IV. Environmental Impact Analysis
G. Noise

1. Introduction

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

2. Environmental Setting

a. Noise and Vibration Fundamentals

(1) Noise

(a) Fundamentals of Sound and Environmental Noise

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

---

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

Table IV.G-1
Typical Noise Levels

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

Source: Caltrans, Technical Noise Supplement (TeNS), Table 2-5, 2013.

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

(b) Outdoor Sound Propagation

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

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

(e.g., air conditioner or bulldozer), is 6 dBA per doubling of distance from the noise source to the receptor at acoustically "hard" sites (e.g., asphalt and concrete surfaces) and 7.5 dBA per doubling of distance from the noise source to the receptor at acoustically "soft" sites (e.g., soft dirt, grass or scattered bushes and trees).[3] For example, an outdoor condenser fan that generates a sound level of 60 dBA at a distance of 50 feet from a point source at an acoustically hard site would attenuate to 54 dBA at a distance of 100 feet from the point source and attenuate to 48 dBA at 200 feet from the point source. The rate of sound attenuation for a line source, such as a constant flow of traffic on a roadway, is 3 dBA and 4.5 dBA per doubling of distance from the noise source to the receptor for hard and soft sites, respectively.[4]

In addition, structures (e.g., buildings and solid walls) and natural topography (e.g., hills and berms) that obstruct the line-of-sight between a noise source and a receptor further reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as "barrier insertion loss." If a receptor is located behind the wall but still has a view of the source (i.e., the line-of-sight is not fully blocked), some barrier insertion loss would still occur but to a lesser extent. Additionally, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall reflects noise back to the receptor, thereby compounding the noise. Noise barriers can provide noise level reductions ranging from approximately 5 dBA (where the barrier just breaks the line-of-sight between the source and receiver) to an upper range of 20 dBA with a more substantial barrier.[5] Additionally, structures with closed windows can further attenuate exterior noise by a minimum of 20 dBA to 30 dBA.[6]

(c) Environmental Noise Descriptors

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

Equivalent Sound Level (L_{eq}). L_{eq} is a measurement of the acoustic energy content of noise averaged over a specified time period. Thus, the L_{eq} of a time-varying sound and

---

[3] *Caltrans, Technical Noise Supplement (TeNS), 2013, Chapter 2.1.4*.

[4] *Ibid.*

[5] *Ibid.*

[6] *Ibid, Table 7-1*.

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

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

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

(2) Ground-Borne Vibration

Vibration is commonly defined as an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root-mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal and is typically used for evaluating potential building damage.[8] The RMS velocity is defined as the square-root of the average of the squared amplitude of the vibration signal and is typically more suitable for evaluating human response to ground-borne vibration.[9] The RMS vibration velocity level can be presented in inch per second or in VdB (a decibel unit referenced to 1 micro-inch per second).[10] Ground-borne vibration generated by man-made activities (e.g., road traffic,

---

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

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

[9] *Federal Transit Administration (FTA), "Transit Noise and Vibration Impact Assessment," May 2006, Section 7.1.2.*

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

(Footnote continued on next page)

construction operations) typically weakens with greater horizontal distance away from the source of the vibration.

b. Regulatory Framework

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

(1) Applicable State Noise Standards

The State of California has adopted noise compatibility guidelines for general land use planning. The types of land uses addressed by the state and the acceptable noise categories for each land use are included in the *State of California General Plan Guidelines,* which is published and updated by the Governor's Office of Planning and Research. The level of acceptability of the noise environment is dependent upon the activity associated with the particular land use. For example, according to the State, an exterior noise environment up to 60 dBA CNEL and 65 dBA CNEL is "normally acceptable" for single- and multi-family residential uses, respectively, without special noise insulation requirements. In addition, noise levels up to 75 dBA CNEL are "conditionally acceptable" with special noise insulation requirements, while noise levels at 75 dBA CNEL and above are "clearly unacceptable" for residential.[11] With respect to residential uses, the 2016 California Building Standards Code requires that where the ambient noise environment exceeds 65 dBA CNEL, measures should be implemented to achieve an interior noise environment (within a habitable room) not to exceed 45 dBA CNEL. With respect to commercial uses, the 2016 California Building Standards Code requires that where the ambient noise environment exceeds 65 dBA CNEL or 65 dBA L_{eq}, measures should be implemented to achieve an interior noise environment not to exceed 50 dBA L_{eq} (1-hour).

Appendix F to this Draft EIR and in this section of the Draft EIR are RMS and referenced to 1 micro-inch per second.

[11] *State of California, Governor's Office of Planning and Research, General Plan Guidelines, October 2017, p. 374.*

(2) City of Los Angeles Regulations and Policies

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

(a) Noise Element

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 citizens to excessive noise levels. The following policies and objectives from the Noise Element of the General Plan are applicable to the Project:[12]

- 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.
- Objective 3 (Land Use Development): Reduce or eliminate noise impacts associated with proposed development of land and changes in land use.
- Policy 3.1: Develop land use policies and programs that will reduce or eliminate potential and existing noise impacts.

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

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

LAMC Chapter XI, Noise Regulation (referred to herein as the Noise Regulations) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences

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

Table IV.G-2
City of Los Angeles Guidelines for Noise Compatible Land Use

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

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

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

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

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

Source: City of Los Angeles Noise Element, 1999.

in the perceived level of different types of noise and/or noise sources. In accordance with the Noise Regulations, a noise level increase from certain regulated noise sources of 5 dBA over the existing or presumed ambient noise level at an adjacent property line is considered a violation of the Noise Regulations. The 5-dBA increase above ambient is applicable to City-regulated noise sources (e.g., mechanical equipment), and it is applicable any time of the day.[13]

The Noise Regulations state that the baseline ambient noise shall be the actual measured ambient noise level or the City's presumed ambient noise level, whichever is

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

greater. The actual ambient noise level is the measured noise level averaged over a period of at least 15 minutes, L_{eq} (15-minute). The Noise Regulations indicate that in cases where the actual measured ambient conditions are not known, the City's presumed daytime (7:00 A.M. to 10:00 P.M.) and nighttime (10:00 P.M. to 7:00 A.M.) ambient noise levels defined in Section 111.03 of the LAMC should be used. The City's presumed ambient noise levels for specific land use zones, as set forth in LAMC Section 111.03, are provided in Table IV.G-3 on page IV.G-9.

To account for people's increased tolerance for short-duration noise events, the Noise Regulations provide an additional 5 dBA allowance beyond the 5 dB above ambient for noise sources occurring more than 5 minutes but less than 15 minutes in any 1-hour period (for a total of 10 dBA above the ambient), and an additional 5-dBA allowance (total of 15 dBA above the ambient) for noise sources occurring 5 minutes or less in any 1-hour period. These additional allowances for short-duration noise sources are applicable to noise sources occurring between the hours of 7:00 A.M. and 10:00 P.M. (daytime hours). The Noise Regulations further provide that 5 dBA shall be added to the noise level for steady high-pitched noise or repeated impulsive noises.[14,15]

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

In addition, the Noise Regulations in LAMC Section 112.05 set a maximum noise level from construction equipment (powered equipment or powered hand tools) operating between the hours of 7:00 A.M. and 10:00 P.M., in any residential zone of the City or within 500 feet thereof, of 75 dBA, measured at a distance of 50 feet from the source, unless compliance with this limitation is technically infeasible.[16] LAMC Section 41.40 prohibits construction noise that disturbs persons occupying sleeping quarters in any dwelling, hotel,

---

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

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

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

Table IV.G-3
City of Los Angeles Presumed Ambient Noise Levels

Zone	Daytime (7:00 A.M. to 10:00 P.M.) dBA (L_{eq})	Nighttime (10:00 P.M. to 7:00 A.M.) dBA (L_{eq})
Residential, School, Hospitals, Hotels (A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and R5)	50	40
Commercial (P, PB, CR, C1, C1.5, C2, C4, C5, and CM)	60	55
Manufacturing (M1, MR1, and MR2)	60	55
Heavy Manufacturing (M2 and M3)	65	65

Source: LAMC Section 111.03.

or apartment or other place of residence between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. and after 6:00 P.M. on Saturday or national holiday, and at any time on Sunday. Construction hours may be extended with approval from the Executive Director of the Board of Police Commissioners. In general, the City of Los Angeles Department of Building and Safety enforces noise ordinance provisions relative to noise generated by operation of equipment, and the Los Angeles Police Department enforces provisions relative to noise generated by people.

(3) Ground-Borne Vibration

The City currently does not have any adopted standards, guidelines, or thresholds relative to ground-borne vibration. As such, available guidelines from the FTA are utilized to assess impacts due to ground-borne vibration. As discussed above, in most circumstances common ground-induced vibrations related to roadway traffic and construction activities pose no threat to buildings or structures.[17,18]

The FTA has published a technical manual titled *Transit Noise and Vibration Impacts Assessment,* which provides ground-borne vibration impact criteria with respect to building damage during construction activities.[19] As discussed above, building vibration damage is measured in PPV described in the unit of inches per second. Table IV.G-4 on page IV.G-10 provides the FTA vibration criteria applicable to construction activities.

[17] *FTA, "Transit Noise and Vibration Impact Assessment," May 2006, Chapter 7.*

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

[19] *FTA, "Transit Noise and Vibration Impact Assessment," May 2006.*

Table IV.G-4
FTA Construction Vibration Impact Criteria for Building Damage

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

Source: Federal Transit Administration, 2006.

According to FTA guidelines, a vibration criterion of 0.20 PPV should be considered as the significant impact level for non-engineered timber and masonry buildings. Structures or buildings constructed of reinforced concrete, steel, or timber, have a vibration damage criterion of 0.50 PPV pursuant to the FTA guidelines.

In addition to the FTA Construction Vibration Impact Criteria for Building Damage, the FTA guidance manual also provides vibration criteria for human annoyance for various uses. These criteria were established primarily for rapid transit (rail) projects and, as indicated in Table IV.G-5 on page IV.G-11, are based on the frequency of vibration events. Specific criteria are provided for three land use categories: (1) Vibration Category 1—High Sensitivity; (2) Vibration Category 2—Residential; and (3) Vibration Category 3—Institutional.

c. Existing Conditions

As discussed in Section II, Project Description, of this Draft EIR, the Project Site is surrounded by a mix of commercial office, government and civic office, retail, and residential uses. Current land uses surrounding the Project Site include: a surface parking lot and 10-story office building to the west; a six-level parking structure and 11-story building to the north (part of Los Angeles Times Square), single-story commercial buildings and a six-level parking structure to the east; and a surface parking lot and several multi-level apartment buildings to the south. The predominant source of noise in the vicinity of the Project Site is vehicular traffic on nearby local roadways, including 2nd Street, Broadway, and Spring Street. Other existing ambient noise sources in the vicinity of the Project Site include nearby construction activities (including the Los Angeles County Metropolitan Transportation Authority [Metro] construction activities associated with the Regional Connector 2nd Street/Broadway rail station and portal within the Project Site), parking lot/structure noise, and other miscellaneous noise sources associated with typical urban activities.

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

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

[a] *"Frequent Events" are defined as more than 70 vibration events of the same source per day.*

[b] *"Occasional Events" are defined as between 30 and 70 vibration events of the same source per day.*

[c] *"Infrequent Events" are defined as fewer than 30 vibration events of the same source per day.*

[d] *This criterion limit is based on the levels that are acceptable for most moderately sensitive equipment such as optical microscopes.*

Source: Federal Transit Administration, 2006.

(1) Noise-Sensitive Receptors

Some land uses are considered more sensitive to intrusive noise than others based on the types of activities typically involved at the receptor location. The *L.A. CEQA Thresholds Guide* states that noise-sensitive uses include residences, transient lodgings, schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks.[20] Similarly, the General Plan Noise Element defines noise-sensitive land uses as single-family and multi-unit dwellings, long-term care facilities (including convalescent and retirement facilities), dormitories, motels, hotels, transient lodging, and other residential uses; houses of worship; hospitals; libraries; schools; auditoriums; concert halls; outdoor theaters; nature and wildlife preserves; and parks.[21] These uses are generally considered more sensitive to noise than commercial and industrial land uses.

Based on a review of the land uses surrounding the Project Site, six noise receptor locations were selected to represent noise-sensitive uses in the Project vicinity. These locations represent land uses nearest to the Project Site that could qualify as noise-sensitive uses according to the definitions in the *L.A. CEQA Thresholds Guide* and the

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

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

General Plan. As discussed further below, noise measurements were conducted at the six off-site measurement locations (identified as R1 to R6) surrounding the Project Site and one location at the Project Site (P1) to establish baseline noise conditions at and in the vicinity of the Project Site. It is noted that the existing use at receptor R6 is a parking structure, which is not noise-sensitive; however, it is included to represent future noise-sensitive development (i.e., mixed uses including residential uses) proposed at this location (Related Project No. 121). The off-site monitoring locations essentially surround the Project Site and thereby provide baseline measurements for uses in all directions. In addition, the monitoring locations provide an adequate basis to evaluate potential impacts at the monitoring locations and receptors beyond in the same direction. The noise measurement locations are shown in Figure IV.G-1 on page IV.G-13 and described in Table IV.G-6 on page IV.G-14.

(2) Ambient Noise Levels

To establish baseline noise conditions, existing ambient noise levels were monitored at the six representative off-site receptor locations (R1 to R6) in the vicinity of the Project Site and one on-site location (P1). The baseline noise monitoring program was conducted on a weekend day (Sunday, June 4, 2017) and on a weekday (Monday, June 5, 2017), using a Quest Technologies Model 2900 Integrating/Logging Sound Level Meter.[22] Two 15-minute measurements were conducted at each of the receptor locations, one during daytime and another during nighttime hours. The daytime ambient noise levels were taken between 10:00 A.M. and 1:00 P.M., and the nighttime ambient noise levels were taken between 10:00 P.M. and 1:00 A.M. The ambient noise measurements were taken in accordance with the City's standards, which require ambient noise to be measured over a period of at least 15 minutes.[23]

Table IV.G-7 on page IV.G-15 provides a summary of the ambient noise measurements. Based on field observations, the ambient noise at the measurement locations is dominated by local traffic from adjacent roadways and to a lesser extent, other typical urban noises. As indicated in Table IV.G-7, the existing daytime ambient noise levels at the off-site noise receptor locations ranged from 65.3 dBA (L_{eq}) at receptor location R5 to 68.7 dBA (L_{eq}) at receptor location R2 during the weekday and from 60.7 dBA (L_{eq}) at receptor location R1 to 67.6 dBA (L_{eq}) at receptor location R2 during the

---

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

[23] *LAMC Section 111.01.*

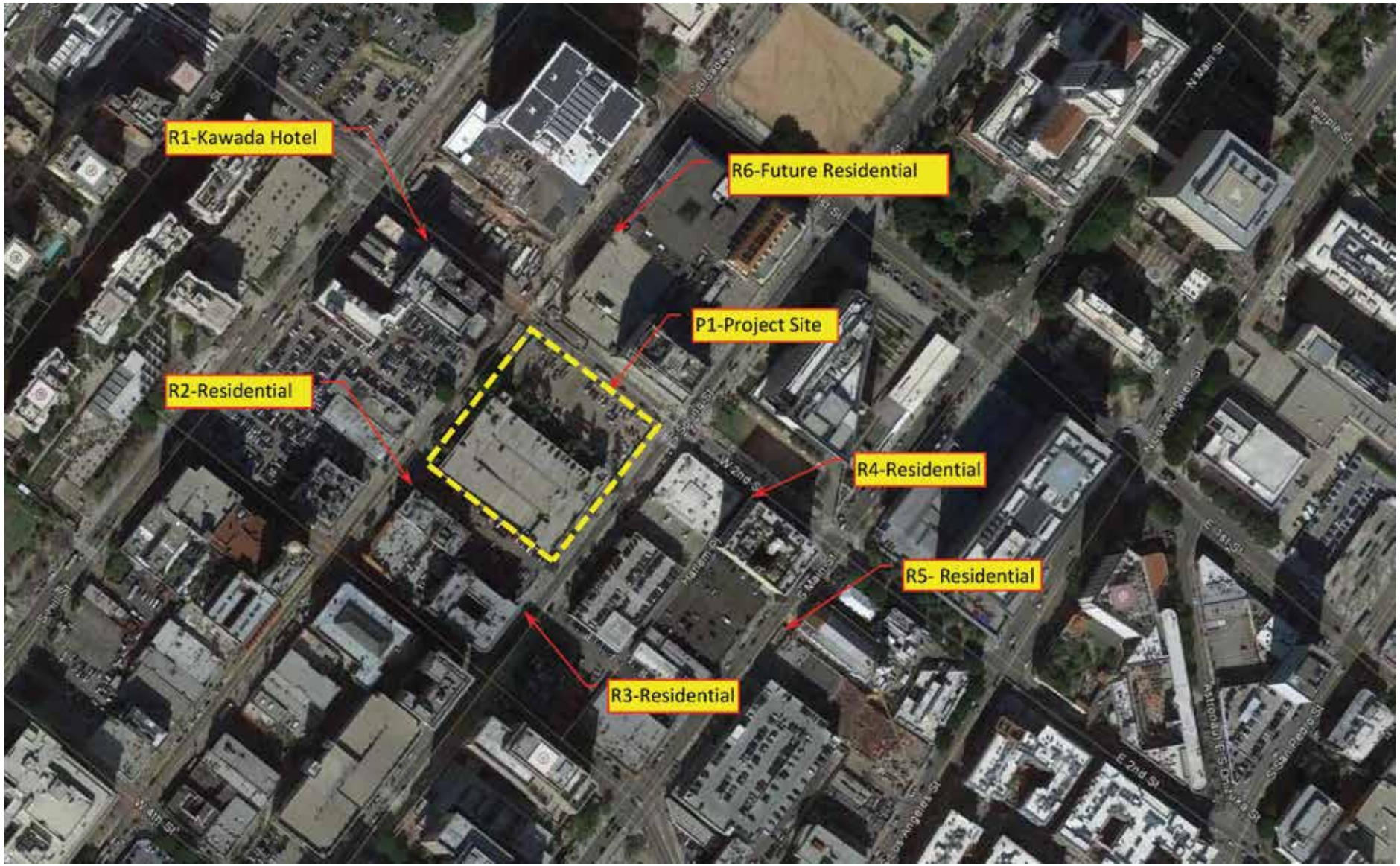

Figure IV.G-1
Noise Measurement Locations

Source: AES, 2017; Eyestone Environmental, 2018.

Table IV.G-6
Description of Existing Ambient Noise Measurement Locations

Receptor Location	Description	Approximate Distance from Measurement Location to Nearest Project Site Boundary[a]	Existing Land Use(s)/Zone(s)
P1	Project Site northern boundary adjacent to 2nd Street	At Project Site north property line	Commercial (C2 and C4)
R1	Kawada Hotel located at the southeast corner of Hill Street and 2nd Street, west of the Project Site	300	Hotel (C2 and C4)
R2	Victor Clothing Company building (multi-family residential use) located at 242 Broadway, south of the Project Site	60	Residential (C2 and C4)
R3	Douglas Building (multi-family residential use) located at the northwest corner of Spring Street and 3rd Street, south of the Project Site	120	Residential (C2 and C4)
R4	Higgins Building Lofts (multi-family residential use) located at the southwest corner of Main Street and 2nd Street, east of the Project Site	245	Residential (C2 and C4)
R5	STOA apartment building (multi-family residential use) on Main Street south of 2nd Street	495	Residential (C2 and C4)
R6	Existing parking structure north of the Project Site, along Broadway north of 2nd Street/future site of multi-family residential uses at the proposed Times Mirror Square project (Related Project No. 121)	230	Commercial (C2 and C4)

[a] *Distances are estimated using Google Earth (Map data © 2017 Google).*
Source: AES, 2019; see Appendix F of this Draft EIR.

weekend. The measured nighttime ambient noise levels at the off-site noise receptor locations ranged from 58.7 dBA (L_{eq}) at receptor location R4 to 68.6 dBA (L_{eq}) at receptor location R6 during the weekday and from 61.9 dBA (L_{eq}) at receptor location R3 to 66.1 dBA (L_{eq}) at receptor location R4 during the weekend. Thus, the existing ambient noise levels at all off-site locations are above the City's presumed daytime and nighttime ambient noise standards of 50 dBA (L_{eq}) and 40 dBA (L_{eq}), respectively, for residential uses, as well as the standards of 60 dBA (L_{eq}) and 55 dBA (L_{eq}) for commercial zones (i.e., the existing zoning at the receptor locations), as presented above in Table IV.G-3 on page IV.G-9. Therefore, consistent with LAMC procedures, the measured existing ambient noise levels are utilized as the baseline noise levels for the purposes of determining Project impacts.

Table IV.G-7
Existing Ambient Noise Levels

Receptor Location	Measurement Date	Measured Noise Levels, L_{eq} (dBA)		CNEL[a] (24-hour)
		Daytime Hours (7:00 A.M.–10:00 P.M.)	Nighttime Hours (10:00 P.M.–7:00 A.M.)	
Weekday				
P1	June 5, 2017	66.6	65.5	70.4
R1	June 5, 2017	66.7	66.2	71.0
R2	June 5, 2017	68.7	65.7	71.1
R3	June 5, 2017	68.5	64.1	70.0
R4	June 5, 2017	66.6	58.7	66.4
R5	June 5, 2017	65.3	62.3	67.7
R6	June 5, 2017	68.2	68.6	73.2
Weekend				
P1	June 4, 2017	66.6	62.2	68.1
R1	June 4, 2017	60.7	64.9	69.0
R2	June 4, 2017	67.6	63.6	69.4
R3	June 4, 2017	63.6	61.9	67.0
R4	June 4, 2017	61.5	66.1	70.2
R5	June 4, 2017	63.8	63.0	67.8
R6	June 4, 2017	64.2	62.8	67.8

[a] *Estimated based on short-term (15-minute) noise measurement based on FTA procedures.*
Source: AES, 2019; see Appendix F of this Draft EIR.

The estimated existing CNEL levels at the off-site receptors ranged from 66.4 dBA (CNEL) at receptor location R4 to 73.2 dBA (CNEL) at receptor location R6 during the weekday and from 67.0 dBA (CNEL) at receptor location R3 to 70.2 dBA (CNEL) at receptor location R4 during the weekend. The existing ambient noise levels at the Project Site ranged from 68.1 to 70.4 dBA (CNEL) as measured at receptor location P1 (along the Project Site's northern property line).

In addition to the ambient noise measurements in the Project vicinity, existing traffic noise on local roadways in the surrounding area was calculated to quantify the 24-hour CNEL noise levels using traffic volume data provided in the Traffic Study prepared for the Project.[24] Thirty-one (31) roadway segments were selected for the existing off-site traffic

[24] *Linscott, Law & Greenspan, Engineers, Transportation Impact Study 222 West 2nd Project, February 27, 2018; see Appendix L of this Draft EIR.*

noise analysis based on proximity to noise-sensitive uses along the roadway segments and potential increases in traffic volumes from the Project. Traffic noise levels were calculated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM). The TNM traffic noise prediction model calculates the hourly L_{eq} noise levels based on specific information including the hourly traffic volume, vehicle type mix, vehicle speed, and lateral distance between the noise receptor and the roadway. To calculate the 24-hour CNEL levels, the hourly L_{eq} levels were computed during daytime hours (7:00 A.M. to 7:00 P.M.), evening hours (7:00 P.M. to 10:00 P.M.), and nighttime hours (10:00 P.M. to 7:00 A.M.).

The traffic noise prediction model calculates the 24-hour CNEL noise levels based on specific information, including Average Daily Traffic (ADT); percentages of day, evening, and nighttime traffic volumes relative to ADT; vehicle speed; and distance between the noise receptor and the roadway. Vehicle mix/distribution information used in the noise calculations is shown in Table IV.G-8 on page IV.G-17.

Table IV.G-9 on page IV.G-18 provides the calculated CNEL for the 31 analyzed local roadway segments based on existing traffic volumes. As shown therein, the existing CNEL due to surface street traffic volumes ranges from 67.6 dBA CNEL along 2nd Street (between Main Street and Los Angeles Street) to 71.2 dBA CNEL along Main Street (between 3rd Street and 4th Street). Currently, the existing traffic-related noise levels along roadway segments surrounding the Project Site, including 2nd Street (along the northern Project Site property line), Broadway (along the western Project Site property line), and Spring Street (along the eastern Project Site property line), fall within the conditionally acceptable noise levels for multi-family residential uses (i.e., between 60 and 70 dBA CNEL).

(3) Existing Ground-Borne Vibration Levels

Based on field observations, the primary source of existing ground-borne vibration in the Project vicinity is vehicular travel (e.g., standard cars, refuse trucks, delivery trucks, construction trucks, school buses, and transit buses) on local roadways. According to the FTA technical study *Federal Transit Administration: Transit Noise and Vibration Impacts Assessments*, typical road traffic-induced vibration levels are unlikely to be perceptible by people. Specifically, the FTA study reports that "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads."[25] Trucks and buses typically generate ground-borne vibration velocity levels of around 63 VdB (at 50 feet distance), and these levels could reach 72 VdB when trucks and buses pass over bumps in the road. Per the FTA, 75 VdB is the dividing line between barely

[25] *FTA, "Transit Noise and Vibration Impact Assessment," May 2006, p. 7-1.*

Table IV.G-8
Vehicle Mix for Traffic Noise Model

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

[a] *Medium Truck—Trucks with 2 axles.*

[b] *Heavy Truck—Trucks with 3 or more axles.*

Source: AES, 2019. See Appendix F to this Draft EIR.

perceptible (with regards to ground vibration) and distinctly perceptible.[26] Therefore, existing ground vibration environment in the vicinity of the Project Site is generally below the perceptible level. However, ground vibration associated with heavy trucks traveling on road surfaces with irregularities, such as speed bumps and potholes, could reach the perceptible threshold.

The Project would be constructed over the future Metro Regional Connector 2nd Street/Broadway rail station and portal (which is currently under construction on-site). Based on the Regional Connector Final EIS/EIR (SCH No. 2009031043), the estimated ground-borne vibration from rail operations in the Project vicinity will range from 63 VdB at the Kawada Hotel (west of the Project Site) to 67 VdB at the Higgins Building Lofts (east of the Project Site).[27]

[26] *Ibid, Figure 10-1.*

[27] *Metro, Final Environmental Impact Statement/Environmental Impact Report, Regional Connector Transit Corridor, Chapter 4.7 Noise and Vibration, Table 4.7-18, January 2012.*

Table IV.G-9
Existing Roadway Traffic Noise Levels

Roadway Segment	Adjacent Land Use(s)	Approximate Distance to Roadway Center Line, (feet)	Calculated Traffic Noise Levels,[a] CNEL (dBA)	Noise-Sensitive Land Uses	Existing Noise Exposure Compatibility Category[b]
Hill Street					
– Between 1st St. and 2nd St.	Office	40	68.8	No	Conditionally Acceptable
– Between 2nd St. and 3rd St.	Hotel, Office	40	69.2	Yes	Conditionally Acceptable
Broadway					
– Between Temple St. and 1st St.	Office, Park	40	68.7	Yes	Conditionally Acceptable
– Between 1st St. and 2nd St.	Office	40	68.5	No	Conditionally Acceptable
– Between 2nd St. and 3rd St.	Residential, Commercial	35	68.7	Yes	Conditionally Acceptable
– Between 3rd St. and 4th St.	Commercial	30	68.4	No	Conditionally Acceptable
– Between 4th St. and 5th St.	Residential, Commercial	30	68.9	Yes	Conditionally Acceptable
Spring Street					
– Between Temple St. and 1st St.	Office, Park	45	67.9	Yes	Conditionally Acceptable
– Between 1st St. and 2nd St.	Office	35	67.9	No	Conditionally Acceptable
– Between 2nd St. and 3rd St.	Residential, Commercial	35	68.4	Yes	Conditionally Acceptable
– Between 3rd St. and 4th St.	Office	35	68.7	No	Conditionally Acceptable
– Between 4th St. and 5th St.	Park, Commercial	35	68.2	Yes	Conditionally Acceptable
Main Street					
– Between Temple St. and 1st St.	Office	40	68.7	No	Conditionally Acceptable
– Between 1st St. and 2nd St.	Office	35	69.2	No	Conditionally Acceptable
– Between 2nd St. and 3rd St.	Residential, Commercial	35	70.2	Yes	Normally Unacceptable
– Between 3rd St. and 4th St.	Residential, Hotel	35	71.2	Yes	Normally Unacceptable
– Between 4th St. and 5th St.	Residential, Commercial	35	71.0	Yes	Normally Unacceptable
1st Street					
– Between Hill St. and Broadway	Library, Office	45	69.3	Yes	Conditionally Acceptable
– Between Broadway and Main St.	Park, Office	45	68.6	Yes	Conditionally Acceptable
– Between Main St. and Los Angeles St.	Office	45	68.1	No	Conditionally Acceptable

Table IV.G-9 (Continued)
Existing Roadway Traffic Noise Levels

Roadway Segment	Adjacent Land Use(s)	Approximate Distance to Roadway Center Line, (feet)	Calculated Traffic Noise Levels,[a] CNEL (dBA)	Noise-Sensitive Land Uses	Existing Noise Exposure Compatibility Category[b]
2nd Street					
– Between Hill St. and Broadway	Hotel, Office	30	68.7	Yes	Conditionally Acceptable
– Between Broadway and Spring St.	Office	30	68.5	No	Conditionally Acceptable
– Between Spring St. and Main St.	Residential, Commercial	30	68.0	Yes	Conditionally Acceptable
– Between Main St. and Los Angeles St.	Library, Office	30	67.6	Yes	Conditionally Acceptable
3rd Street					
– Between Hill St. and Broadway	Residential, Commercial	30	69.8	Yes	Conditionally Acceptable
– Between Broadway and Main St.	Residential, Commercial	30	70.5	Yes	Normally Unacceptable
– Between Main St. and Los Angeles St.	Hotel, Commercial	35	70.7	Yes	Normally Unacceptable
4th Street					
– Between Hill St. and Broadway	Office	30	69.3	No	Conditionally Acceptable
– Between Broadway and Main St.	Hotel, Commercial	30	69.7	Yes	Conditionally Acceptable
– Between Main St. and Los Angeles St.	Residential, Office	30	69.8	Yes	Conditionally Acceptable

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

[b] *Noise compatibility is based on the most stringent land use, per City's land use compatibility as provided in Table IV.G-2 on page IV.G-7.*

Source: AES, 2019.

3. Project Impacts

a. Methodology

(1) On-Site Construction Activities

Construction noise impacts due to on-site construction activities associated with the Project were evaluated by calculating the construction-related noise levels at representative sensitive receptor locations and comparing these estimated noise levels to the existing ambient noise levels (i.e., noise levels without construction noise from the Project). Construction noise was analyzed based on the Project's anticipated construction equipment inventory, construction activity durations, and construction schedule. The Project's construction noise model is based on construction equipment noise levels published by the FHWA's *Roadway Construction Noise Model* (FHWA 2006).[28] The ambient noise levels at surrounding sensitive receptor locations were based on field measurement data (see Table IV.G-7 on page IV.G-15). The construction noise levels were then calculated for sensitive receptor locations based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance (as described above in Subsection 2.a(1)(b), Outdoor Sound Propagation). Additional noise attenuation was assigned to receptor locations where the line-of-sight to the Project Site would be interrupted by the presence of intervening structures.

(2) Off-Site Construction Haul Trucks

Off-site construction noise impacts from haul trucks associated with Project construction were analyzed using the FHWA's TNM computer noise model. The TNM is the current Caltrans standard computer noise model for traffic noise studies. The model allows for the input of roadway, noise receivers, and sound barriers, if applicable. The construction-related off-site truck volumes were obtained from the Traffic Study prepared for the Project, which is included in Appendix L of this Draft EIR. The TNM noise model calculates the hourly L_{eq} noise levels generated by construction-related haul trucks. Noise impacts were determined by comparing the predicted noise levels with the existing ambient noise levels along the Project's anticipated haul route(s).

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

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

On-site stationary point-source noise impacts were evaluated by: (1) identifying the noise levels that would be generated by the Project's stationary noise sources, such as rooftop mechanical equipment, outdoor activities (e.g., use of the ground level paseo, and rooftop amenity decks/pool), parking facilities, loading dock and trash compactor); (2) calculating the noise level from each noise source at surrounding sensitive receptor property line locations; and (3) comparing such noise levels to ambient noise levels to determine significance. The on-site stationary noise sources were calculated using the SoundPLAN (version 7.4) computer noise prediction model.[29] SoundPLAN is a 3-dimensional acoustic ray tracing program for outdoor noise propagation prediction developed by the German company, SoundPLAN GmbH. SoundPLAN is widely used by acoustical engineers as a noise modeling tool for environmental noise analysis.

(4) Off-Site Roadway Noise (Operation)

As discussed in Subsection 2.c, Existing Conditions, above, off-site roadway noise was analyzed using the FHWA TNM model and traffic data from the Project's Traffic Study. Roadway noise conditions without the Project were calculated and compared to noise levels that would occur with implementation of the Project to determine Project-related noise impacts for operational off-site roadway noise.

(5) Construction Vibration

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

(6) Operational Vibration

The primary sources of vibration related to operation of the Project include vehicle circulation within the existing parking garage on-site and off-site vehicular trips. However, as discussed above, vehicular-induced vibration is unlikely to be perceptible by people. The Project would also include typical commercial-grade stationary mechanical equipment, such as air-handling units (mounted at roof level), that would include appropriate vibration-attenuation mounts to reduce the vibration transmission. The Project does not include land uses that would generate high levels of vibration. In addition, ground-borne vibration

---

[29] *SoundPLAN GmbH, SoundPLAN version 7.4, 2017, www.soundplan.eu/english/soundplan-acoustics/highlights/current-versions/.*

attenuates rapidly as a function of distance from the vibration source. Therefore, operation of the Project would not increase the existing vibration levels in the immediate vicinity of the Project Site, and, as such, vibration impacts associated with operation of the Project would be less than significant. Accordingly, the ground-borne vibration analysis presented in this section is limited to Project-related construction activities.

(7) Land Use Compatibility

The Project's land use compatibility was evaluated based on the measured site ambient noise levels as compared to the City of Los Angeles Guidelines for Compatible Land Use (as provided in Table IV.G-2 on page IV.G-7).[30]

b. Thresholds of Significance

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

Threshold (a): ***Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or***

Threshold (b): ***Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels; or***

Threshold (c): ***A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or***

Threshold (d): ***A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or***

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

Threshold (f): ***For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.***

---

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

(2) 2006 L.A. CEQA Thresholds Guide

In the context of the above questions from Appendix G to the CEQA Guidelines, the *L.A. CEQA Thresholds Guide* identifies the following criteria to evaluate noise impacts:

(a) Construction Noise

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

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

As discussed in Section II, Project Description, of this Draft EIR, Project construction is anticipated to begin in 2022 and be completed by 2025. Therefore, since construction activities would occur over a period longer than 10 days for all phases, the significance criteria used in the construction noise analysis presented in this section of the Draft EIR is an increase in the ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use.

(b) Operational Noise

A project would normally have a significant impact from operations if:

- The Project (including on-site and off-site sources) causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 3 dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” category (see Table IV.G-2 on page IV.G-7 for a description of these categories); or
- The Project (including on-site and off-site sources) causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 5 dBA in CNEL or greater for noise levels remain within the “conditionally acceptable” or “normally acceptable”; or

- Project-related operational on-site (i.e., non-roadway) noise sources, such as outdoor building mechanical/electrical equipment, outdoor activities, or parking facilities, increase the ambient noise level (hourly L_{eq}) at noise-sensitive uses by 5 dBA.

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

(3) FTA Ground-Borne Vibration Standards and Guidelines

The City of Los Angeles currently does not have significance criteria to assess vibration impacts during construction. Thus, FTA guidelines set forth in FTA's *Transit Noise and Vibration Assessment*, dated May 2006, are used to evaluate potential impacts related to construction vibration for both potential building damage and human annoyance. The FTA guidelines regarding construction vibration are the most current guidelines and are commonly used in evaluating vibration impacts.

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

- Project construction activities cause ground-borne vibration levels to exceed 0.5 PPV at the nearest off-site reinforced-concrete, steel, or timber building.

- Project construction activities cause ground-borne vibration levels to exceed 0.3 PPV at the nearest off-site engineered concrete and masonry building.

- Project construction activities cause ground-borne vibration levels to exceed 0.2 PPV at the nearest off-site non-engineered timber and masonry building.

- Project construction activities cause ground-borne vibration levels to exceed 0.12 PPV at buildings extremely susceptible to vibration damage, such as historic buildings.

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

- Project construction activities cause ground-borne vibration levels to exceed 72 VdB at off-site residential and hotel uses.

In assessing impacts related to noise in this section, the City will use Appendix G as the thresholds of significance. The significance criteria identified above from the *L.A. CEQA Thresholds Guide* and the FTA Ground-Borne Vibration Standards and Guidelines will be used where applicable and relevant to assist in analyzing the Appendix G threshold questions.

c. Analysis of Project Impacts

(1) Project Design Features

The following Project Design Features are proposed with regard to noise and vibration:

NOI-PDF-1: Project construction shall prohibit the use of driven (impact) pile systems.

NOI-PDF-2: All outdoor mounted, noise-generating mechanical equipment would be screened from off-site noise-sensitive receptors.

NOI-PDF-3: Loading and trash collection areas would be screened from off-site noise-sensitive receptors.

NOI-PDF-4: Outdoor amplified sound systems (e.g., speaker and stereo systems, amplification systems, or other sound-producing devices) would be designed so as not to exceed maximum noise levels of: (i) 75 dBA ($L_{eq\text{-}1hr}$) at a distance of 25 feet from the amplified sound systems at the ground level paseo; (ii) 85 dBA ($L_{eq\text{-}1hr}$) at a distance of 25 feet for the Levels 8 and 15 pool/roof decks; and (iii) 95 dBA ($L_{eq\text{-}1hr}$) at a distance of 25 feet for any amplified sound system at the Level 27 roof deck.

NOI-PDF-5: Where power poles are available, electricity from power poles and/or solar-powered generators rather than temporary diesel or gasoline generators shall be used during construction. In particular, solar-

powered generators shall be used for the construction trailer(s) on-site.[31]

(2) Relevant Project Characteristics

As described in detail in Section II, Project Description, of this Draft EIR, the Project involves the development of a 30-story mixed-use building consisting of 107 residential units (comprising an estimated 137,347 square feet), plus 7,200 square feet of ground level commercial retail uses, and 534,044 square feet of office uses. The proposed residences would include 12 studios, 42 one-bedroom units, 40 two-bedroom units, and 13 three-bedroom units. The existing five-level parking structure located on the southern portion of the Project Site would remain as under existing conditions and would provide the required vehicular parking and long-term bicycle parking for the proposed uses, with surplus parking remaining available for other nearby uses.

Project construction is expected to occur in one primary phase, with no overlap with construction of the Metro portal and station on-site. As previously discussed, the on-site portal and station are currently under construction, and the Metro Regional Connector line is forecasted to open in 2021. Construction of the Project is anticipated to begin in 2022 and be complete by 2025. Construction activities would involve limited demolition of paved areas and landscaping as well as approximately 7,000 cubic yards of graded soil materials, which would be exported off-site to Chiquita Canyon Landfill and/or Manning Pit in Irwindale. The haul route to/from Chiquita Canyon Landfill is anticipated to follow segments of 2nd Street, Spring Street, 3rd Street, and Aliso Street in Downtown Los Angeles; CA-110, US-101, CA-170, and I-5; as well as Newhall Ranch Road, SR-126, and Henry Mayo Drive in Castaic. Alternatively, the haul route to/from Irwindale would follow segments of 2nd Street, Spring Street, 4th Street, Los Angeles Street, El Monte Busway East, and Arcadia Street in Downtown; US-101 and I-10; and Vincent Drive in Irwindale.

(3) Analysis of Project Impacts

Threshold (a): Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

[31] *However, for purposes of a conservative analysis, the noise modeling performed for the Project assumes the use of diesel and gas-powered generators during construction.*

(a) Construction Noise

Project construction would commence with the removal of existing paved areas and landscaping, followed by grading and excavation. Building foundations would then be laid, followed by building construction, paving/concrete installation, and landscape installation, as evaluated below.

(i) On-Site Construction Noise

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

Individual pieces of construction equipment anticipated to be used during Project construction could produce maximum noise levels (L_{max}) of 74 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in Table IV.G-10 on page IV.G-28. These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites often operate under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (Hourly L_{eq}) noise level associated with each construction phase was calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction phase.[32] These noise levels are typically associated with multiple pieces of equipment operating on part power, simultaneously.

Table IV.G-11 on page IV.G-29 provides the estimated construction noise levels for various Project construction phases at the off-site noise-sensitive receptors. To present a conservative impact analysis, the estimated noise levels were calculated for a scenario in

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

Table IV.G-10
Construction Equipment Noise Levels

Equipment	Estimated Usage Factor[a] %	Typical Noise Level at 50 feet from Equipment, dBA (L_{max})
Air Compressor	40	78
Cement and Mortar Mixer	50	80
Concrete Mixer Truck	40	79
Concrete Saw	20	90
Crane	16	81
Drill Rig	20	84
Forklift	10	75
Generator	50	81
Grader	40	85
Excavator	40	81
Paver	50	77
Pump	50	81
Rubber Tired Loader	40	79
Tractor/Loader/Backhoe	40	80
Delivery Truck	40	74
Welders	40	74

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

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

As discussed above, since construction activities would occur over a period longer than 10 days for all phases, the significance criteria used in the construction noise analysis is an increase in the ambient L_{eq} noise level of 5 dBA at the property line of the closest noise-sensitive use. As presented in Table IV.G-11 on page IV.G-29, estimated noise levels from construction activities would be below the significance criteria at all off-site receptors, with the exception of receptor location R6. The estimated construction noise levels at receptor location R6 would exceed the significance criteria (i.e., 73.2 dBA L_{eq} at

Table IV.G-11
Construction Noise Impacts

Off-Site Receptor Location	Approximate Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))					Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Sig. Impact?
		Demolition	Grading	Foundation	Building Construction	Paving/ Concrete/ Landscape				
R1	300	64.5	64.9	62.7	66.3	64.3	66.7	71.7	0.0	No
R2	295	64.6	65.0	62.8	66.4	64.5	68.7	73.7	0.0	No
R3	340	63.4	63.8	61.6	65.2	63.2	68.5	73.5	0.0	No
R4	245	66.3	66.6	64.4	68.0	66.1	66.6	71.6	0.0	No
R5	495	55.1	55.5	53.3	56.9	55.0	65.3	70.3	0.0	No
R6	60	83.1	82.4	79.5	81.9	82.7	68.2	73.2	9.9	**Yes**[b]

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.G-7 on page IV.G-15) plus 5 dBA, per the L.A. CEQA Thresholds Guide for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance criteria, a construction-related noise impact is identified.*

[b] *Significant impact if the proposed mixed-use development at receptor location R6 is built and occupied prior to or during Project construction. Noise impact would be less than significant for the existing use (i.e., parking structure).*

Source: AES, 2019; see Appendix F of this Draft EIR.

R6) by up to 9.9 dBA, for a noise level of up to 83.1 dBA L_{eq}. However, the noise impact identified at receptor R6 assumes the proposed mixed-use development (including multi-family residential uses) at that location will be completed and occupied prior to or during Project construction. In the event the proposed mixed-use development is not built and occupied by or during Project construction, the noise impact identified at receptor R6 would be less than significant, based on the current use (i.e., parking structure).

Therefore, construction of the Project would result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Noise impacts associated with the Project's on-site construction activities would be significant prior to mitigation.

(ii) Off-Site Construction Noise

In addition to on-site construction noise sources, other noise sources may include construction trucks, including materials delivery, concrete trucks, and haul trucks, as well as construction worker vehicles accessing the Project Site during construction. Typically, construction trucks generate higher noise levels than construction worker vehicles. Therefore, the major noise sources associated with off-site construction would be from delivery/haul trucks.

As discussed above, the haul route to/from the Project Site would include 2nd Street, Spring Street, 3rd Street, and Aliso Street. An alternate route would include the use of 2nd Street, Spring Street, 4th Street, Los Angeles Street, El Monte Busway East, and Arcadia Street. Table IV.G-12 on page IV.G-31 provides the estimated number of construction-related trips, including haul/delivery trucks and worker vehicles, and the estimated noise levels along the anticipated haul routes with noise sensitive receptors.

As shown in Table IV.G-12, Project-related construction traffic is estimated to be below the 5-dBA significance criteria along the anticipated haul route(s). As such, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Off-site construction noise impacts would be less than significant.

(b) Operational Noise

Specific operational noise sources addressed herein include: (a) on-site stationary noise sources, including outdoor mechanical equipment (e.g., HVAC equipment), loading dock and trash compactors, parking, and activities within the proposed outdoor spaces

Table IV.G-12
Off-Site Construction Traffic Noise Levels

Construction Phase	Estimated Number of Construction Truck/Worker Trips per Day	Estimated Number of Construction Truck/Worker Trips per Hour[a]	Estimated Haul Truck Noise Levels Along the Project Haul Routes, L_{eq} (dBA)			
			Spring Street	3rd Street	4th Street	Los Angeles Street
Demolition	30/30	2/12	58.1	58.1	58.1	57.3
Grading	100/60	7/24	63.1	63.1	63.1	62.3
Foundation	100/100	7/40	63.5	63.5	63.5	62.7
Building Construction	100/500	7/200	66.0	66.0	66.0	65.2
Paving/Concrete/ Landscape	40/100	3/40	60.8	60.8	60.8	60.0
Existing Ambient Noise Levels Along the Project Haul Routes, L_{eq} (dBA)[b]			68.5	68.5	68.5	68.2
Significance Criteria, L_{eq} (dBA)[c]			73.5	73.5	73.5	73.2
Significant Impact?			No	No	No	No

[a] *For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over an 8-hour work day and divided by two, as incoming and leaving trucks would travel on different roadways. For worker vehicles, the number of hourly trips is based on 40 percent of the daily worker trips that would arrive in one hour to represent a conservative analysis.*

[b] *Ambient noise levels along the haul routes are based on measurements at nearby receptor locations (i.e., receptor R3 along Spring Street). Ambient noise level along Los Angeles Street is estimated based on measurement at Receptor R6.*

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

Source: AES, 2019; see Appendix F of this Draft EIR.

(e.g., ground level paseo, roof level pool and decks); and (b) off-site mobile (roadway traffic) noise sources.

(i) On-Site Stationary Noise Sources

Mechanical Equipment

As part of the Project, new mechanical equipment (e.g., air ventilation equipment) would be located at the exterior of the building (at grade or on one of the rooftop levels) and within the building interior. Although operation of this equipment would generate noise, Project-related outdoor mechanical equipment would be designed so as not to increase the existing ambient noise levels by 5 dBA in accordance with the City's Noise Regulations. Specifically, the Project would comply with LAMC Section 112.02, which prohibits noise from air conditioning, refrigeration, heating, pumping, and filtering equipment from exceeding the ambient noise levels on the premises of other occupied properties by more than 5 dBA. In addition, as provided above in Project Design Feature NOI-PDF-2, all

outdoor mounted mechanical equipment would be screened from off-site noise-sensitive receptors. Table IV.G-13 on page IV.G-33 presents the estimated noise levels at the off-site receptor locations from operation of the Project's mechanical equipment. As indicated in Table IV.G-13, the estimated noise levels from mechanical equipment would range from 27.5 dBA (L_{eq}) at receptor location R1 to 43.5 dBA (L_{eq}) at receptor location R6, which would be below the existing ambient noise levels.

Accordingly, the estimated noise levels at all off-site receptor locations would be below the significance criteria of 5 dBA (L_{eq}) above ambient noise levels (based on the lowest measured ambient noise level). Therefore, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Noise impacts from mechanical equipment would be less than significant.

Outdoor Spaces

As discussed in Section II, Project Description, of this Draft EIR, the Project would include various outdoor spaces including an outdoor paseo at the ground level and pool and amenity decks at Levels 8, 15 and 27. Noise sources associated with the outdoor spaces would include noise from people gathering and conversing. For this operational noise analysis, reference noise levels of 65 dBA for a male and 62 dBA for a female speaking in a raised voice were used for analyzing potential noise impacts from people gathering at the outdoor spaces.[33] In order to analyze a typical noise scenario, it was assumed that up to 50 percent of the people (half of which would be male and the other half female) would be talking at the same time. In addition, the hours of operation for use of the outdoor spaces were assumed to be from 7:00 A.M. to 12:00 A.M.

An additional potential noise source associated with outdoor uses would include the use of outdoor sound systems (e.g., music or other sounds broadcast through an outdoor mounted speaker system). The sound from outdoor sound systems, if used, would be heard by people in the immediate vicinity of the outdoor areas. As part of the Project and as set forth in Project Design Feature NOI-PDF-4, any amplified sound system used in outdoor areas would be designed so as not to exceed the maximum noise levels of 75 to 95 dBA L_{eq}, as indicated in Table IV.G-14 on page IV.G-34. Table IV.G-14 also presents the assumed number of people at each of the outdoor spaces (based on occupancy levels for the outdoor areas) and the Project's proposed amplified sound levels.

---

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

Table IV.G-13
Estimated Noise Levels from Mechanical Equipment

Receptor Location	Existing Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Mechanical Equipment, dBA (L_{eq})	Ambient + Project Noise Levels, dBA (L_{eq})	Significance Criteria,[a] dBA (L_{eq})	Exceedance Above the Significance Criteria	Significant Impact?
R1	60.7	27.5	60.7	65.7	0.0	No
R2	63.6	35.7	63.6	68.6	0.0	No
R3	61.9	31.2	61.9	66.9	0.0	No
R4	58.7	33.5	58.7	63.7	0.0	No
R5	62.3	29.8	62.3	67.3	0.0	No
R6	62.8	43.5	62.9	67.8	0.0	No

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

Source: AES, 2019; see Appendix F of this Draft EIR.

Table IV.G-15 on page IV.G-35 presents the estimated noise levels at the off-site sensitive receptors resulting from the use of the Project's outdoor areas. As presented therein, the estimated noise levels from the outdoor areas would range from 43.4 dBA (L_{eq}) at receptor location R1 to 61.4 dBA (L_{eq}) at receptor location R6.

The estimated noise levels from the outdoor spaces would be below the significance criteria of 5 dBA (L_{eq}) above ambient noise levels at all off-site sensitive receptors. As such, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Noise impacts from the use of the outdoor uses would be less than significant.

Parking Facilities

Parking for the Project would be provided within the existing five-level parking structure located in the southern portion of the Project Site. With no expansion in parking uses (in fact, the parking structure's existing 1,460 parking spaces would be reconfigured to provide 1,436 vehicular spaces and 218 long-term bicycle parking spaces), noise levels associated with parking operation would be similar to existing conditions, which would not increase the existing ambient noise levels.

Table IV.G-14
Outdoor Use Assumptions

Project Location	Outdoor Space	Estimated Total Number of People[a]	Amplified Sound System Levels dBA (L_{eq})[b]
Ground Level	Paseo	450	75 dBA at 25 feet
Level 8	Pool/roof deck	612	85 dBA at 25 feet
Level 15	Roof deck	468	85 dBA at 25 feet
Level 27	Roof deck	503	95 dBA at 25 feet

[a] *The estimated total number of people is based on 15 square feet/person, which is the maximum occupancy permitted by the Los Angeles Building Code. These estimates are considered highly conservative, as the actual number of people occupying these outdoor areas is anticipated to be substantially smaller. The use of these conservative estimates, particularly within the paseo, also serve to account for the presence of Project tenants and visitors within the Metro plaza, which is part of Metro's separate project and was subject to separate environmental analysis (SCH No. 2009031043).*

[b] *Noise levels reflect implementation of Project Design Feature NOI-PDF-4 which sets noise limits for any amplified sound system in the various outdoor areas of the Project.*

Source: Gensler, 2017; AES, 2019; see Appendix F of this Draft EIR.

Therefore, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Noise impacts from parking operations would be less than significant.

Loading Dock and Trash Collection Areas

Loading and trash collection would be located at the southeast corner of the building and would be screened from the view of off-site noise sensitive receptors, as set forth in the Project Design Feature NOI-PDF-3, detailed above. Noise sources associated with the loading docks and trash collection areas would include delivery/trash collection trucks and operation of a trash compactor. Based on measured noise levels from typical loading dock facilities and trash compactors, delivery/trash collection trucks and trash compactors could generate noise levels of approximately 71 dBA (L_{eq}) and 66 dBA (L_{eq}), respectively, at a distance of 50 feet.[34] As indicated in Table IV.G-16 on page IV.G-36, the estimated noise from loading dock and trash compactor operations is estimated to range from 24.9 dBA (L_{eq}) at receptor location R1 to 54.6 dBA (L_{eq}) at receptor location R3.

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

Table IV.G-15
Estimated Noise Levels from Outdoor Uses

Receptor Location	Existing Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Outdoor Uses,[a] dBA (L_{eq})	Ambient + Project Noise Levels, dBA (L_{eq})	Significance Criteria[b]	Exceedance Above the Significance Criteria	Significant Impact?
R1	60.7	43.4	60.8	65.7	0.0	No
R2	63.6	50.0	63.8	68.6	0.0	No
R3	61.9	51.5	62.3	66.9	0.0	No
R4	58.7	52.2	59.6	63.7	0.0	No
R5	62.3	55.0	63.0	67.3	0.0	No
R6	62.8	61.4	65.2	67.8	0.0	No

[a] *Estimated noise levels are based on maximum permitted number of people within the outdoor spaces, as allowed by the Los Angeles Building Code. However, the actual number of people occupying these outdoor areas is anticipated to be substantially smaller, and anticipated noise levels would be reduced accordingly.*

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

Source: AES, 2019; see Appendix F of this Draft EIR.

The estimated noise levels at all off-site receptor locations would be well below the existing ambient noise levels and the significance criteria of 5 dBA (L_{eq}) above ambient noise levels. Therefore, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Noise impacts from loading dock and trash compactor operations would be less than significant.

(ii) Off-Site Mobile Noise Sources

Existing Plus Project

An analysis was performed to determine the increase in noise levels due to Project-related traffic compared with the existing traffic noise conditions. As shown in Table IV.G-17 on page IV.G-37, when compared with existing conditions, the Project would result in a maximum increase of 0.6 dBA CNEL in traffic-related noise levels along Broadway between 2nd Street and 3rd Street. The estimated noise increase due to Project-related traffic would be below the 3 dBA CNEL significance criteria.

Table IV.G-16
Estimated Noise Levels from Loading and Trash Compactor

Receptor Location	Existing Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Loading and Trash Compactor, dBA (L_{eq})	Ambient + Project Noise Levels, dBA (L_{eq})	Significance Criteria[a]	Exceedance Above the Significance Criteria	Significant Impact?
R1	60.7	24.9	60.7	65.7	0.0	No
R2	63.6	33.4	63.6	68.6	0.0	No
R3	61.9	54.6	62.6	66.9	0.0	No
R4	58.7	38.4	58.7	63.7	0.0	No
R5	62.3	40.3	62.3	67.3	0.0	No
R6	62.8	52.5	63.2	67.8	0.0	No

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

Source: AES, 2019; see Appendix F of this Draft EIR.

Therefore, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, and off-site traffic noise impacts under Existing Plus Project conditions would be less than significant.

Future Plus Project

Future roadway noise levels were calculated along the 31 selected roadway segments in the vicinity of the Project Site. The roadway noise levels were calculated using the traffic data provided in the Traffic Study prepared for the Project, which is included in Appendix L of this Draft EIR. As discussed in the Traffic Study, the Project is expected to generate a net increase of 4,006 daily trips. As such, Project-related traffic would increase the existing traffic volumes along the roadway segments in the study area when compared with Future Without Project conditions. This increase in roadway traffic was analyzed to determine if any traffic-related noise impacts would result from operation of the Project.

Table IV.G-18 on page IV.G-39 provides a summary of projected roadway noise impacts. The calculated traffic levels were conservatively calculated with the receptors facing the roadways and did not account for the presence of any physical sound barriers or intervening structures. As shown in Table IV.G-18, the Project is estimated to result in a maximum increase of up to 0.5 dBA CNEL in traffic-related noise levels along Broadway

Table IV.G-17
Roadway Traffic Noise Impacts—Existing Plus Project

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] CNEL (dBA)		Increase in Noise Levels due to Project, CNEL (dBA)	Significant Impact?
		Existing Without Project	Existing Plus Project		
Hill Street					
– Between 1st St. and 2nd St.	Office	68.8	68.8	0.0	No
– Between 2nd St. and 3rd St.	Hotel, Office	69.2	69.3	0.1	No
Broadway					
– Between Temple St. and 1st St.	Office, Park	68.7	69.1	0.4	No
– Between 1st St. and 2nd St.	Office	68.5	69.0	0.5	No
– Between 2nd St. and 3rd St.	Residential, Commercial	68.7	69.3	0.6	No
– Between 3rd St. and 4th St.	Commercial	68.4	68.7	0.3	No
– Between 4th St. and 5th St.	Residential, Commercial	68.9	69.1	0.2	No
Spring Street					
– Between Temple St. and 1st St.	Office, Park	67.9	68.1	0.2	No
– Between 1st St. and 2nd St.	Office	67.9	68.3	0.4	No
– Between 2nd St. and 3rd St.	Residential, Commercial	68.4	68.7	0.3	No
– Between 3rd St. and 4th St.	Office	68.7	68.8	0.1	No
– Between 4th St. and 5th St.	Park, Commercial	68.2	68.2	0.0	No
Main Street					
– Between Temple St. and 1st St.	Office	68.7	68.7	0.0	No
– Between 1st St. and 2nd St.	Office	69.2	69.2	0.0	No
– Between 2nd St. and 3rd St.	Residential, Commercial	70.2	70.2	0.0	No
– Between 3rd St. and 4th St.	Residential, Hotel	71.2	71.2	0.0	No
– Between 4th St. and 5th St.	Residential, Commercial	71.0	71.0	0.0	No

Table IV.G-17 (Continued)
Roadway Traffic Noise Impacts—Existing Plus Project

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] CNEL (dBA)		Increase in Noise Levels due to Project, CNEL (dBA)	Significant Impact?
		Existing Without Project	Existing Plus Project		
1st Street					
– Between Hill St. and Broadway	Library, Office	69.3	69.3	0.0	No
– Between Broadway and Main St.	Park, Office	68.6	68.6	0.0	No
– Between Main St. and Los Angeles St.	Office	68.1	68.1	0.0	No
2nd Street					
– Between Hill St. and Broadway	Hotel, Office	68.7	68.8	0.1	No
– Between Broadway and Spring St.	Office	68.5	68.5	0.0	No
– Between Spring St. and Main St.	Residential, Commercial	68.0	68.1	0.1	No
– Between Main St. and Los Angeles St.	Library, Office	67.6	67.7	0.1	No
3rd Street					
– Between Hill St. and Broadway	Residential, Commercial	69.8	69.9	0.1	No
– Between Broadway and Main St.	Residential, Commercial	70.5	70.5	0.0	No
– Between Main St. and Los Angeles St.	Hotel, Commercial	70.7	70.7	0.0	No
4th Street					
– Between Hill St. and Broadway	Office	69.3	69.4	0.1	No
– Between Broadway and Main St.	Hotel, Commercial	69.7	69.7	0.0	No
– Between Main St. and Los Angeles St.	Residential, Office	69.8	69.9	0.1	No

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

Source: AES, 2019.

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

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] CNEL (dBA)		Increase in Noise Levels due to Project, CNEL (dBA)	Significant Impact?
		Future Without Project	Future Plus Project		
Hill Street					
– Between 1st St. and 2nd St.	Office	69.5	69.5	0.0	No
– Between 2nd St. and 3rd St.	Hotel, Office	69.9	70.0	0.1	No
Broadway					
– Between Temple St. and 1st St.	Office, Park	69.9	70.2	0.3	No
– Between 1st St. and 2nd St.	Office	69.8	70.1	0.3	No
– Between 2nd St. and 3rd St.	Residential, Commercial	70.1	70.6	0.5	No
– Between 3rd St. and 4th St.	Commercial	70.0	70.2	0.2	No
– Between 4th St. and 5th St.	Residential, Commercial	70.5	70.7	0.2	No
Spring Street					
– Between Temple St. and 1st St.	Office, Park	68.7	68.9	0.2	No
– Between 1st St. and 2nd St.	Office	68.9	69.2	0.3	No
– Between 2nd St. and 3rd St.	Residential, Commercial	69.5	69.7	0.2	No
– Between 3rd St. and 4th St.	Office	70.0	70.1	0.1	No
– Between 4th St. and 5th St.	Park, Commercial	69.8	69.8	0.0	No
Main Street					
– Between Temple St. and 1st St.	Office	69.7	69.7	0.0	No
– Between 1st St. and 2nd St.	Office	70.2	70.2	0.0	No
– Between 2nd St. and 3rd St.	Residential, Commercial	71.2	71.2	0.0	No
– Between 3rd St. and 4th St.	Residential, Hotel	72.4	72.4	0.0	No
– Between 4th St. and 5th St.	Residential, Commercial	71.9	71.9	0.0	No

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

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] CNEL (dBA)		Increase in Noise Levels due to Project, CNEL (dBA)	Significant Impact?
		Future Without Project	Future Plus Project		
1st Street					
– Between Hill St. and Broadway	Library, Office	69.8	69.8	0.0	No
– Between Broadway and Main St.	Park, Office	69.1	69.1	0.0	No
– Between Main St. and Los Angeles St.	Office	68.6	68.6	0.0	No
2nd Street					
– Between Hill St. and Broadway	Hotel, Office	70.2	70.3	0.1	No
– Between Broadway and Spring St.	Office	70.1	70.1	0.0	No
– Between Spring St. and Main St.	Residential, Commercial	69.4	69.5	0.1	No
– Between Main St. and Los Angeles St.	Library, Office	69.1	69.2	0.1	No
3rd Street					
– Between Hill St. and Broadway	Residential, Commercial	70.8	70.9	0.1	No
– Between Broadway and Main St.	Residential, Commercial	71.3	71.4	0.1	No
– Between Main St. and Los Angeles St.	Hotel, Commercial	71.4	71.4	0.0	No
4th Street					
– Between Hill St. and Broadway	Office	71.0	71.1	0.1	No
– Between Broadway and Main St.	Hotel, Commercial	71.4	71.4	0.0	No
– Between Main St. and Los Angeles St.	Residential, Office	71.1	71.2	0.1	No

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

Source: AES, 2019.

between 2nd Street and 3rd Street. The increase in traffic noise levels would be well below the 3 dBA CNEL significance criteria (applicable to noise levels within the normally unacceptable land use category). Furthermore, a noise increase of less than 1 dBA is not perceptible and generally considered negligible.

Therefore, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, and off-site traffic noise impacts under Future Plus Project conditions would be less than significant.

(iii) Composite Noise Level Impacts from Project Operations

In addition to considering the potential noise impacts to neighboring noise-sensitive receptors from each specific on-site and off-site noise source (e.g., mechanical equipment, loading docks/trash compactor, outdoor areas, and off-site traffic), an evaluation of potential composite noise level increases (i.e., noise levels from all on-site and off-site noise sources combined) at the analyzed sensitive receptor locations was also performed. This evaluation of composite noise levels, evaluated using the CNEL noise metric, was conducted to determine the Project's contributions at the noise-sensitive receptor locations in the Project vicinity. Table IV.G-19 on page IV.G-42 presents the estimated composite noise levels in terms of CNEL at the off-site sensitive receptor locations from the Project-related noise sources.

As indicated in Table IV.G-19 on page IV.G-42, the estimated composite (plus ambient) noise levels would be below the significance criteria at all off-site receptor locations. Therefore, the Project would not result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Composite noise level impacts due to Project operations would be less than significant.

(iv) Land Use Compatibility

Based on the measured ambient noise levels, the exterior noise levels at the Project Site would be up to 70.4 dBA CNEL at the northern boundary (measured at receptor location P1). In addition, the future Metro 2nd Street/Broadway station would generate noise associated with the station facilities. The Metro station facilities would be designed as not to exceed Metro's performance requirements of 60 dBA for transient sources and 50 dBA for continuous sources (as applicable to high density residential

Table IV.G-19
Composite Noise Impacts

Receptor Location	Existing Ambient Noise Levels, CNEL (dBA)	Calculated Project-Related Noise Sources, CNEL (dBA)				Project Composite Noise Levels, CNEL (dBA)	Ambient plus Project Noise Levels, CNEL (dBA)	Significance Criteria,[a] CNEL (dBA)	Significant Impact?
		Traffic	Mechanical	Loading/ Trash Compactor	Outdoor Spaces				
R1	69.0	52.4	34.2	22.3	45.5	53.2	69.1	74.0	No
R2	69.4	60.4	42.4	30.5	52.1	61.1	70.0	72.4	No
R3	67.0	56.9	37.9	51.8	53.6	59.4	67.7	72.0	No
R4	66.4	51.7	40.2	35.6	54.3	56.3	66.8	71.4	No
R5	67.7	43.8	36.5	37.5	57.1	57.3	68.1	72.7	No
R6	67.8	59.4	50.2	49.7	63.5	65.2	69.7	70.8	No

[a] *Significance criteria are equivalent to: (a) the existing ambient noise level plus 5 dBA if the "Ambient plus Project Noise Level" is within the "normally acceptable" or "conditionally acceptable" categories (i.e., less than 70 dBA CNEL); or (b) the existing ambient noise level plus 3 dBA if the "Ambient plus Project Noise Level" is within the "normally unacceptable" or "clearly unacceptable" category (i.e., 70 dBA CNEL and greater).*

Source: AES, 2019; see Appendix F of this Draft EIR.

receptors).[35] According to the City of Los Angeles Guidelines for Noise Compatible Land Use (refer to Table IV.G-2 on page IV.G-7), the Project Site would be considered "normally unacceptable" for residential development (between 70 and 75 dBA CNEL). However, in accordance with regulatory requirements set forth in the California Building Standards Code, the Project would include necessary noise insulation features, such as insulated glass windows and doors, to achieve an interior noise environment that does not exceed 45 dBA CNEL for residential uses and 50 dBA L_{eq} for non-residential uses. As the exterior noise levels would be generated in large part by the Project's own outdoor uses, such as the public plaza and pedestrian paseo, those uses could not significantly impact themselves. Furthermore, the City's Noise Element does not include noise compatibility guidelines for uses such as public plazas or paseos.

Therefore, the Project would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, and noise impacts associated with land use compatibility would be less than significant.

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

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

(a) Building Damage Impacts from On-Site Construction

With regard to potential building damage, the Project would generate ground-borne construction vibration during building demolition and site excavation/grading activities when heavy construction equipment, such as large bulldozers, drill rigs, and loaded trucks, would be used. The FTA has published standard vibration velocities for various construction equipment operations. Table IV.G-20 on page IV.G-44 provides the estimated vibration

[35] *Metro, Regional Connector Transit Corridor Project, Specification Section 01 56 20 Acoustics Noise and Vibration Control for Station Environment, Rev 2e 010713, January 2013.*

Table IV.G-20
Construction Vibration Impacts—Building Damage

Off-Site Building Structure[a]	Estimated Vibration Velocity Levels at the outside of and adjacent to the Nearest Off-Site Structures from the Project Construction Equipment,[b] inch/second (PPV)					Significance Criteria, PPV	Signif. Impact?
	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	0.089	0.089	0.076	0.035	0.003	—	—
LA Times Mirror building to the north (historic structure)	0.032	0.032	0.027	0.012	0.001	0.12[c]	No
Victor Clothing Company building to the south (historic structure)	0.003	0.003	0.002	0.001	<0.001	0.12[c]	No
Single-story commercial buildings to the east	0.019	0.019	0.016	0.008	0.001	0.30[d]	No
10-story office building to the west	0.012	0012	0.010	0.005	<0.001	0.50[e]	No

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

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

[c] *FTA criteria for historic building structures, applicable to the historic L.A. Times Mirror building to the north and the Victor Clothing Company building to the south.*

[d] *FTA criteria for engineered timber and masonry buildings, applicable to the single-story commercial building to the east.*

[e] *FTA criteria for reinforced-concrete, steel, or timber building structures, applicable to the 10-story office building to the west.*

Source: FTA, 2006; AES, 2019; see Appendix F of this Draft EIR.

levels (in terms of inch per second PPV) at the nearest off-site structures to the Project Site. It is noted that since impact pile driving methods would not be used during construction of the Project, in accordance with Project Design Feature NOI-PDF-1 provided above, impact pile driving vibration is not included in the on-site construction vibration analysis.

As indicated in Table IV.G-20, the estimated vibration velocity levels from all construction equipment would be below the building damage significance criteria of 0.12 PPV for the historic/potentially historic structures to the north and south, 0.3 PPV for the structure to the east, and 0.5 PPV for the multi-story building to the west. Therefore, the Project would not result in the exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels, and vibration impacts associated with potential building damage would be less than significant.

(b) Human Annoyance Impacts from On-Site Construction

Table IV.G-21 on page IV.G-46 provides the estimated vibration levels at the off-site sensitive uses due to construction equipment operation and compares the estimated vibration levels to the specified significance criteria for human annoyance. Per FTA guidance, the significance criteria for human annoyance is 72 VdB at residential and hotel uses, assuming there are a minimum of 70 vibration events occurring during a typical construction day. As indicated in Table IV.G-21, the estimated ground-borne vibration levels from construction equipment would be below the significance criteria for human annoyance at all off-site receptor locations, with the exception of receptor R6. The estimated vibration levels of 76 VdB at receptor R6 would exceed significance criteria of 72 VdB. The vibration impact at receptor R6 assumes the proposed mixed-use development (including multi-family uses) at that location will be completed and occupied prior to or during the Project construction. In the event the proposed mixed-use development is not built and occupied by or during Project construction, the vibration impact identified at receptor R6 would be less than significant, based on the current use (i.e., parking structure).

Therefore, the Project would result in the exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels. Vibration impacts during Project construction would be significant pursuant to the significance criteria for human annoyance, prior to mitigation.

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

As described above, construction delivery/haul trucks would generally travel between the Project Site and the I-110 Freeway to the west or the US-101 Freeway to the north. Heavy-duty construction trucks would generate ground-borne vibration as they travel along the Project's anticipated haul route(s). Thus, an analysis of potential vibration impacts using the building damage and human annoyance criteria for ground-borne vibration along the anticipated local haul route(s) was conducted.

With respect to building damage, based on FTA data, the vibration generated by a typical heavy-duty truck is approximately 63 VdB (0.006 PPV) at a distance of 50 feet from the truck.[36] According to the FTA "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads." Nonetheless, there are existing buildings along the Project's anticipated haul route(s) situated approximately

[36] *FTA, "Transit Noise and Vibration Impact Assessment," May 2006, Figure 7-3.*

Table IV.G-21
Construction Vibration Impacts—Human Annoyance

Off-Site Receptor Location	Estimated Vibration Velocity Levels at the Off-Site Sensitive Uses due to On-Site Construction Equipment Operation,[a] VdB					Significance Criteria,[b] VdB	Signif. Impact?
	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	87	87	86	79	58	—	—
R1	55	55	54	47	26	72	No
R2	55	55	54	47	26	72	No
R3	53	53	52	45	24	72	No
R4	57	57	56	49	28	72	No
R5	48	48	47	40	19	72	No
R6	76	76	75	68	47	72	**Yes**[c]

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

[b] *FTA criteria of 72 VdB for residential/hotel use and 75 VdB for religious (church) use with frequent events.*

[c] *Significant impact if the proposed mixed-use development at receptor location R6 is built and occupied prior to or during Project construction. Vibration impact would be less than significant for the existing use (i.e., parking structure).*

Source: FTA, 2006; AES, 2019; see Appendix F of this Draft EIR.

20 feet from the truck path that would be exposed to ground-borne vibration levels of approximately 0.022 PPV, as provided in the noise calculation worksheets included in Appendix F of this Draft EIR. This estimated vibration generated by construction trucks traveling along the anticipated haul route(s) would be well below the most stringent building damage criteria of 0.12 PPV for buildings extremely susceptible to vibration.

Therefore, the Project would not result in the exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels. Vibration impacts with respect to building damage resulting from construction trucks traveling along the anticipated haul route(s) would be less than significant.

As discussed above, per FTA guidance, the significance criteria for human annoyance is 75 VdB for sensitive uses (for occasional events, 30 to 70 events per day), including residential uses. The significance criteria based on occasional events is used, as the Project would generate 50 truck trips per day during construction. Buses and trucks

rarely create vibration that exceeds 70 VdB at 50 feet from a receptor unless there are bumps in the road.[37] Multi-family residential buildings are located along the anticipated haul route(s) along Spring Street, 3rd Street, 4th Street, and Los Angeles Street. These multi-family residential buildings are located approximately 20 feet from the truck travel path. As indicated in the noise calculation worksheets included in Appendix F of this Draft EIR, temporary vibration levels could periodically reach approximately 75 VdB as trucks pass by the residences.

The estimated ground-borne vibration from construction trucks could reach the 75 VdB significance criteria for residential uses. Therefore, the Project would result in the exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels. Vibration impacts with respect to human annoyance resulting from construction trucks traveling along the anticipated haul route(s) would be significant, prior to mitigation.

Threshold (c): Would the Project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the Project?

As discussed above under Threshold (a), the estimated noise levels generated by Project operations would not exceed the existing ambient noise levels and/or the significance criteria at any of the off-site sensitive receptors.

Therefore, the Project would not result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project. Operational noise impacts from on-site sources and off-site sources would be less than significant, and no mitigation measures are required.

Threshold (d): Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the Project?

As discussed above under Threshold (a), noise impacts associated with the Project's on-site construction activities would be significant at off-site sensitive receptor R6 (if future development at that location is constructed and occupied at the time of Project construction). As Project operations would not involve temporary or periodic noise, operational noise impacts are addressed above under Thresholds (a) and (c).

---

[37] *Id. at Section 7.2.1.*

Accordingly, the Project would result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity during construction above levels existing without the Project. Although temporary, this impact would be significant prior to mitigation.

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

Threshold (f): For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the project area to excessive noise levels?

As discussed in Section VI, Other CEQA Considerations, and in the Initial Study (Appendix A of this Draft EIR), the Project Site is not located within an airport land use plan or within two miles of a public airport or public use airport, or within the vicinity of a private airstrip. Project impacts with regard to airport-related noise would not occur and would be clearly insignificant and unlikely to occur. Therefore, the Project would not expose people residing or working in the project area to excessive airport-related noise levels. As such, no further analysis of airport operation-related noise is necessary.

Thus, the Project would have a less than significant impact with respect to Thresholds (e) and (f). No impacts from excessive airport-related noise levels would occur, and no further analysis is required.

4. Cumulative Impacts

As identified in Section III, Environmental Setting, of this Draft EIR, a total of 173 related projects are located in the vicinity of the Project Site. Much of this growth is anticipated by the City and will be incorporated into the Central City Community Plan update, known as the DTLA 2040 Plan, which the Department of City Planning is in the process of preparing (refer to Section IV.F, Land Use, of this Draft EIR for further discussion). According to the DTLA 2040 projections, an additional approximately 125,000 people, 70,000 housing units, and 55,000 jobs will be added to the Downtown area by the year 2040.[38] A map of the related project locations is provided in Figure III-1 in Section III, Environmental Setting, of this Draft EIR.

[38] *Growth projections current as of December 2018. Source: City of Los Angeles, DTLA 2040, About This Project, www.dtla2040.org/, accessed December 6, 2018.*

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

a. Construction Noise

(1) On-Site Construction Noise

Noise from the construction of development projects is typically localized and has the potential to affect noise-sensitive uses within 500 feet from the construction site, based on the *L.A. CEQA Thresholds Guide* screening criteria. Thus, noise from construction activities for two projects within 1,000 feet of each other can contribute to a cumulative noise impact for receptors located midway between the two construction sites. While the majority of the related projects are located over 1,000 feet from the Project Site, the following nine related projects are within 1,000 feet of the Project Site, as evaluated below:

- Related Project No. 2 (Ava Little Tokyo) is a mixed-use development located at 200 Los Angeles Street, approximately 970 feet southeast of the Project Site. Construction of this related project has already been completed.[39] Therefore, this related project would not contribute to cumulative construction-related noise impacts.

- Related Project No. 5 (Vibiana Lofts) is a mixed-use development located at 225 Main Street, approximately 500 feet southeast of the Project Site. Construction of this related project has already been completed (now known as the STOA apartments). Therefore, this related project would not contribute to cumulative construction-related noise impacts.

- Related Project No. 33 is a mixed office/retail/restaurant development located at 201 Broadway, approximately 90 feet west of the Project Site. The nearest noise-sensitive use to the Project Site and Related Project No. 33 is the Kawada Hotel (represented by receptor location R1). As indicated in Table IV.G-11 on page IV.G-29, the estimated noise from the Project construction activities at receptor location R1 would be at least 5 dBA below the significance criteria. In addition, receptor location R1 is shielded to Related Project No. 33 by an existing 12-story building. Furthermore, Related Project No. 33 involves interior renovations only. Therefore, cumulative noise impacts would not be expected in

[39] *Refer to Section IV.J, Transportation/Traffic, of this Draft EIR for an explanation regarding the inclusion within the related projects list of several development projects that have already been completed and occupied.*

the event concurrent construction of the Project and Related Project No. 33 were to occur.

- Related Project No. 35 is a mixed-use development located at 400 Broadway, approximately 960 feet southwest of the Project Site. There are several noise sensitive uses between the Project Site and Related Project No. 35, including the Victor Clothing Company apartments (represented by receptor location R2) and the Douglas Building apartments (represented by receptor location R3). However, there are multiple buildings located between the Project and Related Project No. 35 construction areas, which would provide noise reduction from the two projects. Therefore, cumulative noise impacts would not be expected in the event concurrent construction of the Project and Related Project No. 35 were to occur (which, in any event, may be unlikely given that construction of the related project is underway and Project construction would not begin until 2022).

- Related Project No. 65 is a mixed-use development located at 340 Hill Street, approximately 725 feet southwest of the Project Site. The nearest noise sensitive use between the Project Site and Related Project No. 65 is the Victor Clothing Company apartments (represented by receptor location R2). However, there are multiple buildings located between the Project and Related Project No. 65 construction areas, which would provide noise reduction from the two projects. Therefore, cumulative noise impacts would not be expected in the event concurrent construction of the Project and Related Project No. 62 were to occur.

- Related Project No. 76 (Medallion Phase 2) is a mixed-use development located at 300 Main Street, approximately 650 feet southeast of the Project Site. The nearest noise sensitive use between the Project Site and Related Project No. 76 is the Douglas Building apartments (represented by receptor location R3). However, there are buildings located between the Project and Related Project No. 76 construction areas, which would provide noise reduction for receptor location R3. In addition, the estimated noise from the Project's construction activities at receptor location R3 would be at least 8 dBA below the significance threshold, as indicated in Table IV.G-11 on page IV.G-29. Therefore, construction noise from the Project would not contribute to cumulative construction noise at receptor location R3. Accordingly, the Project and Related Project No. 76 would not contribute to cumulative construction-related noise impacts.

- Related Project No. 121 (Times Mirror Square project) is a mixed-use development located at 202 1st Street, directly north of the Project Site. There are several noise-sensitive receptors in proximity, which could be exposed to construction noise from both the Project and Related Project No. 121, including the Kawada Hotel (represented by receptor location R1) and the Higgins Building Lofts (represented by receptor location R4). As indicated in Table IV.G-11 on page IV.G-29, the estimated noise from Project construction activities at receptor

locations R1 and R4 would be below the 5 dBA the significance criteria. However, since Related Project No. 121 has a direct acoustic line-of-sight to these receptor locations, the construction-related noise from Related Project No. 121 could contribute to cumulative construction noise and exceed the 5 dBA significance criteria. Therefore, construction noise impacts in the event of concurrent construction of the Project and Related Project No. 121 would be cumulatively considerable and would be considered significant.

It is noted, however, that should construction of the Project occur concurrently with Related Project No. 121, the Project-specific construction-related noise impact identified above (see Table IV.G-11 on page IV.G-29), which assumes the Times Mirror Square project (represented by receptor location R6) will be built and occupied prior to or during Project construction, would not occur. Moreover, should the Times Mirror Square project be built and occupied prior to or during Project construction, the cumulative construction impact identified in the paragraph above also would not occur.

With regard to cumulative noise impacts potentially affecting receptor location R6 (i.e., the Times Mirror Square project, once occupied), the nearest related project to receptor R6 is Related Project No. 33. As discussed above, Related Project No. 33 involves interior renovations only. Therefore, cumulative noise impacts at receptor R6 would not be expected in the event concurrent construction of the Project and Related Project No. 33 were to occur. None of the other related projects are located sufficiently close or have a direct line-of-sight to receptor R6 to cause a significant cumulative impact in the event of concurrent construction activities with Project construction. Each of the related projects discussed herein are evaluated relative to the nearest sensitive receptor(s); accordingly, it can be assumed that any sensitive receptor located further from each related project would experience a reduced impact. As such, cumulative noise impacts affecting receptor R6 would be less than significant.

- Related Project No. 127 is a proposed sports center development located at 237-249 Los Angeles Street, approximately 750 feet southwest of the Project Site. The nearest noise-sensitive uses between the Project Site and Related Project No. 127 are the Higgins Building Lofts (represented by receptor location R4) and Vibiana Church (represented by receptor location R5). Receptor location R4 is approximately 360 feet from Related Project No. 127 and is shielded by existing intervening buildings. Therefore, construction noise from Related No. 127 would not contribute to cumulative construction noise at receptor location R4. In addition, the estimated noise from Project construction activities at receptor location R5 would at least 13 dBA below the significance criteria, as indicated in Table IV.G-11 on page IV.G-29. Therefore, the Project and Related Project No. 127 would not contribute to cumulative construction-related noise impacts.

- Related Project No. 172 is a mixed-use development located at 354 Spring Street, approximately 790 feet south of the Project Site. This related project

currently is under construction and will be completed prior to the construction of the Project. Therefore, the Related Project No. 172 would not contribute to cumulative construction-related noise impacts.

Based on the above, cumulative noise impacts at the nearby sensitive uses located between the Project Site and Related Project No. 121 (Times Mirror Square project) could occur. Construction-related noise levels from the related projects would be intermittent and temporary, and it is anticipated that, as with the Project, the related projects would comply with the construction hours and other relevant provisions set forth in the LAMC. Noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through mitigation measures for each individual related project, as required, and compliance with locally adopted and enforced noise ordinances.

Nonetheless, should Related Project No. 121 be constructed concurrently with the Project, significant cumulative construction noise impacts could result.

(2) Off-Site Construction Noise

In addition to the cumulative impacts of on-site construction activities, off-site construction haul trucks would have the potential to result in cumulative impacts if the trucks associated with the related projects and the Project were to utilize the same haul route(s) over the same time periods. Based on the existing daytime ambient noise level of 68.5 dBA (L_{eq}) measured at receptor location R3 (refer to Table IV.G-7 on page IV.G-15), it is estimated that up to 86 truck trips per hour could occur along Spring Street, 3rd Street, and 4th Street without exceeding the significance criteria of 5 dBA above ambient noise levels.[40] In addition, based on an existing daytime ambient noise level of 68.2 dBA (L_{eq}) estimated along Los Angeles Street (refer to Table IV.G-12 on page IV.G-31), it is estimated that up to 95 truck trips per hour could occur along Los Angeles Street without exceeding the significance criteria of 5 dBA above ambient noise levels.[41] However, construction-related trips from the Project and related projects could combine to exceed ambient noise levels by 5 dBA and thus exceed the significance criteria.

---

[40] *As determined using the FHWA Traffic Noise Model, 86 truck trips per hour would generate a noise level of approximately 73.4 dBA along the specified streets (refer to Table IV.G-12 on page IV.G-31 for the existing ambient noise levels along the Project's haul route roadways). As previously described, the TNM traffic noise prediction model calculates the hourly L_{eq} noise levels based on specific information including the hourly traffic volume, vehicle type mix, vehicle speed, and lateral distance between the noise receptor and the roadway. The other estimated noise levels cited below were determined in the same manner.*

[41] *As determined using the FHWA Traffic Noise Model, 95 truck trips per hour would generate a noise level of approximately 73.1 dBA along Los Angeles Street (refer to Table IV.G-12 on page IV.G-31 for the existing ambient noise levels along the Project's haul route roadways).*

Although the Project would only generate an average of 7 truck trips per hour along each of the inbound and outbound haul routes during various construction periods (site grading, foundation, and building construction phases), the Project is unique as it is one of two large projects in very close proximity that have the potential to be constructed concurrently. Thus, truck traffic related to construction of the Project combined with the potential concurrent construction of Related Project No. 121 (the Times Mirror Square project) located immediately north of the Project Site and other related projects in the surrounding area could result in noise levels that potentially exceed the City's significance criteria.[42]

According to information on file with the Department of City Planning, the primary segment of the Project's haul route anticipated to coincide with the haul route for Related Project No. 121 (the Times Mirror Square project) is Los Angeles Street between 2nd Street and US-101.[43] Also based on that information, Related Project No. 121 is estimated to generate up to 78 passenger car equivalent (PCE) heavy truck trips per hour, plus at least some of the 124 additional daily worker trips that could occur if renovation work overlaps with construction of that project, along 2nd Street and Los Angeles Street. As previously discussed, it is not certain whether Project construction would occur concurrently with that of Related Project No. 121. However, given the possible unique circumstance of concurrent construction activities (including the possible overlapping renovation work of Related Project No. 121) of these two large-scale projects located across the street from one another and utilizing overlapping haul routes, it is conservatively assumed herein that these projects, combined with other related projects in the area noted in this section, could cumulatively generate sufficient truck trips to trigger a significant noise impact. It is noted, however, that should the construction activity involving peak construction truck traffic for Related Project No. 121 be completed prior to commencement of Project construction, this cumulative construction noise impact may not occur.

---

[42] *Related projects located along or near Spring Street, 3rd Street, or 4th Street that could potentially use those roadways to access the nearest freeway on- or off-ramp include Related Project Nos. 21, 65, 76, 92, 96, 118, 120, 127, 128, 129, and 130. Related projects located along or near Los Angeles Street that could potentially use that roadway to access the nearest freeway on- or off-ramp include Related Project Nos. 23, 69, 76, 107, 118, 121, 127, 128, 129, 153, and 159. While some of these related projects may already be underway, may be operational prior to the start of Project construction, and/or may only involve interior renovations and therefore not require a haul route, other development projects in the surrounding area also could contribute to truck trips along the identified routes.*

[43] *While the haul routes for both the Project and Related Project No. 121 would include portions of 2nd Street, the only overlapping segment would be located between the Project Site driveway and Spring Street. Since the only sensitive receptors adjacent to this segment are the future residential uses at Related Project No. 121, construction of these two projects could not combine to create a cumulative mobile noise impact since the future residential uses will not be occupied until peak construction activity associated with Related Project No. 121 is complete.*

In addition, according to information on file with the Department of City Planning, the haul route for Related Project No. 121 is not anticipated to use Spring Street, 3rd Street, or 4th Street. Accordingly, even if the Project and Related Project No. 121 were to be constructed concurrently, unless Related Project No. 121 were to change its haul route to use Spring Street, 3rd Street, or 4th Street, that related project's construction truck trips would not contribute to cumulative off-site construction noise along those street segments. As such, the Project, combined with other related projects in the area, may not cumulatively generate sufficient truck trips to trigger a significant noise impact along Spring Street, 3rd Street, or 4th Street.

In sum, based on the above, it is conservatively assumed that truck traffic related to construction of the Project, combined with Related Project No. 121 and other nearby related projects noted in this section, would occur throughout the day and could overlap, and thus could cumulatively exceed ambient noise levels by 5 dBA at sensitive receptors adjacent to Los Angeles Street.

Therefore, should Related Project No. 121 be constructed concurrently with the Project, cumulative noise due to construction truck traffic from the Project, Related Project No. 121, and other nearby related projects noted in this section has the potential to exceed the ambient noise levels along Los Angeles Street by 5 dBA. As such, cumulative noise impacts from off-site construction are conservatively considered to be significant.

b. Construction Vibration

(1) On-site Construction Vibration

As previously discussed, ground-borne vibration decreases rapidly with distance. Potential vibration impacts due to construction activities are generally limited to buildings/structures that are located in proximity of the construction site. The nearest related project to the Project Site is Related Project No. 121, located directly to the north across 2nd Street. The nearest sensitive building to the Project and Related Project No. 121 construction sites would be the L.A. Times Mirror building (which would be retained as part of Related Project No. 121), located adjacent to the Related Project No. 121 development area. As analyzed above, the estimated vibration level at the L.A. Times Mirror building resulting from Project construction (0.032 inch/second PPV) would be well below the significance criteria of 0.12 inch/second PPV. In addition, Related Project No. 121 is currently undergoing discretionary review by the City in connection with that project's environmental review process pursuant to CEQA and will be required to adopt mitigation measures, if appropriate, to avoid potential damage to the L.A. Times Mirror building. Furthermore, Related Project No. 121 will be subject to the provisions of LAMC Section

91.3307.1, which requires the protection of adjoining public and private property from damage during construction, remodeling, and demolition work. Therefore, based on the above, the Project would not contribute to a cumulative construction vibration impact with respect to building damage associated with ground-borne vibration from on-site sources.

With regard to human annoyance, the nearest sensitive uses to the Project and Related Project No. 121 include the Kawada Hotel (represented by receptor location R1) and the Higgins Building Lofts (represented by receptor location R4). As indicated in Table IV.G-21 on page IV.G-46, the estimated ground-borne vibration levels from the Project's construction activities at receptor locations R1 and R4 would be at least 15 dB below the 72 VdB significance criteria. In addition, concurrent construction of the Project and Related Project No. 121 could not result in a cumulative impact at receptor R6, since this related project and receptor represent the same location and development (i.e., the Times Mirror Square project); thus, Related Project No. 121's construction impacts would not affect its own on-site residents, as occupancy would occur after construction is complete. As such, the Project would not contribute to a cumulative construction vibration impact with respect to human annoyance associated with ground-borne vibration from on-site sources.

Therefore, cumulative construction vibration impacts pursuant to the criteria for building damage and human annoyance from on-site construction would be less than significant in the event concurrent construction of the Project and Related Project No. 121 occurs.

(2) Off-Site Construction Vibration

As previously discussed, based on FTA data, the vibration generated by a typical heavy truck is approximately 63 VdB (0.006 PPV) at a distance of 50 feet from the truck.[44] In addition, according to the FTA "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads." As discussed above, there are existing buildings located approximately 20 feet from the right-of-way of the anticipated haul route(s). These buildings are anticipated to be exposed to ground-borne vibration levels of approximately 0.022 PPV. Trucks from the related projects are expected to generate similar ground-borne vibration levels.

Therefore, the vibration levels generated from off-site construction trucks associated with the Project and other related projects along the anticipated haul route(s) would be well below the most stringent building damage criteria of 0.12 PPV

[44] *FTA, "Transit Noise and Vibration Impact Assessment," May 2006, Figure 7-3.*

for buildings extremely susceptible to vibration. Potential cumulative vibration impacts with respect to building damage from off-site construction would be less than significant.

As discussed above, potential vibration impacts associated with temporary and intermittent vibration from Project-related construction trucks traveling along the anticipated haul route(s) would be significant with respect to human annoyance. As the related projects would be anticipated to use similar trucks as the Project, it is expected that construction trucks from the related projects would generate similar vibration levels along the anticipated haul routes.

Therefore, to the extent that other related projects use the same haul route(s) as the Project, potential cumulative human annoyance impacts associated with temporary and intermittent vibration from haul trucks traveling along the designated haul routes would be significant.

c. Operational Noise

The Project Site and surrounding area is developed with uses that have previously generated and will continue to generate noise from a number of community noise sources, including mechanical equipment (e.g., HVAC systems), outdoor activity areas, and vehicle travel. Similar to the Project, each of the related projects would generate stationary-source and mobile-source noise due to ongoing day-to-day operations. These related projects generally are of a residential, retail, or commercial nature, and such uses are not typically associated with excessive exterior noise levels. However, each project would produce traffic volumes that are capable of generating roadway noise impacts. The potential cumulative noise impacts associated with on-site and off-site noise sources are addressed below.

(1) On-Site Stationary Noise Sources

Due to provisions set forth in the LAMC that limit stationary source noise from uses such as roof-top mechanical equipment and outdoor amplified sound system, noise levels would be less than significant (with mitigation, as appropriate) at the property line for each related project.

Therefore, based on the distance of the related projects from the Project Site and the operational noise levels associated with the Project, cumulative stationary source noise impacts associated with operation of the Project and related projects would be less than significant.

(2) Off-Site Mobile Noise Sources

The Project and related projects in the area would produce traffic volumes (i.e., off-site mobile sources) that would generate roadway noise. Cumulative noise impacts due to off-site traffic were analyzed by comparing the projected increase in traffic noise levels from existing conditions to Future Plus Project conditions to the applicable significance criteria. Future Plus Project conditions include traffic volumes from future ambient growth, the related projects, and the Project. The calculated traffic noise levels under existing conditions and Future Plus Project conditions are presented in Table IV.G-22 on page IV.G-58. As shown therein, cumulative traffic volumes would result in an increase ranging from 0.5 dBA (CNEL) along the roadway segment of 1st Street (between Hill Street and Los Angeles Street) to 1.9 dBA (CNEL) along the roadway segment of Broadway (between 2nd Street and 3rd Street).

The estimated noise increase would be below the 3 dBA significance criteria (applicable to noise levels fall within the normally unacceptable land use category). Therefore, cumulative noise impacts due to off-site mobile noise sources associated with the Project, future growth, and related projects would be less than significant.

Table IV.G-22
Cumulative Roadway Traffic Noise Impacts

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] CNEL (dBA)		Increase in Noise Levels due to Cumulative Plus Project, CNEL (dBA)	Significant Impact?
		Existing Without Project	Future Cumulative Plus Project		
Hill Street					
– Between 1st St. and 2nd St.	Office	68.8	69.5	0.7	No
– Between 2nd St. and 3rd St.	Hotel, Office	69.2	70.0	0.8	No
Broadway					
– Between Temple St. and 1st St.	Office, Park	68.7	70.2	1.5	No
– Between 1st St. and 2nd St.	Office	68.5	70.1	1.6	No
– Between 2nd St. and 3rd St.	Residential, Commercial	68.7	70.6	1.9	No
– Between 3rd St. and 4th St.	Commercial	68.4	70.2	1.8	No
– Between 4th St. and 5th St.	Residential, Commercial	68.9	70.7	1.8	No
Spring Street					
– Between Temple St. and 1st St.	Office, Park	67.9	68.9	1.0	No
– Between 1st St. and 2nd St.	Office	67.9	69.2	1.3	No
– Between 2nd St. and 3rd St.	Residential, Commercial	68.4	69.7	1.3	No
– Between 3rd St. and 4th St.	Office	68.7	70.1	1.4	No
– Between 4th St. and 5th St.	Park, Commercial	68.2	69.8	1.6	No
Main Street					
– Between Temple St. and 1st St.	Office	68.7	69.7	1.0	No
– Between 1st St. and 2nd St.	Office	69.2	70.2	1.0	No
– Between 2nd St. and 3rd St.	Residential, Commercial	70.2	71.2	1.0	No
– Between 3rd St. and 4th St.	Residential, Hotel	71.2	72.4	1.2	No
– Between 4th St. and 5th St.	Residential, Commercial	71.0	71.9	0.9	No

Table IV.G-22 (Continued)
Cumulative Roadway Traffic Noise Impacts

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels[a] CNEL (dBA)		Increase in Noise Levels due to Cumulative Plus Project, CNEL (dBA)	Significant Impact?
		Existing Without Project	Future Cumulative Plus Project		
1st Street					
– Between Hill St. and Broadway	Library, Office	69.3	69.8	0.5	No
– Between Broadway and Main St.	Park, Office	68.6	69.1	0.5	No
– Between Main St. and Los Angeles St.	Office	68.1	68.6	0.5	No
2nd Street					
– Between Hill St. and Broadway	Hotel, Office	68.7	70.3	1.6	No
– Between Broadway and Spring St.	Office	68.5	70.1	1.6	No
– Between Spring St. and Main St.	Residential, Commercial	68.0	69.5	1.5	No
– Between Main St. and Los Angeles St.	Library, Office	67.6	69.2	1.6	No
3rd Street					
– Between Hill St. and Broadway	Residential, Commercial	69.8	70.9	1.1	No
– Between Broadway and Main St.	Residential, Commercial	70.5	71.4	0.9	No
– Between Main St. and Los Angeles St.	Hotel, Commercial	70.7	71.4	0.7	No
4th Street					
– Between Hill St. and Broadway	Office	69.3	71.1	1.8	No
– Between Broadway and Main St.	Hotel, Commercial	69.7	71.4	1.7	No
– Between Main St. and Los Angeles St.	Residential, Office	69.8	71.2	1.4	No

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

Source: AES, 2019.

5. Mitigation Measures

a. Construction

As analyzed above, the Project's on-site construction activities would have the potential to result in significant noise impacts at one off-site sensitive receptor location (receptor location R6, which is the location of the proposed Times Mirror Square project, a future mixed-use development immediately north of the Project Site), but only if the Times Mirror Square project is completed and occupied prior to or during Project construction. Therefore, the following measure is provided to reduce the construction-related noise impact:

NOI-MM-1: A 12-foot-high temporary and impermeable sound barrier shall be erected along the northern property line of the Project Site between the construction area and the proposed mixed-use development located north of the Project Site across 2nd Street (receptor R6). Pedestrian access to/from the on-site Metro station shall be provided as required by and in consultation with Metro. The temporary sound barrier shall be designed to provide a minimum 10-dBA noise reduction at ground level. At plan check, building plans shall include documentation prepared by a noise consultant verifying compliance with this measure.

In the event the Times Mirror Square project is not completed and occupied prior to or during Project construction, this mitigation measure shall not be required.

b. Operation

As discussed above, operation of the Project would not result in a significant impact. Therefore, no mitigation is required.

6. Level of Significance After Mitigation

a. Construction Noise

(1) On-Site Construction Noise

The Project's noise impact from on-site construction would be reduced to a less-than-significant level at ground level with implementation of the mitigation measure provided above. Specifically, installation of a temporary sound barrier would reduce the noise generated by on-site construction activities at the ground level of receptor R6 (the Times Mirror Square project) by 10 dBA, which would reduce the construction-related noise

to below the significance criteria level. However, the temporary sound barrier would not be effective in reducing construction noise at the future residences at receptor R6, which would be located on the second story and above, starting at approximately 20 feet above grade. In order to be effective in reducing construction noise at all residences at receptor R6, the temporary noise barrier would need to be as high as the Project's 53-story building, which would not be feasible. There are no other feasible mitigation measures that could be implemented to reduce the temporary noise impact affecting the residential uses at the Times Mirror Square project as a result of on-site construction activities. As such, on-site construction noise impacts would remain significant and unavoidable. It is important to note that this impact would only occur if the Times Mirror Square project residences are completed and occupied prior to or during Project construction. If, however, the Times Mirror Square project is not completed and occupied prior to or during Project construction, the Project's construction-related noise impact at receptor R6, identified above (see Table IV.G-11 on page IV.G-29), would not occur, and mitigation would not be necessary.

On the other hand, if the Times Mirror Square project is not completed and occupied prior to or during Project construction and instead construction of that project occurs concurrently with Project construction, cumulative construction noise impacts associated with on-site noise sources would be significant and unavoidable.

(2) Off-Site Construction Noise

Project-level noise impacts from off-site construction traffic would be less than significant. However, cumulative noise levels due to construction truck traffic from the Project, adjacent Related Project No. 121, and other related projects is conservatively assumed to exceed the ambient noise level along the Los Angeles Street segment of the haul route by 5 dBA. Conventional mitigation measures, such as the construction of noise barrier walls to reduce the off-site construction noise impacts, would not be feasible as the barriers would obstruct access to other properties. As such, cumulative noise impacts from off-site construction would be significant and unavoidable. However, should peak construction traffic associated with the Times Mirror Square project be completed prior to commencement of Project construction, the cumulative off-site construction noise impact may not occur.

b. Construction Vibration

(1) On-Site Construction Vibration

Vibration levels generated by the Project's on-site construction activities at the adjacent off-site buildings would be well below the significance criteria for building damage. Based on the analysis presented above, Project-level and cumulative vibration impacts with respect to building damage would be less than significant.

Vibration levels from on-site construction activities at receptor location R6 (assuming the proposed mixed-use development is built and occupied prior or during Project construction) would exceed the significance criteria for human annoyance. Additional mitigation measures considered to reduce vibration impacts from on-site construction activities with respect to human annoyance included the installation of a wave barrier, which is typically a trench or a thin wall made of sheet piles installed in the ground (essentially a subterranean sound barrier to reduce noise). However, wave barriers must be very deep and long to be effective and are not considered cost effective for temporary applications, such as construction.[45] In addition, constructing a wave barrier to reduce the Project's construction-related vibration impacts would, in and of itself, generate ground-borne vibration from the excavation equipment. Furthermore, given the presence of a Metro station beneath 2nd Street and the station's subsurface facilities (all currently under construction) beneath the Project Site, installation of a wave barrier below ground would not be feasible. Thus, it is concluded that there are no feasible mitigation measures that could be implemented to reduce the temporary vibration impacts from on-site construction associated with human annoyance to a less-than-significant level. Therefore, Project-level vibration impacts from on-site construction activities with respect to human annoyance would remain significant and unavoidable at receptor location R6.

Based on the analysis presented above, however, in the event of concurrent construction of the Project and Related Project No. 121, cumulative vibration impacts with respect to human annoyance would be less than significant.[46]

(2) Off-Site Construction Vibration

Vibration levels generated by construction trucks (i.e., haul, delivery, and concrete trucks) along the Project's haul route(s) would be below the significance criteria for building damage. Based on the analysis presented above, Project-level and cumulative vibration impacts with respect to building damage would be less than significant.

Vibration levels from construction trucks would exceed the significance criteria for human annoyance at vibration sensitive receptors along the anticipated haul route(s), including Spring Street, 3rd Street, 4th Street, and Los Angeles Street. There are no feasible mitigation measures to reduce the potential vibration human annoyance impacts. Even though impacts would be temporary, intermittent, and limited to daytime hours when haul trucks are traveling within 20 feet of a sensitive receptor, Project-level and cumulative

---

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

[46] *Since Related Project No. 121 (the Times Mirror Square project) is the same location as receptor R6, its construction impacts cannot affect its own on-site residents.*

vibration impacts from off-site construction with respect to human annoyance would remain significant and unavoidable.

c. Operational Noise

Based on the analysis presented above, Project-level and cumulative impacts with regard to operational noise would be less than significant.