile driving would be used. As discussed in Chapter II, *Project Description*, construction is anticipated to begin as early as 2020, with full build out and occupancy occurring as early as 2022.

As described above, Project construction would require the use of mobile heavy equipment with high noise-level characteristics. Individual pieces of construction equipment expected to be used during Project construction could produce maximum noise levels of 74 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in **Table IV.I-8**, *Construction Equipment Noise Levels*. These maximum noise levels would occur when the equipment is operating under full power conditions. The estimated usage factor for the equipment is also shown in Table IV.I-8. The usage factors are based on the FHWA's Roadway Construction Noise Model User's Guide.[71] To more accurately characterize construction-period noise levels, the average (Hourly L_{eq}) noise level associated with each construction stage was calculated based on the quantity, type, and usage factors for each type of equipment expected to be used during each construction stage. Over the course of a construction day, the highest noise levels would be generated when multiple pieces of construction equipment are operating concurrently. The estimated noise levels at the off-site sensitive receptor locations were based on a scenario that assumed the maximum concurrent operation of equipment, which is considered to be a worst-case evaluation because Project construction would typically use less overall equipment on a daily basis, and as such would generate lower noise levels.

A summary of the construction noise impacts at the existing nearby sensitive receptors is provided in **Table IV.I-9,** *Estimated Construction Noise Levels at Existing Off-Site Sensitive Receptors*. Detailed noise calculations for construction activities are provided in Appendix I of this Draft EIR. As shown in Table IV.I-9, construction noise levels are estimated to reach a maximum of 106 dBA at the off-site receptor locations (represented by measurement location/sensitive receptor location R3) along west side of Vista Del Mar Avenue, 83 dBA at the receptor locations (represented by measurement location/sensitive receptor location R2) along Yucca Street, 82 dBA at the receptor locations (R1) along Argyle Avenue, and 69 dBA at the receptor locations (represented by measurement location/sensitive receptor location R4) along Carlos Avenue. Therefore, construction related activity noise levels would exceed the significance thresholds of 70 dBA at sensitive receptor location R1 (average daytime noise level of 65 dBA plus 5 dBA), 66 dBA at sensitive receptor location R2 (average daytime noise level of 61 dBA plus 5 dBA), 63 dBA at sensitive receptor location R3 (ambient noise level of 58 dBA plus 5 dBA), and 61 dBA at sensitive receptor location R4 (ambient noise level of 56 dBA plus 5 dBA). The ambient noise levels are shown in Table IV.I-5. **As such, the Project would exceed significance thresholds at residential uses located to the west of the Project Site along Argyle Avenue (R1), south and east of the Project Site along Vista Del Mar Avenue (R3), north of Yucca Street (R2), and north and south of Carlos Avenue (R4) and impacts would be significant. Therefore, mitigation is required and identified below.**

71 Federal Highway Administration, Roadway Construction Noise Model User's Guide, Table 1, 2006.

TABLE IV.I-8
CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Estimated Usage Factor, %	Maximum Noise Level at 50 feet from Equipment, dBA (Lmax)
Air Compressor	40	78
Concrete Saw	20	90
Crane	16	81
Drill Rig Truck	20	84
Dump/Haul Truck	40	76
Excavator	40	81
Forklift	10	75
Generator Set	50	81
Paving Equipment	20	90
Paver	50	77
Pump	50	81
Roller	20	80
Rubber Tired Dozer	40	82
Rubber Tired Loader	40	79
Scraper	40	84
Tractor/Loader/Backhoe	40	80
Water Trucks	10	80
Welder	40	74

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

(b) Off-Site Construction Traffic Noise

Delivery and haul truck and worker trips would occur throughout the construction period, although no truck trips would occur between 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. Construction-related traffic would use Argyle Avenue and Yucca Street because these roadways have direct access to the Project Site. An estimated round trip maximum of approximately 200 haul truck trips with approximately 26 trips per hour (13 inbound, 13 outbound) uniformly over a typical eight-hour workday and 20 worker trips would occur per day, based on the Traffic Study, during excavation. The excavation phase generates the most daily construction truck trips and thus represents the maximum off-site construction traffic noise conditions. Trucks traveling to and from the Project Site would be required to travel along the haul route ultimately approved by the City for the Project. However, three potential haul route options are being considered by the Project, which are evaluated below. Noise calculation worksheets for construction traffic are provided in Appendix I of this Draft EIR.

TABLE IV.I-9
ESTIMATED CONSTRUCTION NOISE LEVELS AT EXISTING OFF-SITE SENSITIVE RECEPTORS

Noise Sensitive Receptor	Construction Phases	Distance between Nearest Receptor and Construction Site, feet	Estimated Construction Noise Levels at Noise Sensitive Receptor by Construction Phase, [a] Hourly Leq (dBA)	Project's Significance Threshold [b,c] (dBA)	Exceeds Significance Threshold?
R1	Demolition	80	81	70	Yes
Western Property Line near Multi-family Residential Uses	Site Preparation	80	76		Yes
	Grading	80	81		Yes
	Building Construction 1	80	79		Yes
	Paving/Architectural Coatings/ Building Construction 2	80	82		Yes
R2	Demolition	65	83	66	Yes
Northern Property Line near Multi-family Residential and Hotel Uses	Site Preparation	65	78		Yes
	Grading	65	83		Yes
	Building Construction 1	65	81		Yes
	Paving/Architectural Coatings/ Building Construction 2	65	83		Yes
R3	Demolition	5	105	63	Yes
Southeastern Property Line near Residential Uses along Vista Del Mar Avenue	Site Preparation	5	100		Yes
	Grading	5	105		Yes
	Building Construction 1	5	103		Yes
	Paving/Architectural Coatings/ Building Construction 2	5	106		Yes
R4 [c]	Demolition	190	69	61	Yes
Residential Uses south of Carlos Avenue	Site Preparation	190	64		Yes
	Grading	190	69		Yes
	Building Construction	190	66		Yes
	Paving/Architectural Coatings/ Building Construction 2	190	69		Yes

TABLE IV.I-9
ESTIMATED CONSTRUCTION NOISE LEVELS AT EXISTING OFF-SITE SENSITIVE RECEPTORS

Noise Sensitive Receptor	Construction Phases	Distance between Nearest Receptor and Construction Site, feet	Estimated Construction Noise Levels at Noise Sensitive Receptor by Construction Phase, [a] Hourly Leq (dBA)	Project's Significance Threshold [b,c] (dBA)	Exceeds Significance Threshold?
R5 [d]	Demolition	380	53	76	No
Residential Uses west of Gower Street & south of Franklin Ave.	Site Preparation	380	48		No
	Grading	380	53		No
	Building Construction	380	50		No
	Paving/Architectural Coatings/ Building Construction 2	380	53		No

[a] Estimated construction noise levels represent the worst-case condition when noise generators are located closest to the receptors and are expected to last the entire duration of each construction phase.

[b] Significance Thresholds are the measured daytime noise levels shown in Table IV.I-5 plus 5 dBA.

[c] Receptors are partially shielded from the construction site by existing buildings; and such shielding is included in the analyses representing a 5 dBA reduction in noise levels.

[d] Receptors are fully shielded from the construction site by existing buildings; and such shielding is included in the analyses representing a 15 dBA reduction in noise levels

SOURCE: ESA, 2019.

Under Option 1, arriving haul truck traffic would exit US 101 southbound at Gower Street, travel south to Hollywood Boulevard, west to Argyle Avenue, north to the Project Site, and if necessary, east on Yucca Street to the appropriate staging area. To depart, the trucks would either travel north on Argyle Avenue to the US 101 northbound on-ramp at Franklin Avenue, or, if staging on Yucca Street, would travel south on Gower Street, west on Hollywood Boulevard, and north on Argyle Avenue to the on-ramp.

The Project's truck trips and worker trips would generate noise levels of approximately 61.0 dBA, Leq at an approximately 25-foot distance (from the closest edge of the roadway) along Gower Street, 60.6 dBA along Hollywood Boulevard and Franklin Avenue, and 61.5 dBA along Argyle Avenue and along Yucca Street.

As shown in Table IV.I-6, the existing noise levels along these streets are 67.6 dBA, Leq along Gower Street, 69.5 dBA, along Franklin Avenue, 69.5 dBA, Leq along Hollywood Boulevard, 65.7 dBA, Leq along Argyle Avenue, and 58.7 dBA, Leq along Yucca Street. Construction traffic noise levels generated by truck trips and worker trips would increase traffic noise levels along Gower Street by up to 0.9 dBA, along Franklin Avenue by up to 0.5 dBA, along Hollywood Boulevard by up to 0.5 dBA, along Argyle Avenue by up to 1.4 dBA, and along Yucca Street by up to 4.6 dBA. The noise level increases generated by truck trips and worker trips would be below the significance threshold of 5 dBA. Therefore, off-site construction traffic noise impacts would be less than significant under Option 1.

Under Option 2, arriving haul truck traffic would exit US 101 southbound at Gower Street, travel south to Yucca Street, and west to the Site. Staging would be located on the south side of Yucca Street adjacent to the Project Site, and haul trucks would cross the striped center median on Yucca Street to enter. To depart, the trucks would exit the Site northward onto Argyle Avenue and proceed to the US 101 northbound on-ramp at Argyle Avenue and Franklin Avenue.

The Project's truck trips and worker trips would generate noise levels of approximately 61.0 dBA, Leq at an approximately 25-foot distance (from the closest edge of the roadway) along Gower Street, 60.6 dBA along Franklin Avenue, and 61.5 dBA, along Yucca Street and Argyle Avenue.

As shown in Table IV.I-6, the existing noise levels along these streets are 67.6 dBA, Leq along Gower Street, 69.5 dBA, along Franklin Avenue, 65.7 dBA, Leq along Argyle Avenue, and 58.7 dBA, Leq along Yucca Street. Construction traffic noise levels generated by truck trips and worker trips would increase traffic noise levels along Gower Street by up to 0.9 dBA, along Franklin Avenue by up to 0.5 dBA, along Argyle Avenue by up to 1.4 dBA, and along Yucca Street by up to 4.6 dBA. The noise level increases generated by truck trips and worker trips would be below the significance threshold of 5 dBA. Therefore, off-site construction traffic noise impacts would be less than significant under the Option 2.

Under Option 3, arriving haul truck traffic would exit US 101 southbound at Vine Street, travel south to Yucca Street, and east to the Site. To depart, the trucks would continue east on Yucca Street, turn north on Gower, turn west on Franklin Avenue, and use the US 101 northbound on-ramp at Argyle Avenue and Franklin Avenue.

The Project's truck trips and worker trips would generate noise levels of approximately 60.6 dBA, Leq at an approximately 25-foot distance (from the closest edge of the roadway) along Franklin Avenue and Vine Street, 61.5 dBA along Yucca Street, and 61.0 dBA along Gower Street.

As shown in Table IV.I-6, the existing noise levels along these streets are 69.5 dBA along Franklin Avenue, 67.5 dBA along Vine Street, 58.7 dBA, Leq along Yucca Street, and 67.6 dBA, Leq along Gower Street. Construction traffic noise levels generated by truck trips and worker trips would increase traffic noise levels along Franklin Avenue by up to 0.5 dBA, along Vine Street by up to 0.8 dBA, along Yucca Street by up to 4.6 dBA, along Gower Street by up to 0.9 dBA, and. The noise level increases generated by truck trips and worker trips would be below the significance threshold of 5 dBA. Therefore, off-site construction traffic noise impacts would be less than significant under Option 3.

As shown above, off-site construction traffic noise impacts would be less than significant under all three potential haul route options. As such, no mitigation measures are required.

(2) Operational Noise Impacts

(a) Potential Impacts from On-site Stationary Noise Sources

(i) Fixed Mechanical Equipment

The operation of mechanical equipment such as air conditioners, fans, and related equipment may generate audible noise levels. Mechanical equipment is typically located on rooftops or within buildings, and is shielded from nearby land uses to attenuate noise and avoid conflicts with adjacent uses. All of the Project's mechanical equipment would be designed with appropriate noise control devices, such as sound attenuators, acoustics louvers, or sound screen/parapet walls in order to comply with noise limitation requirements provided in Section 112.02 of the LAMC, which compliance prevents the noise from such equipment from causing an increase in the ambient noise level by more than 5 dBA. To meet this standard, the noise from the Project equipment must be at least 10 dBA below ambient noise levels, as noise levels lower than ambient conditions can contribute to the general ambient sound level. The Project would install mechanical equipment that would generate noise levels below this threshold consistent with applicable regulatory requirements. **Therefore, operation of the Project's mechanical equipment would not exceed the City's thresholds of significance and impacts are less than significant. As such, no mitigation measures would be required.**

(ii) Outdoor/Open Space Activity

<u>Building 1</u> - Building 1 would include a gym with an adjacent outdoor synthetic lawn/workout space, a restaurant/bar with outdoor seating, a pool and a spa surrounded by a deck, and a podium courtyard on Level 4 to be shared by both hotel guests and residents. The courtyard would be equipped with lounge seats, an active lounge, gas fire pit and lounge, BBQ, and dining tables and chairs. Building 1 would also include a pool/roof garden space and small bar on Level 20. Building 2 would include a roof garden on Level 4.

The podium courtyard on Level 4 of Building 1, located approximately 50 feet above ground, would be a potential noise source for the closest residential uses at sensitive receptor locations R1 and R2, which are located approximately 80 and 65 feet away from the Project Site boundary. Under a conservative scenario, there could be up to approximately 248 visitors on the podium courtyard at one time on a peak weekend day.[72] The noise level from human conversation reaches approximately 55 dBA per

72 The podium courtyard area is approximately 7,440 sf. The assembly area allowance in the Building Code is 15 sf/person. Thus, this courtyard area could accommodate approximately 496 people. However, with tables, chairs and benches provided during an event with that number of people, an estimate of approximately 248 people is provided, which assumes half of the spaces would be filled with furniture and/or other non-occupied space.

person (speaking) at a distance of 3 feet.[73] Assuming 124 visitors would be talking simultaneously, the continuous noise level could be up to approximately 76 dBA at 3 feet. Based on a noise level of 76 dBA at a reference distance of 3 feet, and accounting for distance attenuation (29 dBA at R1 and 26 dBA at R2), the podium courtyard noise level would be 47 dBA at the R1 noise sensitive receptors along Argyle Avenue, which would not exceed the significance threshold of 70 dBA, and 50 dBA at the R2 noise sensitive receptors along Yucca Street, which would not exceed the significance threshold of 66 dBA.[74] **Therefore, the podium courtyard operations would not result in a substantial increase in ambient noise levels, and impacts would be less than significant.**

The pool deck on Level 4 would also be located approximately 50 feet above ground, and approximately 160 feet from the nearest residential uses at sensitive receptor location R3 and approximately 50 feet from the nearest residential uses at sensitive receptor location R4. The pool deck would serve as a potential noise source for sensitive receptor locations R3 and R4. Under a conservative scenario, there could be up to approximately 106 visitors on the 4th Level podium pool deck at one time on a peak weekend day.[75] The noise level from human conversation reaches approximately 55 dBA per person (speaking) at a distance of 3 feet.[76] Assuming 53 visitors would be talking simultaneously, the continuous noise level could be up to 72 dBA at 3 feet. Based on a noise level of 72 dBA at a reference distance of 3 feet, and accounting for distance attenuation (35 dBA at R3 and 24 dBA at R4), the pool deck noise level would be 37 dBA at the noise sensitive receptors along Vista Del Mar Avenue (sensitive receptor location R3) and 48 dBA at the noise sensitive receptors along Carlos Avenue (sensitive receptor location R4) and would not exceed the significance thresholds of 63 dBA at R3 and 61 dBA at R4, respectively.[77] **Therefore, pool deck operations would not exceed the significance threshold, and impacts would be less than significant. As such, no mitigation measures are required.**

The pool/roof garden would be located on Level 20, approximately 220 feet above ground. The nearest residential uses (measurement location/sensitive receptor location R2) along Yucca Street would be located approximately 60 lateral feet from the pool/roof garden on Level 20. Therefore, the pool/roof garden would be located approximately 228 feet from

[73] American Journal of Audiology Vol.7 21-25 October 1998. doi:10.1044/1059-0889(1998/012). https://aja.pubs.asha.org/article.aspx?articleid=1773811, accessed July 2019.

[74] The open space noise levels of 47 dBA at R1 and 50 dBA at R2 would be less than the existing ambient noise levels by more than 10 dBA at both locations; therefore, it would not contribute an audible increase in the existing ambient noise levels at R1 or R2.

[75] The pool deck area is approximately 3,170 sf. The assembly area allowance in the Building Code is 15 sf/person. Thus, approximately 211 people could potentially occupy the space. However, with tables, chairs and benches provided during an event with that number of people, an estimate of approximately 106 people is provided, which assumes half of the spaces would be filled with furniture and/or other non-occupied space.

[76] American Journal of Audiology Vol.7 21-25 October 1998. doi:10.1044/1059-0889(1998/012). https://aja.pubs.asha.org/article.aspx?articleid=1773811, accessed July 2019.

[77] The open space noise levels of 48 dBA at R3 and 39 dBA at R4 would be less than the existing ambient noise levels by more than 10 dBA at both locations; therefore, it would not contribute an audible increase in the existing ambient noise levels at R3 or R4.

the nearest residential uses (measurement location/sensitive receptor location R2) along Yucca Street. Under a conservative scenario, there could be up to approximately 125 visitors on the pool/roof garden area at one time on a peak weekend day.[78] The noise levels generated by rooftop-related activities of approximately 125 people could be as high as 73 dBA at 3 feet from the boundary of the rooftop, assuming that 62 visitors would be talking simultaneously. Accounting for distance attenuation (minimum 38 dBA loss), noise levels are expected to contribute no more than 35 dBA at the nearest sensitive receptor (measurement location/sensitive receptor location R2) and would not exceed the significance threshold of 5 dBA over ambient noise levels.[79] **Therefore, noise impacts associated with the pool/roof garden area are less than significant. As such, no mitigation measures are required.**

<u>Building 2</u> - Building 2 would include a roof garden on Level 4, located approximately 50 feet from the nearest residential uses (measurement location/sensitive receptor location R3) across Vista Del Mar to the east. Under a conservative scenario, there could be up to approximately 29 visitors on the roof garden at one time on a peak weekend day. [80] The noise level from human conversation reaches approximately 55 dBA per person (speaking) at a distance of 3 feet.[81] Assuming 15 visitors would be talking simultaneously, the continuous noise level would be up to 67 dBA at 3 feet. Based on a noise level of 67 dBA at a reference distance of 3 feet, and accounting for distance attenuation (24 dBA), the roof garden noise level would be 43 dBA at the noise sensitive receptors along Vista Del Mar Avenue (measurement location/sensitive receptor location R3) and would not exceed the significance threshold of 63 dBA.[82]

Therefore, outdoor/open space activities would not exceed the significance threshold, and impacts would be less than significant. As such, no mitigation measures are required.

78 The pool/roof garden area is approximately 3,740 sf. The assembly area allowance in the Building Code is 15 sf/person. Thus, approximately 249 people could potentially occupy this space. However, with tables, chairs and benches provided during an event with that number of people, an estimate of approximately 125 people is provided, which assumes half of the spaces would be filled with furniture and/or other non-occupied space.

79 The open space noise level of 35 dBA at R2 would be less than the existing ambient noise levels by more than 10 dBA at R2; therefore, it would not contribute an audible increase in the existing ambient noise level at R2.

80 The roof garden area is approximately 875 sf. The assembly area allowance in the Building Code is 15 sf/person. Thus, approximately 58 people could potentially occupy the space. However, with tables, chairs and benches provided during an event with that number of people, an estimate of approximately 29 people is provided, which assumes half of the spaces would be filled with furniture and/or other non-occupied space.

81 American Journal of Audiology Vol.7 21-25 October 1998. doi:10.1044/1059-0889(1998/012). https://aja.pubs.asha.org/article.aspx?articleid=1773811, accessed July 2019.

82 The open space noise level of 43 dBA at R3 would be less than the existing ambient noise levels by more than 10 dBA at R3; therefore, it would not contribute an audible increase in the existing ambient noise level at R3.

(iii) Loading Dock and Refuse Collection Areas

Loading, recycling, trash removal, and collection for the residential, hotel, and commercial/restaurant uses within Building 1 would occur in designated areas within the interior areas of the P1 Level near the parking entrance off of Argyle Avenue such that noise impacts to nearby residents would be minimized.

For Building 2, trash collection and recycling for the residential uses would occur in a designated area within the P1 Level. It is anticipated that any moving trucks would temporarily park along Vista Del Mar when residents are moving in or out. Loading/deliveries for residential uses would also occur within the P1 level and would utilize a dedicated residential freight elevator on the P1 Level for Building 2.

Loading dock and refuse collection areas activities such as truck movements/idling and loading/unloading operations generate noise levels that have a potential to adversely impact adjacent land uses during long-term Project operations. Based on a noise survey that was conducted at a loading dock facility by ESA, loading dock activity (namely idling semi-trucks and backup alarm beeps) would generate noise levels of approximately 70 dBA L_{eq} at a reference distance of 50 feet from the noisiest portion of the truck (i.e., to the side behind the cab and in line with the engine and exhaust stacks).[83]

For Building 1, loading dock and refuse service areas would be located within the P1 level. The east side of the parking structure from the P1 up to the 3rd Level for Building 1 will have no openings. In addition, the south side of the exterior Building 1 wall from at least 50 feet as measured from the southeastern corner of the Building 1 parking structure (towards the center of the Project Site) from the P1 Level up to the 3rd Level will also have no openings, in order to block the line of sight to the residential uses along the west side of Vista Del Mar Avenue. Based on a noise source level of 66 dBA at a reference distance of 80 feet for noise sensitive receptor R1, and a noise level of 60 dBA at a reference distance of 160 feet for noise sensitive receptor R4, accounting for barrier-insertion loss by the Project buildings (minimum 40 dBA insertion loss), the loading dock and refuse service noise levels would be approximately 26 dBA L_{eq} at the noise-sensitive uses represented by R1 and 20 dBA L_{eq} at noise-sensitive uses represented by R4, of which such levels would be inaudible because they would be at least 10 dBA below the existing ambient noise levels at R1 and R4, and therefore would not exceed the significance thresholds of 70 dBA at R1 and 61 dBA at R4, respectively.

For Building 2, dumpsters would be wheeled manually from the trash collection areas within the P1 Level to the curbside along Vista Del Mar Avenue. The moving of trash and recycling bins manually would generate noise levels of approximately 60 dBA (L_{max}) at a

83 The loading dock facility noise measurements were conducted at a loading dock facility at a Wal-Mart store using the Larson-Davis 820 Precision Integrated Sound Level Meter (SLM) in June 15, 2016. 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 approximately 5 feet above the local grade. See Appendix I for the supporting documents.

3-foot distance.[84] The nearest noise-sensitive uses on the east side of the Project Site, represented by measurement location R3 (residential uses along Vista Del Mar Avenue), would be located approximately 15 feet from the refuse service activities. Based on a noise level source strength of 60 dBA at a reference distance of 3 feet, and accounting for distance attenuation (minimum 15 dBA insertion loss), the noise level generated by moving the trash and recycling bins would be approximately 46 dBA at these noise-sensitive uses along Vista Del Mar Avenue and therefore would not exceed the significance threshold of 63 dBA.[85] **Therefore, loading dock and refuse collection areas operations would not exceed the significance threshold, and impacts would be less than significant. As such, no mitigation measures would be required.**

(iv) Parking Structure

The Project would provide a total of 436 vehicle parking spaces in Buildings 1 and 2. Parking for Building 1 would be provided within the six-level parking structure housed within its podium [two subterranean levels (P2 and P3); two semi-subterranean levels (P1 and L1); and two fully above ground levels (L2 and L3)]. Parking for Building 2 would be provided in its two-level podium structure within the semi-subterranean level (P1) and one subterranean level (P2).

Sources of noise associated with parking areas typically include engines accelerating, doors slamming, car alarms, horns honking, tire squeals, and people talking. Noise levels at these facilities would fluctuate throughout the day with the amount of vehicle and human activity. Noise levels would generally be the highest during the morning and evening peak traffic hours when the largest number of vehicles would enter and exit the parking structures.

Although the residential uses would be provided with private garage parking and there are a total of three access driveways, for the purpose of providing a conservative, quantitative estimate of the noise levels that would be generated by vehicles entering and exiting the Project Site, the methodology recommended by FTA for the general assessment of parking-related noise sources was used, as discussed in the Methodology Section.

Based on the Project's Traffic Study provided in Appendix L-2 of this Draft EIR, the Project is forecasted to generate 2,897 daily vehicle trips, including an anticipated 218 trips and 238 trips during the A.M. and P.M. peak hours. The 238 P.M. peak hour trips were then proportioned based on land use type and number of entrances, such that approximately 116 trips are expected to use the north entrance driveway on Yucca Street to access Building 1 parking, approximately 116 trips are expected to use the west entrance

84 Moving of trash and recycling bins noise measurements were conducted at a refuse service area at a Wal-Mart store using the Larson-Davis 820 Precision Integrated Sound Level Meter (SLM) in June 15, 2016. 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 approximately 5 feet above the local grade. See Appendix I for the supporting documents.

85 The noise level of 46 dBA at R3 would be less than the existing ambient noise levels by more than 10 dBA at R3; therefore, it would not contribute an audible increase in the existing ambient noise level at R3.

driveway on Argyle Avenue to access Building 1 parking, and approximately 7 trips are expected to use the east side entrance driveway on Vista Del Mar to access Building 2 parking. Using the FTA's reference noise level of 92 dBA SEL[86] at 50 feet from the noise source for a parking lot, assuming the trip volumes mentioned previously, the noise levels would be approximately 47 dBA L_{eq} at 50 feet for the north entrance driveway on Yucca Street to access Building 1 parking, approximately 47 dBA L_{eq} at 50 feet for the west entrance driveway on Argyle Avenue to access Building 1 parking, and approximately 35 dBA L_{eq} at 50 feet for the east side entrance driveway on Vista Del Mar to access Building 2 parking. These calculated noise levels assume no noise attenuation from walls, partial screens, or other barriers, and thus are very conservative estimates.

The north entrance driveway on Yucca Street to access Building 1 parking is located approximately 80 feet from noise-sensitive uses at sensitive receptor location R1, the west entrance driveway on Argyle Avenue to access Building 1 parking is approximately 65 feet from noise-sensitive uses at sensitive receptor location R2. The north entrance driveway on Yucca Street to access Building 1 parking is located approximately and the east entrance driveway on Vista Del Mar to access Building 2 parking are approximately 100 feet and 10 feet, respectively, from noise-sensitive uses at sensitive receptor location R3, and the west entrance driveway on Argyle Avenue to access Building 1 parking and the east entrance driveway on Vista Del Mar to access Building 2 parking are located approximately 180 feet and 210 feet, respectively, from noise-sensitive uses at sensitive receptor location R4. Therefore, adjusting for these distances, the parking structure vehicle-related noise levels would be approximately 43 dBA L_{eq} at sensitive receptor location R1, 45 dBA L_{eq} at sensitive receptor location R2, 53 dBA L_{eq} at sensitive receptor location R3, and 36 dBA L_{eq} at sensitive receptor location R4. These noise levels are well below the existing noise levels of 65 dBA L_{eq}, 61 dBA L_{eq}, 58 dBA L_{eq} and 56 dBA L_{eq}, respectively, and which would not audibly increase the ambient noise level sensitive receptor locations at R1, R2, or R4,[87] but would increase the noise level at sensitive receptor location R3 by 1.2 dBA. The noise level increase of 1.2 dBA at R3 would not exceed the significance threshold. **Because the parking structure vehicle-related noise would not increase ambient noise levels at the noise sensitive receptor locations R1, R2, R3, or R4 by the applicable 3 dBA or 5 dBA threshold, respectively, impacts would be less than significant, and no mitigation measures are required.**

(v) Emergency Generator

The Project would include an on-site emergency generator. The emergency generator is anticipated to be located on the P1 level of Building 1, approximately 75 feet from Argyle Avenue and along the southern perimeter of Building 1. The emergency generator is assumed to be rated at approximately 250 kilowatts (approximately 335 horsepower). The emergency generator may be used in the event of a power outage to provide electricity

86 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 4-13 and Table 4-14, pages 45 and 47, 2018.

87 The noise levels of 43 dBA at R1, 45 dBA at R2, and 36 dBA at R4 would be less than the existing ambient noise levels by more than 10 dBA at these locations; therefore, it would not contribute an audible increase in the existing ambient noise level at R1, R2, and R4.

for emergency safety lighting and other electrical needs. Maintenance and testing of the emergency generator would not occur daily, but rather periodically, up to 50 hours per year per South Coast Air Quality Management District Rule 1470.

The emergency generator is anticipated to be located approximately 155 feet from the multi-family residential uses to the west side of Argyle Avenue (R1) and approximately 200 feet from the noise-sensitive uses to the south side of Carlos Avenue (R4). Other off-site noise-sensitive receptors would be farther away or would not have a line-of-sight to the emergency generator and would be less impacted by noise from this source. Based on a noise survey that was conducted for an equivalent generator by ESA, noise from the emergency generator would be approximately 96 dBA (L_{eq}) at 25 feet.[88] Noise from the emergency generator would be approximately 80 dBA at 155 feet (R1) and 78 dBA at 200 feet (R4), which would exceed the existing ambient noise levels at these locations. The combined noise level from the emergency generator plus the existing ambient noise levels (65 dBA at R1 and 56 dBA at R4) would be approximately 80 dBA at R1 and 78 dBA at R4, which would exceed the significance threshold. The off-site residential uses and hotel uses on the north side of Yucca Street (R2) located approximately 160 feet from the emergency generator and the residential uses to the east and southeast of the Project Site along Vista Del Mar Avenue (R3) located approximately 300 feet from the emergency generator, while located near to the Project Site, would not have a line-of-sight to the emergency generator. For locations R2 and R3, the Project building would act as a noise enclosure and substantially shield the emergency generator noise by at least 34 dBA.[89] Given distance attenuation and noise shielding effects, the emergency generator noise at R2 would be 46 dBA L_{eq} and at R3 would be 40 dBA L_{eq}, respectively, which would not exceed the ambient noise levels at R2 and R3 of 61 dBA and 58 dBA. **Therefore, noise impacts would be potentially significant at the nearest noise sensitive receptors (R1 and R4) located 155 feet and 200 feet away, respectively. Mitigation is required and identified below.**

(b) Off-site Project Traffic

(i) Impacts Under Existing Traffic Baseline 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.

88 The generator noise measurements were conducted at a Verizon facility using the Larson-Davis 820 Precision Integrated Sound Level Meter (SLM) in November 2000. 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 approximately 5 feet above the local grade. See Appendix I for the supporting documents.

89 Federal Highway Administration, Noise Barrier Design Handbook, Acoustical Considerations, 2017, https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/design03.cfm . Accessed October 2019. Noise shielding based on the transmission loss for concrete enclosure.

Project impacts are shown in **Table IV.I-10**, *Off-Site Traffic Noise Impacts – Existing Baseline Conditions.* As shown, the maximum increase in Project-related traffic noise levels over existing traffic noise levels would be 1.9 dBA CNEL, which would occur along Yucca Street, between Argyle Avenue and Gower Street. This increase in noise level would be well below a "clearly noticeable" increase of 5.0 dBA CNEL in an area characterized by conditionally acceptable noise levels (see Table IV.I-4 for a description of the land use compatibility categories for community noise), and the increase in sound level would be substantially lower at the remaining roadway segments analyzed. **Therefore, off-site Project-related traffic noise increases would be less than the applicable threshold and therefore less than significant, and no mitigation measures are required.**

TABLE IV.I-10
OFF-SITE TRAFFIC NOISE IMPACTS – EXISTING BASELINE CONDITIONS

		Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA)			
Roadway Segment	**Adjacent Land Use**	**Existing [a] (A)**	**Existing with Project [b] (B)**	**Project Increment (B - A)**	**Exceed Threshold?**
Franklin Avenue					
Between Cahuenga Boulevard and Vine Street	Residential/ Commercial	68.3	68.3	0.0	No
Between Argyle Avenue and Gower Street	Residential/ Commercial	69.9	70.0	0.1	No
Between Gower Street and Beachwood Drive	Residential/ Commercial	70.2	70.2	0.0	No
Between Beachwood Drive and Bronson Avenue	Residential/ Commercial	70.0	70.0	0.0	No
Yucca Street					
Between Cahuenga Boulevard and Ivar Avenue	Commercial	64.5	64.6	0.1	No
Between Ivar Avenue and Vine Street	Commercial	65.2	65.3	0.1	No
Between Vine Street and Argyle Avenue	Commercial	63.8	64.2	0.4	No
Between Argyle Avenue and Gower Street	Residential/ Commercial	60.9	62.8	1.9	No
Hollywood Boulevard					
Between Cahuenga Boulevard and Ivar Avenue	Commercial	68.7	68.7	0.0	No
Between Ivar Avenue and Vine Street	Commercial	68.8	68.9	0.1	No

TABLE IV.I-10
OFF-SITE TRAFFIC NOISE IMPACTS – EXISTING BASELINE CONDITIONS

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA)			Exceed Threshold?
		Existing [a] (A)	Existing with Project [b] (B)	Project Increment (B - A)	
Between Vine Street and Argyle Avenue	Residential/ Commercial	69.2	69.2	0.0	No
Between Argyle Avenue and Gower Street	Residential/ Commercial	69.6	69.6	0.0	No
Between Gower Street and Bronson Avenue	Commercial	68.8	68.8	0.0	No
Argyle Avenue					
Between Franklin Avenue and Yucca Street	Commercial	66.6	66.8	0.2	No
Between Yucca Street and Hollywood Boulevard	Residential/ Commercial	65.7	65.9	0.2	No
Between Hollywood Boulevard and Selma Avenue	Residential/ Commercial	65.8	65.9	0.1	No
Between Selma Avenue and Sunset Boulevard	Residential/ Commercial	63.7	63.8	0.1	No
Vine Street					
Between Franklin Avenue and Yucca Street	Residential/ Commercial	68.8	68.9	0.1	No
Between Yucca Street and Hollywood Boulevard	Commercial	69.5	69.5	0.0	No
Between Hollywood Boulevard and Selma Avenue	Residential/ Commercial	69.8	69.9	0.1	No
Between Selma Avenue and Sunset Boulevard	Residential/ Commercial	70.1	70.1	0.0	No
Gower Street					
Between Franklin Avenue and Yucca Street	Residential/ Commercial	68.4	68.5	0.1	No
Between Yucca Street and Hollywood Boulevard	Residential/ Commercial	67.8	68.0	0.2	No
Between Hollywood Boulevard and Sunset Boulevard	Commercial	67.5	67.5	0.0	No

TABLE IV.I-10
OFF-SITE TRAFFIC NOISE IMPACTS – EXISTING BASELINE CONDITIONS

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA)			Exceed Threshold?
		Existing [a] (A)	Existing with Project [b] (B)	Project Increment (B - A)	
Sunset Boulevard					
Between Vine Street and Argyle Avenue	Commercial	71.6	71.6	0.0	No
Between Argyle Avenue and Gower Street	Commercial	71.6	71.6	0.0	No
Cahuenga Boulevard					
Between Franklin Avenue and Yucca Street	Residential/ Commercial	71.0	71.0	0.0	No
Between Yucca Street and Hollywood Boulevard	Commercial	70.7	70.7	0.0	No
Ivar Avenue					
Between Yucca Street and Hollywood Boulevard	Commercial	64.2	64.2	0.0	No
Bronson Avenue					
Between Franklin Avenue and Carlos Avenue	Residential/ Commercial	66.2	66.2	0.0	No
Between Carlos Avenue and Hollywood Boulevard	Residential/ Commercial	66.0	66.0	0.0	No
Selma Avenue					
Between Vine Street and Argyle Avenue	Residential/ Commercial	61.7	61.7	0.0	No

[a] Existing data is taken from Table IV.I-6.
SOURCE: ESA, 2019.

(ii) Impacts Under Future Traffic Conditions

Future (2022) roadway noise levels were also calculated along various roadway segments near the Project Site to establish future baseline traffic noise levels that would occur with implementation of the related projects, to which the Project's off-site traffic noise during operations could be added. Project impacts are shown in **Table IV.I-11**, *Off-Site Traffic Noise Impacts – Future 2022 Conditions.* As indicated, the maximum increase in Project-related traffic noise levels over the future traffic noise levels would be 3.0 dBA CNEL, which would occur along Yucca Street, between Argyle Avenue and Gower Street. This increase in noise level would be less than a "clearly noticeable" increase of 5.0 dBA

CNEL in an area characterized by conditionally acceptable noise levels (see Table IV.I-4 for a description of the land use compatibility categories for community noise), and the increase in noise would be substantially lower at the remaining roadway segments analyzed. **Therefore, off-site Project-related traffic noise increases, when measured against the 2022 conditions, would be less than the applicable threshold and therefore less than significant.**

TABLE IV.I-11
OFF-SITE TRAFFIC NOISE IMPACTS – FUTURE 2022 CONDITIONS

	Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA)					
Roadway Segment	**Existing (A)**	**Future No Project [a] (B)**	**Future with Project [b] (C)**	**Future Project Increment [c] (C-B)**	**Cumulative Increment (C-A)**	**Exceed Threshold?**
Franklin Avenue						
Between Cahuenga Boulevard and Vine Street	68.3	69.2	69.2	0.0	0.9	No
Between Argyle Avenue and Gower Street	69.9	70.5	70.5	0.0	0.6	No
Between Gower Street and Beachwood Drive	70.2	70.6	70.6	0.0	0.4	No
Between Beachwood Drive and Bronson Avenue	70.0	70.4	70.4	0.0	0.4	No
Yucca Street						
Between Cahuenga Boulevard and Ivar Avenue	64.5	65.4	65.6	0.2	1.1	No
Between Ivar Avenue and Vine Street	65.2	65.9	66.0	0.1	0.8	No
Between Vine Street and Argyle Avenue	63.8	65.2	65.5	0.3	1.7	No
Between Argyle Avenue and Gower Street	60.9	62.5	63.9	1.4	3.0	No
Hollywood Boulevard						
Between Cahuenga Boulevard and Ivar Avenue	68.7	70.4	70.4	0.0	1.7	No
Between Ivar Avenue and Vine Street	68.8	70.6	70.6	0.0	1.8	No
Between Vine Street and Argyle Avenue	69.2	70.7	70.8	0.1	1.6	No

TABLE IV.I-11
OFF-SITE TRAFFIC NOISE IMPACTS – FUTURE 2022 CONDITIONS

Roadway Segment	Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA)					
	Existing (A)	Future No Project [a] (B)	Future with Project [b] (C)	Future Project Increment [c] (C-B)	Cumulative Increment (C-A)	Exceed Threshold?
Between Argyle Avenue and Gower Street	69.6	70.9	70.9	0.0	1.3	No
Between Gower Street and Bronson Avenue	68.8	70.6	70.6	0.0	1.8	No
Argyle Avenue						
Between Franklin Avenue and Yucca Street	66.6	67.3	67.5	0.2	0.9	No
Between Yucca Street and Hollywood Boulevard	65.7	66.6	66.7	0.1	1.0	No
Between Hollywood Boulevard and Selma Avenue	65.8	66.3	66.4	0.1	0.6	No
Between Selma Avenue and Sunset Boulevard	63.7	64.4	64.5	0.1	0.8	No
Vine Street						
Between Franklin Avenue and Yucca Street	68.8	69.6	69.6	0.0	0.8	No
Between Yucca Street and Hollywood Boulevard	69.5	70.5	70.5	0.0	1.0	No
Between Hollywood Boulevard and Selma Avenue	69.8	70.6	70.7	0.1	0.9	No
Between Selma Avenue and Sunset Boulevard	70.1	70.9	71.0	0.1	0.9	No
Gower Street						
Between Franklin Avenue and Yucca Street	68.4	69.0	69.1	0.1	0.7	No
Between Yucca Street and Hollywood Boulevard	67.8	68.5	68.7	0.2	0.9	No

TABLE IV.I-11
OFF-SITE TRAFFIC NOISE IMPACTS – FUTURE 2022 CONDITIONS

	Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA)					
Roadway Segment	**Existing (A)**	**Future No Project [a] (B)**	**Future with Project [b] (C)**	**Future Project Increment [c] (C-B)**	**Cumulative Increment (C-A)**	**Exceed Threshold?**
Between Hollywood Boulevard and Sunset Boulevard	67.5	68.8	68.8	0.0	1.3	No
Sunset Boulevard						
Between Vine Street and Argyle Avenue	71.6	73.4	73.4	0.0	1.8	No
Between Argyle Avenue and Gower Street	71.6	73.4	73.4	0.0	1.8	No
Cahuenga Boulevard						
Between Franklin Avenue and Yucca Street	71.0	71.9	72.0	0.1	1.0	No
Between Yucca Street and Hollywood Boulevard	70.7	71.6	71.6	0.0	0.9	No
Ivar Avenue						
Between Yucca Street and Hollywood Boulevard	64.2	64.4	64.4	0.0	0.2	No
Bronson Avenue						
Between Franklin Avenue and Carlos Avenue	66.2	66.5	66.5	0.0	0.3	No
Between Carlos Avenue and Hollywood Boulevard	66.0	66.3	66.3	0.0	0.3	No
Selma Avenue						
Between Vine Street and Argyle Avenue	61.7	62.5	62.5	0.0	0.8	No

[a] Includes future growth plus related projects.
[b] Includes future growth plus related projects and Project traffic.
[c] Increase due to Project-related traffic only at Project build-out.

SOURCE: ESA, 2019.

(c) Composite Noise Level Impacts from Proposed Project Operations

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 noise-sensitive receptor locations included in this analysis. Noise sources associated with the Project would include traffic on nearby roadways, automobile movement noise in the parking structures, outdoor/open space noise, loading dock and refuse service areas, emergency generator, and on-site mechanical equipment.

The maximum composite noise impacts would generally be expected near the Project Site boundary. As shown in Table IV.I-12, *Unmitigated Composite Noise Levels at Sensitive Receptor Locations R1 and R4 from Project Operation*, the composite noise levels are dominated by the emergency generator, which would be located on the P1 level of Building 1, approximately 75 feet from Argyle Avenue and along the southern perimeter of Building 1. The maximum composite noise impacts are expected to occur at noise-sensitive receptors at measurement locations R1 and R4. Location R1 represents uses located across Argyle Avenue that could experience composite noise from the Project's emergency generator, Podium Courtyard (4th level), and Building 1 parking access as well as from traffic on Argyle Avenue. Location R4 represents uses located adjacent to the south of the Project Site that could experience composite noise from the Project's emergency generator, Podium Pool Deck (4th level), and Building 2 parking access as well as from traffic on Vista Del Mar and Carlos Avenue. Locations R2 and R3 to the north and west of the Project Site would be less affected by composite noise because the Project buildings would provide a buffer from composite noise from the emergency generator and also would be situated further away from the Podium Pool Deck (for R2 and R3) and the Podium Courtyard (for R3).

Since the composite noise levels are dominated by the emergency generator noise, locations R1 and R4 represent the maximum impacted sensitive receptors for composite noise. Composite noise levels for locations R1, R2, R3, and R4 are based on the operational noise analyses provided in subsection 3.d)(2), *Operational Noise Impacts*.

As shown in **Table IV.I-12**, *Unmitigated Composite Noise Levels at Sensitive Receptor Locations R1, R2, R3, and R4 from Project Operation*, the primary contributors to composite noise levels would be the emergency generator and traffic noise. The operation of an emergency generator would contribute a maximum of 80 dBA at the sensitive receptor location R1 and a maximum of 78 dBA at sensitive location R4. Due to distance attenuation and noise shielding effects, the emergency generator would contribute a maximum of 46 dBA at the sensitive receptor location R2 and a maximum of 40 dBA at sensitive location R3. Project-related peak hour traffic noise levels would range from approximately 53.6 dBA (L_{eq}) at sensitive receptor locations R1 and R4 and approximately 57.9 dBA (L_{eq}) at sensitive receptor locations R2 and R3. The composite noise levels from the operation of the Project would be up to 80.2 dBA at sensitive receptor location R1, up to 63.4 dBA at sensitive receptor location R2, up to 62.0 dBA at sensitive receptor location R3, and up to 78.0 dBA at the sensitive receptor location R4, largely based on conservative noise levels from the emergency generator and Project-related peak hour traffic noise levels. Overall, relative to the existing noise environment, the Project would be estimated to increase the ambient noise level by approximately 15.2 dBA at the residences to the west (R1) along Argyle Avenue, approximately 2.4 dBA to the hotel and residential uses to the north (R2) along Yucca Street, approximately 3.0 dBA to the residential uses to the east (R4) along Vista Del Mar, and by approximately 22.0 dBA at the residences to the south along Carlos Avenue (R4). The increase in unmitigated noise level at R2 and R3 not exceed the significance threshold of an increase of 5 dBA but would be above the applicable increase of 5 dBA at R1 and R4. This analysis conservatively assumes that the Project's operational noise sources would generate maximum noise levels simultaneously. **As such, the unmitigated composite noise level impact on sensitive receptors due to the Project's future operations would be potentially significant and mitigation measures would be required.**

TABLE IV.I-12
UNMITIGATED COMPOSITE NOISE LEVELS AT SENSITIVE RECEPTOR LOCATIONS R1, R2, R3, AND R4 FROM PROJECT OPERATION

Operational Noise Sources	Noise Levels, dBA			
	Location R1	Location R2	Location R3	Location R4
(A) Existing (Ambient) Noise Level	**65**	**61**	**58**	**56**
Project Composite Noise Sources				
(1) Mechanical Equipment	55	51	48	46
(2) Outdoor/Open Space Activity	47	50 [c]	44 [d]	48
(3) Loading Dock and Refuse Collection Areas	26	N/A [e]	46	20
(4) Parking Structures	43	45	53	36
(5) Emergency Generator	80	46	40	78
(6) Off-site traffic [a]				
Estimated Project-only traffic noise level (peak Leq)	53.6	57.9	57.9	53.6
(B) Project Composite Noise Level (1+2+3+4+5+6) [b]	**80.0**	**59.6**	**59.8**	**78.0**
(C) Existing Plus Project Composite Noise Level (A+B) [b]	**80.2**	**63.4**	**62.0**	**78.0**
Project Increment (C-A)	15.2	2.4	3.0	22.0
Exceeds Threshold?	Yes	No	No	Yes

[a] Traffic volumes and associated noise levels conservatively assumed to be the same for R4 as R1.
[b] Noise levels are added logarithmically.
[c] Noise levels are added logarithmically for the Building 1 Level 4 podium courtyard (50 dBA) and the Building 1 Level 20 pool/roof garden (35 dBA).
[d] Noise levels are added logarithmically for the Building 1 Level 4 pool deck (37 dBA) and the Building 2 Level 4 roof garden (43 dBA).
[e] The Project would not have loading docks near location R2 and as such would not contribute to noise increases from loading docks at location R2.
SOURCE: ESA, 2019.

Conclusion

Overall, the Project could generate a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies and mitigation measures would be required. As discussed below in subsection g, impacts from on-site construction noise would remain significant and unavoidable, even with implementation of the identified mitigation measures (see **MM-NOI-1** and **MM-NOI-2**). As discussed below in subsection g, operational noise would be less than significant with the incorporation of the identified mitigation measures (see **MM-NOI-4**).

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

(1) Structural Impacts

(a) Construction

Construction activities can generate varying degrees of groundborne vibration, depending on the construction procedures and the construction equipment used. The operation of construction equipment generates groundborne vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site varies depending on soil type, ground strata, and construction characteristics of the receptor buildings. The results from vibration can range from no perceptible effects at the lowest groundborne vibration levels, to low rumbling sounds and perceptible groundborne vibration at moderate levels, to slight damage at the highest levels. Groundborne vibration from construction activities rarely reaches levels that damage structures. The PPV and VdB for the construction equipment anticipated to be used during Project construction are listed in **Table IV.I-13**, *Typical Groundborne Vibration Velocities for Potential Project Construction Equipment*.

Construction of the Project would generate groundborne vibration during site clearing, grading and shoring activities. Based on the groundborne vibration data provided in Table IV.I-13, groundborne vibration velocities created by operation of construction equipment would range from approximately 0.003 to 0.089 inches per second PPV at 25 feet from the source of activity.

TABLE IV.I-13
TYPICAL GROUNDBORNE VIBRATION VELOCITIES FOR THE PROJECT CONSTRUCTION EQUIPMENT

	Approximate PPV (in/sec)					Approximate RMS (VdB)				
Equipment	**25 Feet**	**50 Feet**	**60 Feet**	**75 Feet**	**100 Feet**	**25 Feet**	**50 Feet**	**60 Feet**	**75 Feet**	**100 Feet**
Large Bulldozer	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Hoe Ram	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Caisson Drilling	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Loaded Trucks	0.076	0.027	0.020	0.015	0.010	86	77	75	72	68
Jackhammer	0.035	0.012	0.009	0.007	0.004	79	70	68	65	61
Small Bulldozer	0.003	0.001	0.0008	0.0006	0.0004	58	49	47	44	40

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

Metro’s Red Line subway tunnels are located underground approximately 500 feet south of the Project Site. Given the distance of 500 feet, intervening existing structures between the Metro’s Red Line subway tunnels, and the underground locations of the tunnels, groundborne vibration generated by construction and operation of the Project would not have significant impacts on Metro’s Red Line subway tunnels and operation. Therefore, impacts would be less than significant and no mitigation measures are required for Metro’s Red Line tunnels.

The nearest single-family residential building along Vista Del Mar Avenue (measurement location/sensitive receptor location R3) is located within approximately five feet from the Project Site. Construction activities immediately adjacent to the property line could produce groundborne vibration velocities of up to approximately 0.995 inches per second at this off-site residential building when heavy construction equipment operates within approximately five feet from the residential building. This value would exceed the 0.2 inch per second PPV significance threshold for potential residential building damage. **As such, the Project’s impact related to groundborne vibration during construction is considered to be potentially significant. Mitigation is required and identified below**.

(b) Operation

The Project’s day-to-day operations 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 compressors would generate groundborne vibration levels of 0.5 in/sec PPV at 1 foot.[90] The Project mechanical equipment, including air handling units, condenser units, and exhaust fans, would be located on Project building rooftops and not be located in direct contact with the ground. As such, it would not generate groundborne vibration off the Project Site. Therefore, groundborne vibration from the operation of such mechanical equipment would not impact any of the off-site sensitive receptors.

During Project operations, delivery trucks would visit the site similar to other residential developments. According to the FTA, delivery trucks rarely generate vibration that exceeds 70 VdB,[91] which is equivalent to approximately 0.013 in/sec PPV, which would be less than the significance threshold of 0.2 inch per second PPV for potential residential building damage.

As such, groundborne vibration impacts associated with operation of the Project would be less than significant and mitigation is not required.

(2) Human Annoyance

(a) Construction

The Thresholds Guide identifies residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks as sensitive uses. Off-site non-residential uses such as retail and commercial uses are not considered groundborne vibration sensitive receptors for human annoyance under CEQA. The only uses in the Project vicinity that are sensitive uses are residential uses. The nearest existing off-site residential structure is located along Vista Del Mar Avenue approximately within five feet south of the construction site, with other residential structures situated at greater distances along Vista Del Mar Avenue. These structures could be exposed to groundborne vibration from construction activities that would range from approximately from 62 to 91 VdB during construction, when construction activities occur near the property line. These values exceed the 72 VdB perception threshold. As shown in Table IV.I-13, construction groundborne vibration levels at 75 feet would exceed 72 VdB. At 100 feet, construction vibration levels would fall to below 72 VdB. Thus, sensitive receptor locations R1 at 80 feet from the Project Site and R2 at 65 feet from the Project Site would potentially be exposed to construction groundborne vibration levels in excess of 72 VdB.

Smaller equipment operating along the property line would result in groundborne vibration levels below the 72 VdB threshold. The groundborne vibration levels would exceed the significance threshold only when heavy equipment, such as a larger dozer and heavy trucks, operate along the boundary of the construction site. Construction-related groundborne vibration levels would exceed 72 VdB threshold intermittently and for generally very short durations. **Due to this potential exceedance, impacts related to**

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

[91] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, page 113, 2018.

construction-related groundborne vibration are considered potentially significant. Mitigation is required and identified below.

As stated above, groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to vibration of floors and walls and is perceptible only inside buildings.[92] For typical buildings, groundborne vibration results in groundborne noise levels approximately 35 to 37 decibels lower than the velocity level.[93] According the FTA *Transit Noise and Vibration Impact Assessment Manual*, most of the studies of groundborne vibration in this country have focused on urban rail transit and the problems with groundborne vibration and noise that are common when there is less than 50 feet between a subway structure and building foundations. Project construction would not create on-going and continuous groundborne vibration and noise like that of an urban rail transit system. Rather, Project construction would generate intermittent or periodic groundborne vibration and noise, which means groundborne vibration and noise impacts would be less than that of an urban rail transit system. Nonetheless, as discussed above, unmitigated construction activities could exceed the groundborne vibration significance threshold and result in a significant groundborne vibration impact. **Since groundborne noise is a direct result of groundborne vibration levels, and since the nearest groundborne vibration-sensitive receptor is located closer than 50 feet of the Project Site, Project construction activities could also have a potentially significant groundborne noise impact on groundborne vibration-sensitive receptors. Mitigation is required and identified below.**

(b) Operation

The Project's day-to-day operations 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. As discussed above, the Project mechanical equipment, including air handling units, condenser units, and exhaust fans, would be located on Project building rooftops and not be located in direct contact with the ground. As such, it would not generate groundborne vibration off the Project Site. Therefore, groundborne vibration from the operation of such mechanical equipment would not impact any of the off-site sensitive receptors.

During Project operations, delivery trucks would visit the site similar to other residential developments. According to the FTA, delivery trucks rarely generate vibration that

92 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, page 117, 2018.

93 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-3, page 126, 2018.

exceeds 70 VdB,[94] which would be less than the significance threshold of 72 VdB for human annoyance.

As such, groundborne vibration impacts associated with operation of the Project would be below the significance threshold and impacts would be less than significant.

As discussed above, operation of the Project would result in groundborne vibration levels substantially less than the significance threshold for groundborne vibration at groundborne vibration-sensitive receptors. For typical buildings, groundborne vibration results in groundborne noise levels approximately 35 to 37 decibels lower than the velocity level.[95] **Given that the groundborne vibration level would be much lower than the perceptibility threshold at groundborne vibration-sensitive uses, and given that groundborne noise would be approximately 35 to 37 decibels lower than the velocity level, operational groundborne noise impacts would also be less than significant at groundborne vibration-sensitive uses**.

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?

As discussed in Chapter VI (subsection Impacts Found not to be Significant) of this Draft EIR and in the Initial Study (Appendix A of this Draft EIR), the Project Site 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. No further analysis is required.

e) Cumulative Impacts

The geographic context for the analysis of cumulative noise impacts depends on the impact being analyzed. Noise from on-site stationary sources is by definition a localized phenomenon, and significantly reduces in magnitude as the distance from the source increases. As such, only related projects located in the immediate Project Site area could potentially contribute to cumulative on-site stationary source noise impacts. However, cumulative offsite mobile source noise impacts could potentially be created by traffic from all related projects throughout a larger area.

As discussed in Chapter III, *General Description of Environmental Setting*, in this Draft EIR, the City has identified 137 related projects for the Project. Of the related projects listed in Table III-1 and shown on Figure III-1 in this Draft EIR, and discussed in Chapter

94 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, page 113, 2018.
95 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 6-3, page 126, 2018.

III, five projects are located in close enough proximity to the Project Site to potentially create cumulative on-site stationary source impacts. Specifically, these five projects are: the Argyle House (formerly Yucca Street Condos) (No. 5), approximately 80 feet from the Project Site across Argyle Avenue; the Pantages Theater Office (No. 14), an office construction project at 6225 W. Hollywood Boulevard, approximately 450 feet from the Project Site; Kimpton Everly Hotel (formerly Argyle Hotel Project) (No. 16), a hotel project at 1800 N. Argyle Avenue, approximately 60 feet from the Project Site; the Hollywood Center (formerly Millennium Hollywood) Mixed-Use Project with hotel, residential, office, retail, fitness uses (No. 29), approximately 400 feet from the site at 1740 N. Vine Street; and the citizenM Hotel (No. 69), approximately 350 feet from the Project Site at 1718 Vine Street. However, the construction of the Argyle House (No. 5), Kimpton Everly Hotel Project (No. 16), and citizenM Hotel (No. 69) have been completed. These three projects are therefore included as part of the existing ambient noise environment and are not considered as contributors to cumulative construction impacts.

(1) Construction Noise

(a) On-site Construction Noise

Noise from on-site construction activities is localized and would normally affect the areas within 500 feet from each individual construction site. As stated above, two of the Project's 137 related projects are located within the immediate vicinity of the Project Site and have the potential to cumulatively contribute to ambient noise level increases due to construction activities associated with each project site.

Residential uses (represented by measurement location/sensitive receptor location R4) to the south of the Project Site along Carlos Avenue are situated approximately 190 feet away from the Project Site. The nearest related projects which may be under construction concurrently with the Project that have the highest potential for cumulative impacts to R4 are Related Project 14 (Pantages Theater Office), located to the south of the Project Site, and Related Project 29 (Hollywood Center), located to the west of the Project Site. Construction of these related projects could overlap with construction of the Project. The Project alone would result in a maximum construction noise level of 69 dBA L_{eq} at the off-site receptor locations along Carlos Avenue (R4) during demolition, grading/excavation, and building construction/paving/architectural coating. Therefore, short-term cumulative impacts could occur at the R4 noise sensitive receptors.

Even if the mitigation measures identified for the Project were also imposed on these related projects, and if nearby related projects were to be constructed concurrently with the Project, significant and unavoidable cumulative construction noise impacts could result at the R4 receptors. Those noise levels would be intermittent, temporary and would cease at the end of the construction phase, and their construction days and hours would comply with time restrictions and other relevant provisions in the LAMC. Noise associated with cumulative construction activities would also be reduced to the degree reasonably and technically feasible through proposed mitigation measures for each individual project and compliance with the City's noise ordinances. Even so, potential cumulative impacts as a result of construction of the Project and nearby related projects cannot be precluded. **Therefore, cumulative construction noise impacts from on-site activities would be significant and unavoidable.**

(b) Off-Site Construction Traffic Noise

Construction traffic from any of the related projects that are under construction when the Project is also under construction could contribute to noise levels on major thoroughfares throughout the area, even though those related projects would be located in different areas and, at least to some extent would have varied haul routes and traffic patterns associated with their construction. However, there is potential for overlap in haul routes along Argyle Avenue and Yucca Street. Existing ambient daytime noise levels at R1 (Argyle Avenue) and R2 (Yucca Street) were 65 dBA and 61 dBA, respectively (see table IV.I-5). It is estimated that up to 160 truck trips per hour could occur along Argyle Avenue and up to 64 truck trips per hour could occur along Yucca Street without exceeding the significance criteria of 5 dBA above ambient noise levels (70 dBA and 66 dBA). The Project would generate up to 26 truck trips per hour during the grading/excavation phase of construction, which would last for approximately four months. Other phases of Project construction would generate fewer maximum daily truck trips. If the related projects generated 134 more trips per hour along Argyle Avenue and 38 more trips per hour along Yucca Street, the cumulative noise levels from off-site construction would exceed the significance threshold. During peak periods it is possible that the Project and related projects would have overlapping haul truck schedules and could cause noise levels greater than the significance thresholds. **Therefore, it is conservatively concluded that the off-site construction noise impacts would be cumulatively considerable and cumulative off-site construction noise impacts would be significant and unavoidable**.

(2) Operation

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to operation of the Project and related projects, as traffic is the greatest source of operational noise in the Project Site area. Cumulative traffic-generated noise impacts were assessed based on a comparison of the future cumulative base traffic volumes with the Project to the existing base traffic volumes without the Project. The noise levels associated with existing base traffic volumes without the Project, and cumulative base traffic volumes with the Project are provided in Table IV.I-11, above. Table IV.I-11 also shows the Project's contribution to the cumulative noise levels. The maximum cumulative noise increase from the Project plus related project traffic would be 3.0 dBA CNEL, which would occur along Yucca Street, between Argyle Avenue and Gower Street. This increase in sound level would not exceed the applicable significance threshold of an increase of 5.0 dBA CNEL. As a result, cumulative traffic related noise impacts would be less than significant.

As discussed above, the Project's composite stationary source noise impacts would be potentially significant due to the emergency generator. However, with implementation of

Mitigation Measure MM-NOI-5, discussed below, the Project's composite stationary source noise impacts would be less than significant. As is true for the Project, the LAMC-required provisions that limit stationary-source noise from items such as roof-top mechanical equipment would ensure that noise levels would be less than significant at the property line for each related project. In addition, on-site noise generated by the related projects would be sufficiently low that it would not result in an additive increase to Project-related noise levels with implementation of mitigation measures identified by each related project. Further, noise from other stationary sources, including parking structures, open space activity, emergency generator, and loading docks and composite noise levels from each stationary sources would be limited to areas in the immediate vicinity of each related project with implementation of mitigation measures identified by each related project. Although a related project could potentially impact an adjacent sensitive use, that potential impact would be localized to that specific area and would not contribute to cumulative operational noise conditions at or near the Project Site with implementation of mitigation measures identified by each related project. As the Project's composite stationary-source impacts would not be significant, and the Project's contribution to cumulative traffic impacts would not be cumulatively considerable, the Project's contribution to cumulative stationary-source noise impacts attributable to cumulative development would not be cumulatively considerable and impacts would not be significant.

(3) Groundborne Vibration and Noise

Due to the rapid attenuation characteristics of groundborne vibration and noise and the distances between the related projects and the Project Site, there is no potential for cumulative construction- or operational-period impacts to be created with respect to groundborne vibration or noise. Therefore, cumulative impacts would be less than significant.

f) Mitigation Measures

(1) Construction Noise and Groundborne Vibration and Noise

As discussed above, Project construction has the potential to result in significant noise and groundborne vibration and noise impacts at three sensitive receptor locations: R1, R2, R3, and R4. Thus, the following mitigation measures are identified to minimize these construction-related impacts:

MM-NOI-1: Construction Noise Barriers: The Project shall provide a temporary 15-foot tall construction noise barriers (i.e., wood, sound blanket) between the Project construction site and residential development along the entire south, west, and east boundaries of the Project Site, achieving a performance standard of a 15 dBA noise level reduction. At plan check, building plans shall include documentation prepared by a noise consultant verifying compliance with this measure. The temporary noise barriers shall be used during early Project construction phases (up to the start of framing) when the use of heavy equipment is prevalent.

MM-NOI-2: Equipment Noise Control: The Project contractor(s) shall employ state-of-the-art noise minimization strategies when using mechanized construction equipment.

- The contractor(s) shall not use blasting, jack hammers or pile drivers. The contractor(s) shall use only electric power crane(s), and shall use other electric equipment if commercially available.
- The contractor(s) shall limit unnecessary idling of equipment on or near the site.
- The contractor(s) shall place noisy construction equipment as far from the Project Site edges as practicable.
- The Project contractor(s) shall equip all construction equipment, fixed or mobile, with properly operating and maintained noise mufflers, consistent with manufacturers' standards. For example, absorptive mufflers are generally considered commercially available, state-of-the-art noise reduction for heavy duty equipment.[96] The construction contractor shall keep documentation on-site demonstrating that the equipment has been maintained in accordance with manufacturer's specifications.

MM-NOI-3: Heavy construction equipment such as a large dozer, a large grader, and a large excavator shall not operate within 15 feet from the nearest single-family residential building adjacent to the Project Site along Vista Del Mar Avenue (R3). Small construction equipment such as a small dozer, a small excavator, and a small grader shall be permitted to operate within 15 feet from the nearest single-family residential building adjacent to the Project Site along Vista Del Mar Avenue (R3). The Applicant shall designate a construction relations officer to serve as a liaison with the nearest single-family residential buildings (R3). The liaison shall be responsible for responding to concerns regarding construction groundborne vibration within 24 hours of receiving a complaint. The liaison shall ensure that steps will be taken to reduce construction groundborne vibration levels as deemed appropriate and safe by the on-site construction manager. Such steps could include the use of vibration absorbing barriers, substituting lower groundborne vibration generating equipment or activity, rescheduling of high groundborne vibration-generating construction activity, or other potential adjustments to the construction program to reduce groundborne vibration levels at the nearest single-family residential building adjacent to the Project Site along Vista Del Mar Avenue (R3).

96 United muffler Corp: https://www.unitedmuffler.com/ P) 866-229-3402; Auto-jet Muffler Corp: http://mandrelbending-tubefabrication.com/index.php, P)800-247-5391; AP Exhaust Technologies: http://www.apexhaust.com/, P)800-277-2787

MM-NOI-4: Prior to start of construction, the Project Applicant shall retain the services of a licensed building inspector, or structural engineer, or other qualified professional as approved by the City, to inspect and document (video and/or photographic) the apparent physical condition of the residential buildings along Vista Del Mar Avenue (measurement location/sensitive receptor location R3), including but not limited to the building structure, interior wall, and ceiling finishes.

The Project Applicant shall retain the services of a qualified acoustical engineer to review proposed construction equipment and develop and implement a groundborne vibration monitoring program capable of documenting the construction-related groundborne vibration levels at each residence during demolition, excavation, and construction of the parking garages. The groundborne vibration monitoring program shall measure (in vertical and horizontal directions) and continuously store the peak particle velocity (PPV) in inch/second. Groundborne vibration data shall be stored on a two-second interval. The program shall also be programmed for two preset velocity levels: a warning level of 0.15 inch/second PPV and a regulatory level of 0.2 inch/second PPV. The program shall also provide real-time alerts when the groundborne vibration levels exceed the two preset levels.

- The groundborne vibration monitoring program shall be submitted to the Department of Building and Safety, prior to initiating any construction activities for approval.
- In the event the warning level (0.15 inch/second PPV) is triggered, the contractor shall identify the source of groundborne vibration generation and provide feasible steps to reduce the groundborne vibration level such as halting/staggering concurrent activities or utilizing lower vibratory techniques.
- In the event the regulatory level (0.2 inch/second PPV) is triggered, the contractor shall halt the construction activities in the vicinity of the affected residences and visually inspect the affected residences for any damage. Results of the inspection must be logged. The contractor shall identify the source of groundborne vibration generation and implement feasible steps to reduce the groundborne vibration level such as staggering concurrent activities or utilizing lower vibratory techniques. Construction activities may continue upon implementation of feasible steps to reduce the groundborne vibration level.
- In the event damage occurs to the residential buildings along Vista Del Mar Avenue (measurement location/sensitive receptor location R3) due to Project construction groundborne vibration, such materials shall be repaired to the same or better physical condition as documented in the pre-construction inspection and video and/or photographic records.

(2) Operational Noise

As discussed above, the Project has the potential to result in significant impacts associated with operational noise. Therefore, the following mitigation measure is identified to minimize operational-related noise impacts:

> **MM-NOI-5: Emergency Generator:** The Project shall install a sound enclosure and/or equivalent noise-attenuating features (i.e., mufflers) for the emergency generator that will provide approximately 25 dBA noise reduction. At plan check, building plans shall include documentation prepared by a noise consultant verifying compliance with this measure.

g) Level of Significance After Mitigation

(1) Construction Noise and Groundborne Vibration and Noise

MM-NOI-1 provides for sound barriers that would achieve a noise reduction of 15 dBA between Project construction and off-site receptor locations along Argyle Avenue (R1), Vista Del Mar Avenue (R3), and Carlos Avenue (R4). Sound barriers would not be feasible to reduce the impacts to sensitive receptors (represented by measurement location/sensitive receptor location R2) along the north of Yucca Street since the Project's construction staging area and/or traffic entrance would be located on the south side of Yucca Street adjacent to the Project Site. Although the noise reduction provided by the noise barriers would be considered a substantial reduction, construction noise levels would still increase the daytime ambient noise level above the 5-dBA significance threshold at the residential uses along Vista Del Mar Avenue (represented by measurement location/sensitive receptor location R3) during some phases of construction. In addition, the sound barrier would not reduce the noise levels at the upper floors (i.e., 3rd to 18th floor) of the multi-family residential uses at the southwest corner of Yucca Street and Argyle Avenue (R1) or the upper floors (i.e. 3rd floor to 5th floor) of the five-story mixed-use residential uses (R4) along Carlos Avenue since the proposed sound barrier would not block the line of sight between the construction site and upper floors of the 18-story multi-family residential use (R1) or the five-story mixed-use residential uses (R4). **Thus, construction noise impacts would be significant and unavoidable at the upper floors (i.e., 3rd to 18th floor) of the multi-family residential uses at the southwest corner of Yucca Street and Argyle Avenue (R1), at the adjacent residential uses along Vista Del Mar Avenue (R3), the upper floors of the five-story mixed-use residential uses south of Carlos Avenue (R4), and those on the north side of Yucca Street (R2), even after implementation of MM-NOI-1.**

MM-NOI-2 requires Project contractors to employ state-of-the-art noise minimization strategies, as feasible, when using mechanized construction equipment. **While noise minimization strategies will reduce noise where feasible, construction noise impacts would remain significant and unavoidable, even with implementation of MM-NOI-1 and MM-NOI-2 together.**

Implementation of MM-NOI-3 would ensure that construction groundborne vibration levels would be below the significance threshold of 0.2 inches per second (PPV) for potential structural damage impacts at the nearest single-family residential building adjacent to the site along Vista Del Mar Avenue (R3). This mitigation measure requires a 15-foot buffer between the nearest residential building and heavy construction equipment operations. At 15 feet, the groundborne vibration levels would be reduced to 0.191 inches per second (PPV). The mitigated level of 0.191 inches per second (PPV) is less than, but still close to the significance threshold of 0.2 inches per second (PPV). Therefore, MM-NOI-4 is also recommended to mitigate potential groundborne vibration impacts. Implementation of MM-NOI-4 would ensure that groundborne vibration levels are below the thresholds associated with potential damage to the residential buildings along Vista Del Mar Avenue (measurement location/sensitive receptor location R3) due to Project construction. However, because MM-NOI-4 requires the consent of other property owners, who may not agree, it is conservatively concluded that structural groundborne vibration impacts on the residential buildings along Vista Del Mar Avenue would be significant and unavoidable.

In addition, temporary construction-related groundborne vibration and groundborne noise impacts on human annoyance would be reduced at the adjacent residential uses along the west side Vista Del Mar Avenue (represented by measurement location/sensitive receptor location R3). However, given that the groundborne vibration level would be close to the structural damage threshold, it would still exceed the perceptibility threshold at groundborne vibration-sensitive uses. Therefore, human annoyance impacts on the residential buildings along Vista Del Mar Avenue would be significant and unavoidable after implementation of mitigation measures. **Therefore, temporary construction-related groundborne vibration structural and groundborne vibration and noise human annoyance impacts would be significant and unavoidable.**

(2) Operational Noise

(a) Building 1

Generator. With the implementation of MM-NOI-5, the Project will install a sound enclosure and/or equivalent noise attenuation features (i.e., mufflers) for the emergency generator that provide approximately 25 dBA of noise reduction. With a sound enclosure, the generator noise level will be reduced from 80 dBA to approximately 55 dBA at the noise sensitive receptors (measurement location/sensitive receptor location R1) along Argyle Avenue and from 78 dBA to approximately 53 dBA at the noise sensitive receptors (measurement location/sensitive receptor location R4) south of the Project Site, which are below the significance thresholds of 70 dBA for noise-sensitive receptors R1 and 61 dBA for noise-sensitive receptor R4. The combined mitigated noise level from the emergency generator plus the existing ambient noise levels (65 dBA at R1 and 56 dBA at R4) would be approximately 65 dBA at R1 and 58 dBA at R4, which would not exceed the significance threshold. **Therefore, generator-related noise impacts would be less than significant with mitigation.**

(b) Composite Noise Levels

As shown in **Table IV.I-14**, *Mitigated Composite Noise Levels at Sensitive Receptor Location R1 and R4 from Project Operation with Mitigation*, the pool deck-related podium courtyard activities on Level 4 (Building 1) would contribute a maximum of 47 dBA at sensitive receptor R1, and the pool deck activities on Level 4 (Building 1) would contribute a maximum of 48 dBA at sensitive receptor R4. Mechanical equipment would contribute a maximum of 55 dBA to R1 and a maximum of 46 dBA to R4.

TABLE IV.I-14
COMPOSITE NOISE LEVELS AT SENSITIVE RECEPTOR LOCATION R1 AND R4 FROM PROJECT OPERATION WITH MITIGATION

Operational Noise Sources	Noise Levels, dBA Location R1	Noise Levels, dBA Location R4
(A) Existing (Ambient) Noise Level	**65**	**56**
Project Composite Noise Sources		
(1) Mechanical Equipment	55	46
(2) Podium Courtyard and Pool Deck on Level 4 (Building 1)	47	48
(3) Loading Dock and Refuse Collection Areas	26	20
(4) Parking Structures	43	36
(5) Emergency Generator	55	53
(6) Off-site traffic [a]		
Estimated Project-only traffic noise level	53.6	53.6
(B) Project Composite Noise Level (1+2+3+4+5+6) [a]	**59.7**	**57.3**
(C) Existing Plus Project Composite Noise Level (A+B)	**66.1**	**59.7**
Project Increment (C-A)	1.1	3.7
Exceeds Threshold?	No	No

[a] Traffic volumes and associated noise levels conservatively assumed to be the same for R4 as R1.

[b] Noise levels are added logarithmically.

[c] With the implementation of MM-NOISE-4, emergency generator noise levels of up to 80 dBA at R1 and 78 dBA at R4 would be reduced to 55 dBA and 53 dBA, respectively.

SOURCE: ESA, 2019.

MM-NOISE-5 would reduce emergency generator-related noise levels to 55 dBA at the noise sensitive receptors (measurement location/sensitive receptor location R1) along Argyle Avenue and 53 dBA at the noise sensitive receptors (measurement location/sensitive receptor location R4) south of the Project Site, which are below the significance thresholds of 70 dBA for noise-sensitive receptors R1 and 61 dBA for noise-sensitive receptor R4. The mitigated composite noise levels from Project operation with the mitigated emergency generator noise levels would be up to 66.1 dBA for R1 and 59.7 dBA for R4. Overall, relative to the existing noise environment, the Project would be estimated to increase the ambient noise level by approximately 1.1 dBA at the residences to the west (represented by measurement location/sensitive receptor location R1) along Argyle Avenue and by 3.7 dBA at the residences to the south (represented by measurement location/sensitive receptor location R4). This increase in noise would be below the applicable thresholds involving increases of 5 dBA. This analysis conservatively assumes that the Project's operational noise sources would generate maximum noise levels simultaneously. **As such, the composite noise level impacts on sensitive receptors due to the Project's future operations would be less than significant with mitigation**.