IV. Environmental Impact Analysis

I. Noise

1. Introduction

This section analyzes the potential noise and vibration impacts associated with the Project. Specifically, the analysis describes the existing noise environment within the Project area, estimates future noise and vibration levels at surrounding sensitive land uses resulting from construction and operation of the Project, identifies the potential for significant impacts, and provides mitigation measures to address significant impacts. In addition, an analysis of potential cumulative noise and vibration impacts is also provided. Noise calculation worksheets prepared by Acoustical Engineering Services (AES) are included in Appendix J of this Draft EIR.

2. Environmental Setting

a. Noise and Vibration Fundamentals

(1) Noise

(a) Fundamentals of Sound and Environmental Noise

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

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[1] *All sound levels measured in decibel (dB) in this study are relative to $2x10^{-5}$ N/m^2.*

Table IV.I-1
Typical Noise Levels

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

Source: Caltrans, Technical Noise Supplement (TeNS), Table 2-5, 2009.

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

(b) Outdoor Sound Propagation

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

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

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

In addition, structures (e.g., buildings and solid walls) and natural topography (e.g., hills and berms) that obstruct the line of sight between a noise source and a receptor further reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as "barrier insertion loss." If a receptor is located behind the wall but still has a view of the source (i.e., the line of sight is not fully blocked), some barrier insertion loss would still occur, but to a lesser extent. Additionally, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall reflects noise back to the receptor, thereby compounding the noise. Noise barriers can provide noise level reductions ranging from approximately 5 dBA (where the barrier just breaks the line of sight between the source and receiver) to an upper range of 20 dBA with a more substantial barrier.[5] Additionally, structures with closed windows can further attenuate exterior noise by a minimum of 25 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 are summarized below.

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[3] *U.S. Department of Transportation, Federal Highway Administration, Highway Noise Fundamentals, (Springfield, Virginia: U.S. Department of Transportation, Federal Highway Administration, September 1980), p. 97. A "hard" or reflective site does not provide any excess ground-effect attenuation and is characteristic of asphalt, concrete, and very hard packed soils. An acoustically "soft" or absorptive site is characteristic of normal earth and most ground with vegetation.*

[4] *Caltrans, Technical Noise Supplement (TeNS), Chapter 2.1.4.1, 2009.*

[5] *Ibid.*

[6] *Transportation Research Board, National Research Council, Highway Noise: A Design Guide for Highway Engineers, National Cooperative Highway Research Program Report 117.*

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

Statistical Sound Level (L_n). L_n is a statistical description of the sound level that is exceeded over some fraction of a given period of time. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_8 and L_{25} represent the noise levels that are exceeded 8 and 25 percent of the time, respectively, or for 5 and 15 minutes during a 1-hour period, respectively. The County of Los Angeles noise limits are provided in terms of statistical sound levels.

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

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

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, 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. An overview of the State, County and City regulations and policies that are relevant to construction and operation of the Project is provided below.

While the Project Site is located within the City of Los Angeles, the Ford Theatres are owned and operated by the County of Los Angeles. Accordingly, development of the Project Site is governed by the Los Angeles County Code. Noise-sensitive receptors adjacent to the Project Site, however, are within the City of Los Angeles. This analysis reviews both County and City regulations and assesses Project noise impacts in light of whichever is the more restrictive of the applicable policies and regulations from the County of Los Angeles and the City of Los Angeles. This means that noise impacts will be determined to be less than significant only if both County and City methodology determine impacts to be less than significant.

(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 standards 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

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[8] *Vibration levels used in this study are described in terms peak particle velocity level in the unit of inches per second.*

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

[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 this study are RMS and referenced to 1 micro-inch per second.*

upon the activity associated with the particular land use. Table IV.I-2 on page IV.I-7 provides the exterior noise standard associated with various land uses, as described by the State of California land use compatibility for community noise environment.

(2) County of Los Angeles Noise Standards

(a) Los Angeles County General Plan

Refer to Section IV.H, Land Use, of this Draft EIR for a listing of the General Plan policies that are applicable to noise. As discussed in the General Plan policy consistency analysis provided therein, the Project would be consistent with the applicable General Plan polices related to noise.

(b) County of Los Angeles Noise Control Ordinance

The Noise Control Ordinance of the County of Los Angeles (County Noise Ordinance Section 12.08.010, *et seq.*, of the Los Angeles County Code) identifies exterior noise standards for any source of sound, as well as specific exemptions for exterior noise sources. The primary components of the County Noise Ordinance are described below.

The County Noise Ordinance provides maximum exterior noise level standards for four general noise zones and establishes maximum exterior noise levels for each zone. These noise zones are:

1. Noise-Sensitive Areas—Noise-sensitive zones are designated by the County Health Officer.

2. Residential Properties—This category includes all types of residential developments and properties subject to residential zoning.

3. Commercial Properties—This category includes all types of commercial developments and also includes properties subject to commercial zoning classifications.

4. Industrial Properties—This category includes all properties developed with manufacturing uses and industrial zoning.

For each of these zones, the County Noise Ordinance states that exterior operational noise levels caused by Project-related on-site fixed sources (i.e., point noise sources) shall not exceed the levels identified in Table IV.I-3 on page IV.I-8, or the ambient noise level, whichever is greater, when the ambient noise level is determined

Table IV.I-2
Land Use Compatibility for Community Noise Exposure

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

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

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

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

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

Source: Office of Planning and Research, State of California General Plan Guidelines, October 2003.

without the noise source operating.[11] These standards are based on the duration of the noise. Thus, the louder the noise, the shorter the duration that such noise can last. To define these specific durations of noise, the noise metrics used include L_{50}, L_{25}, $L_{8.3}$, $L_{1.7}$, and L_{max}. These metrics are based upon a 1-hour timeframe and indicate exceedances of

[11] *Ambient noise level is the existing background noise level at the time of measurement or prediction.*

Table IV.I-3
County of Los Angeles Exterior Noise Standards

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Levels,[a] dBA
I	Noise-Sensitive Area[b]	Anytime	45
II	Residential Properties	10:00 P.M. to 7:00 A.M. 7:00 A.M. to 10:00 P.M.	45 50
III	Commercial Properties	10:00 P.M. to 7:00 A.M. 7:00 A.M. to 10:00 P.M.	55 60
IV	Industrial Properties	Anytime	70

[a] *This Table is used by the County to develop noise standards based on the duration of the noise source. These standards are described below.*

***Standard No. 1** shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level; or, if the ambient L_{50} exceeds the forgoing level, then the ambient L_{50} becomes the exterior noise level for Standard No. 1.*

***Standard No. 2** shall be the exterior noise level which may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from Standard 1 plus 5 dBA; or, if the ambient L_{25} exceeds the forgoing level, then the ambient L_{25} becomes the exterior noise level for Standard No. 2*

***Standard No. 3** shall be the exterior noise level which may not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level from Standard 1 plus 10 dBA; or, if the ambient $LB_{8.3}$ exceeds the forgoing level, then the ambient $L_{8.3}$ becomes the exterior noise level for Standard No. 3.*

***Standard No. 4** shall be the exterior noise level which may not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from Standard 1 plus 15 dBA, or, if the ambient $L_{1.7}$ exceeds the forgoing level, then the ambient $L_{1.7}$ becomes the exterior noise level for Standard No. 4.*

***Standard No. 5** shall be the exterior noise level which may not be exceeded for any period of time. Standard No. 4 shall be the applicable noise level from Standard 1 plus 20 dBA; or, if the ambient L_0 exceeds the forgoing level, then the ambient L_0 becomes the exterior noise level for Standard No. 4.*

[b] *Not defined in the County Noise ordinance. To be designated by the County Health Officer.*

Source: County of Los Angeles Ordinance No. 11743, Section 12.08.390

50, 25, 8.3, and 1.7 percent of the time, plus the maximum sound level during that time period.

The County Noise Ordinance identifies specific restrictions regarding construction noise. Pursuant to the County Noise Ordinance, the operation of equipment used in construction, drilling, repair, alteration or demolition work is prohibited between the hours of 7:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. or after 6:00 P.M. on Saturday, and anytime on Sundays or legal holidays if such noise would create a noise

disturbance across a residential or commercial real-property line.[12] The County Noise Ordinance further states the contractor must conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in Table IV.I-4 on page IV.I-10. All mobile and stationary internal-combustion-powered equipment and machinery are also required to be equipped with suitable exhaust and air-intake silencers in proper working order.

The Los Angeles County Code also provides exemptions from the construction standards set forth under Chapter 12.12 of the County Code. Specifically, Section 12.12.050 of the Los Angeles County Code provides an exemption for construction work performed with the County Engineer's permission if the County Engineer can make the finding that: 1) the work proposed to be done is effected with a public interest; 2) that hardship, injustice or unreasonable delay would result from the interruption of construction activities; or 3) that the building or structure involved is devoted or intended to be devoted to a use immediately incident to public defense. In addition, Section 12.12.060 of the Los Angeles County Code exempts construction work by public utilities that are subject to the jurisdiction of the Public Utilities Commission where such work is necessary for the preservation of life or property, and where such necessity makes it necessary to construct, repair or excavate during prohibited hours.

(3) City of Los Angeles Noise Regulations

Chapter XI of the LAMC (Noise Regulation) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences in the perceived level of different types of noise and/or noise sources. In accordance with the Noise Regulation, 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 Regulation. 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 Regulation states that the baseline ambient noise shall be the actual measured ambient noise level or the City's presumed ambient noise level, whichever is

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[12] *County of Los Angeles Ordinance No. 11743, codified in Los Angeles County Code Section 12.08.440. Noise disturbance is defined in Los Angeles County Code Section 12.08.230 as "an alleged intrusive noise which violates an applicable noise standard as set forth in this chapter." The County Health Officer has the authority to define and determine the extent of a noise disturbance on a case-by-case basis.*

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

Table IV.I-4
County of Los Angeles Construction Noise Limits

	Noise Limits, dBA (L_{eq})		
	Single-Family Residential	**Multi-Family Residential**	**Commercial**[a]
Residential Structures			
Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment			
Daily, except Sundays and legal holidays, 7:00 A.M. to 8:00 P.M.	75	80	85
Daily, 8:00 P.M. to 7:00 A.M. and all day Sunday and legal holidays	60	64	70
Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment			
Daily, except Sundays and legal holidays, 7:00 A.M. to 8:00 P.M.	60	65	70
Daily, 8:00 P.M. to 7:00 A.M. and all day Sunday and legal holidays	50	55	60
		All Structures	
Business Structures			
Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment			
Daily, including Sundays and legal holidays, all hours		85	

[a] *Refers to residential structures within a commercial area. This standard does not apply to commercial structures.*

Source: County of Los Angeles Ordinance No. 11743, Section 12.08.390

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 Regulation indicates 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 are set forth in the LAMC Section 111.03 and are provided in Table IV.I-5 on page IV.I-11. As indicated therein, for residential-zoned areas,

Table IV.I-5
City of Los Angeles Presumed Ambient Noise Levels

Zone	Daytime (7 A.M. to 10 P.M.) dBA (L_{eq})	Nighttime (10 P.M. to 7 A.M.) dBA (L_{eq})
Residential, School, Hospitals, Hotels	50	40
Commercial	60	55
Manufacturing (M1, MR1 and MR2)	60	55
Heavy Manufacturing (M2 and M3)	65	65

Source: City of Los Angeles Municipal Code, Section 111.03.

the presumed ambient noise level is 50 dBA during the daytime and 40 dBA during the nighttime. As further discussed below, the measured existing ambient noise levels in the vicinity of the Project Site exceed these presumed ambient noise levels.

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

In addition, the City's Noise Regulation Section 112.05 sets 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] Section 41.40 of the LAMC prohibits construction noise that disturbs persons occupying sleeping quarters in any

[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 base drum beats, or the discharge of firearms.*

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

dwelling, hotel, or apartment or other place of residence between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. and after 6:00 P.M. on Saturday, and at any time on Sunday or City-observed holidays. Construction hours may be extended with approval from the Executive Director of the Board of Police Commissioners.

4) Ground-Borne Vibration

Available guidelines from the FTA are utilized to assess impacts due to ground-borne vibration. 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.[17] As discussed above, building vibration damage is measured in PPV described in the unit of inches per second. Table IV.I-6 on page IV.I-13 provides the FTA vibration criteria applicable to construction activities. According to FTA guidelines, a vibration criterion of 0.20 PPV should be considered as the significant impact level for non-engineered timber and masonry buildings. Structures or buildings constructed of reinforced concrete, steel, or timber, have a vibration damage criterion of 0.50 PPV pursuant to the FTA guidelines.

In addition to the FTA Construction Vibration Impact Criteria for Building Damage, the FTA guidance manual also provides vibration criteria for human annoyance for various uses. These criteria were established primarily for rapid transit (rail) projects and, as indicated in Table IV.I-7 on page IV.I-14, 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

The predominant source of noise in the vicinity of the Project Site is vehicular traffic on adjacent roadways, particularly Cahuenga Boulevard and the nearby U.S. 101 Freeway. Within the Project Site, noise sources include operation of the Amphitheatre and outdoor plaza areas as well as use of the surface parking areas.

(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 residences, transient lodgings, schools, libraries, churches,

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

Table IV.I-6
Federal Transit Administration Construction Vibration Impact Criteria for Building Damage

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Source: Federal Transit Administration, 2006.

hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks are generally more sensitive to noise than are commercial and industrial land uses.[18]

Based on a review of the land uses in the Project area, a total of four off-site noise receptor locations were selected to represent noise sensitive uses in the Project area. As discussed below, noise measurements were conducted at these locations, in addition to one on-site location, to establish baseline noise conditions in the Project area. The five noise measurement locations are shown on Figure IV.I-1 on page IV.I-15 and described in Table IV.I-8 on page IV.I-16.

(2) Ambient Noise Levels

To establish baseline noise conditions, existing ambient noise levels were monitored at the four representative off-site receptor locations in the vicinity of the Project Site and the one on-site location, as shown on Figure IV.I-1. The baseline noise monitoring program was conducted on February 19 to February 20, 2014 using a Quest Technologies Model 2900 Integrating/Logging Sound Level Meter.[19] Two 15-minute measurements were conducted at three of the off-site receptor locations during daytime and nighttime hours. A 24-hour measurement was conducted at the off-site receptor location R3 (the Hollywood Bowl) and at the Project Site (receptor R5). Furthermore, a 15-minute measurement is a reasonable duration for sampling ambient noise levels where street traffic is the dominant source (typical of urban environments), as traffic noise generally does not vary significantly within an hour.

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

[19] *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.*

Table IV.I-7
Federal Transit Administration Vibration Impact Criteria for Human Annoyance

Land Use Category	Ground-Borne Vibration Impacts Levels, VdB		
	Frequent Events[a]	Occasional Events[a]	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.

Table IV.I-9 on page IV.I-17 provides a summary of the ambient noise measurements taken at the five receptor locations. Based on field observations, the ambient noise at the measurement locations is dominated by local traffic and other typical urban noises. As indicated in Table IV.I-9, the existing daytime ambient noise levels at the four off-site locations ranged from 50.0 dBA (L_{eq}) at Location R3 to 75.9 dBA (L_{eq}) at Location R4, while the measured nighttime ambient noise levels ranged from 46.7 dBA (L_{eq}) at Location R3 to 75.9 dBA (L_{eq}) at Location R4. The existing ambient noise levels at off-site residential locations are above the City's presumed daytime and nighttime ambient noise standards of 50 dBA (L_{eq}) and 45 dBA (L_{eq}) for residential uses, respectively, as presented above in Table IV.I-5 on page IV.I-11. Therefore, the measured existing ambient noise levels are used as the baseline conditions for the purposes of determining Project impacts. The measured existing ambient noise level at the Project Site ranged from 65.1 dBA (L_{eq}) to 70.9 dBA (L_{eq}), with a 24-hour average sound level of 74.8 dBA CNEL.

In addition to the ambient noise measurements in the vicinity of the Project Site, the existing traffic noise on local roadways in the surrounding areas were calculated to quantify the 24-hour CNEL noise levels using information provided by the Project's traffic study.[20] Eleven (11) roadway segments were selected for the existing noise analysis, based on

[20] *Gibson Transportation Consulting, Inc., Transportation Study for the Ford Theatres Project, March 2014. See Appendix L of this Draft EIR.*

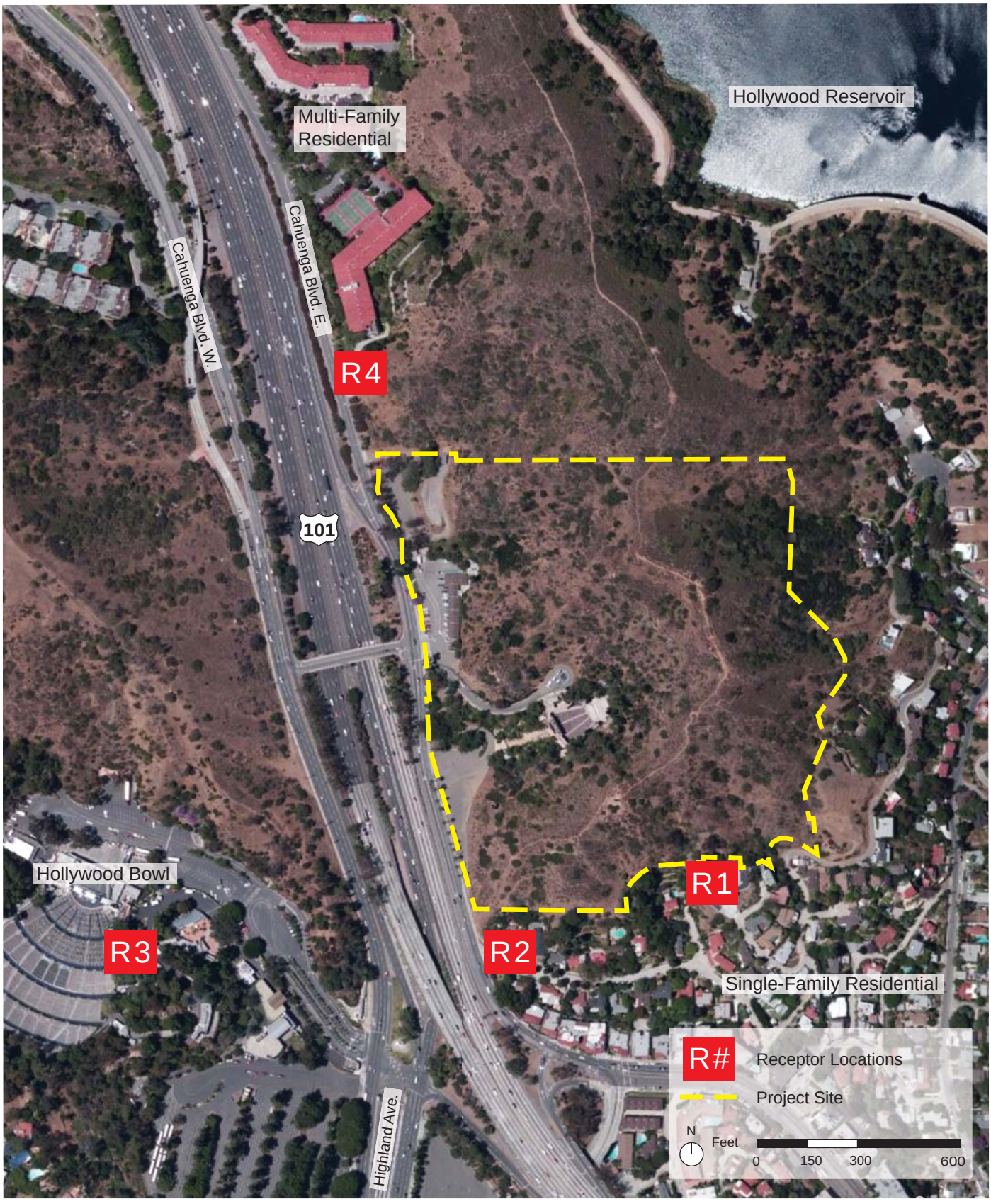

Figure IV.I-1
Noise Monitoring Locations

Source: AES, 2014; Google Earth, 2013.

Table IV.I-8
Description of Noise Measurement Locations

Receptor Location	Description	Approximate Distance from Measurement Location to Nearest Project Site Boundary[a]	Nearest Noise-Sensitive Land Use(s)
R1	Single-family residence on San Marcos Drive, southeast of the Project Site	25 feet	Single-Family Residential
R2	Single-family residence on Cahuenga Terrace, south of the Project Site	50 feet	Single-Family Residential
R3	The Hollywood Bowl, west of the Project Site	1,200 feet	Amphitheater
R4	Multi-family residence on the east side of Cahuenga Boulevard East, north of the Project Site	325 feet	Multi-Family Residential
R5	Project Site (noise meter was placed at the existing entrance gate).	0 feet	Project Site

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

Source: Acoustical Engineering Services (AES), 2014.

proximity to noise sensitive uses along the roadway segments and potential increases in traffic volume from the Project. Traffic noise levels were calculated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) and traffic volume data from the Project's Transportation Study.[21] The TNM traffic noise prediction model calculates the hourly L_{eq} noise levels based on specific information including the hourly traffic volume, vehicle type mix, vehicle speed, and lateral distance between the noise receptor and the roadway. To calculate the 24-hour CNEL levels, the hourly L_{eq} levels were calculated 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 Volume (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.I-10 on page IV.I-18.

Table IV.I-11 on page IV.I-19 provides the calculated traffic noise levels for the analyzed local roadway segments based on existing traffic volumes. Traffic noise levels were calculated for the commuter peak hour, the peak hour preceding an on-site event,

[21] *Ibid.*

Table IV.I-9
Existing Ambient Noise Levels

Receptor Location	Noise-Sensitive Land Use	Measured Noise Levels, L_{eq} (dBA)		CNEL (24-Hour)
		Daytime Hours (7:00 A.M.–10:00 P.M.)	Nighttime Hours (10:00 P.M.–7:00 A.M.)	
R1	Residential	51.3	50.9	55.7[a]
R2	Residential	75.3	75.3	80.0[a]
R3	Amphitheater	50.0–57.3	46.7–55.1	59.3
R4	Residential	75.9	75.9	80.6[a]
R5	Project Site	66.9–70.2	65.1–70.9	74.8

[a] *Estimated based on short-term (15-minute) noise measurement based on FTA procedures.*
Source: AES, 2014.

and a 24-hour period for both a weekday and weekend. As shown therein, the existing CNEL due to surface street traffic volumes ranges from 65.6 dBA CNEL along Odin Avenue (south of Cahuenga Boulevard North) to 75.6 dBA CNEL along Highland Boulevard (south of Odin Avenue) during a weekday. The existing traffic noise levels during a weekend day ranges from 63.6 dBA CNEL along Odin Avenue (south of Cahuenga Boulevard North) to 74.8 dBA CNEL along Highland Boulevard (south of Odin Avenue). Currently, the existing traffic related noise levels along Odin Avenue fall within the conditionally acceptable noise levels for multi-family residential uses (i.e., 60 to 70 dBA CNEL). The existing traffic noise levels along Cahuenga Boulevard North, Cahuenga Boulevard East, Barham Boulevard, and Highland Boulevard (between Hollywood Bowl Road and Odin Avenue) fall within the normally unacceptable noise levels for residential uses (i.e., between 70 and 75 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 (i.e., automobiles, 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."[22] Trucks and buses typically generate ground-borne vibration velocity levels of approximately

[22] *Federal Transit Administration (FTA), "Transit Noise and Vibration Impact Assessment," Page 7-1, 2006.*

Table IV.I-10
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, 2014.

63 VdB at a distance of 50 feet, and these levels could reach 72 VdB when trucks and buses pass over bumps in the road. Per FTA, 75 VdB is the dividing line between barely perceptible and distinctly perceptible.[23] Therefore, it is expected that the existing ground vibration environment in the vicinity of the Project Site would be below the perceptible level.

3. Project Impacts

a. Methodology

(1) On-Site Construction Activities

Construction noise impacts due to on-site construction activities were evaluated by calculating the Project's construction-related noise level at representative sensitive receptor locations and comparing these Project construction-related noise levels to the existing ambient noise levels (i.e., noise levels without construction noise from the Project). Construction noise associated with the Project was analyzed based on the Project's potential construction equipment inventory, construction durations, and construction schedule. The construction noise model for the Project is based on construction equipment noise levels as published by Federal Highway Administration (FHWA) "Roadway Construction Noise Model (FHWA 2006)."[24] The ambient noise levels at surrounding

[23] *FTA, "Transit Noise and Vibration Impact Assessment," Figure 10-1, May 2006.*

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

Table IV.I-11
Existing Roadway Traffic Noise Levels

Roadway Segment	Adjacent Land Use	Distance to Roadway Center Line (feet)	Calculated Traffic Noise Levels,[a] (dBA)						Noise-Sensitive Land Uses	Existing Noise Exposure Compatibility Category[b]
			Weekday			Weekend				
			Peak Hour[c] L_{eq}	Evening Peak Hour w/ Event[d] L_{eq}	24-Hour CNEL	Midday Peak Hour w/ Event[e] L_{eq}	Evening Peak Hour w/ Event[f] L_{eq}	24-Hour CNEL		
Barham Boulevard										
– East of Cahuenga Blvd. East	Multi-Residential	40	76.0	75.0	75.0	73.5	73.8	72.5	Yes	Normally Unacceptable
Cahuenga Boulevard East										
– Between Barham Blvd. and Pilgrimage Bridge	Multi-Residential	30	75.1	74.3	74.1	71.1	71.6	70.1	Yes	Normally Unacceptable
– Between Pilgrimage Bridge and US 101 NB off–ramp	Residential	30	75.3	75.0	74.3	71.7	73.7	70.8	Yes	Normally Unacceptable
Cahuenga Boulevard West										
– South of Barham Blvd.	Residential, School	70	71.9	71.1	71.0	69.3	69.7	68.3	Yes	Normally Unacceptable
– North of Pilgrimage Bridge	Multi-Residential	70	73.3	71.7	72.3	71.8	71.4	70.8	Yes	Normally Unacceptable
– Between Pilgrimage Bridge and Hollywood Bowl Rd.	Park	70	73.3	71.9	72.3	72.2	71.1	71.2	Yes	Normally Unacceptable
Cahuenga Boulevard North										
– Between US 101 NB off–ramp and Odin Ave.	Park	35	75.9	74.1	74.9	71.1	72.7	70.1	Yes	Normally Unacceptable
– South of Odin Ave.	Park	40	76.0	73.5	75.0	70.2	72.4	69.2	Yes	Normally Unacceptable

Table IV.I-11 (Continued)
Existing Roadway Traffic Noise Levels

Roadway Segment	Adjacent Land Use	Distance to Roadway Center Line (feet)	Calculated Traffic Noise Levels,[a] (dBA)						Noise-Sensitive Land Uses	Existing Noise Exposure Compatibility Category[b]
			Weekday			Weekend				
			Peak Hour[c] L_{eq}	Evening Peak Hour w/ Event[d] L_{eq}	24-Hour CNEL	Midday Peak Hour w/ Event[e] L_{eq}	Evening Peak Hour w/ Event[f] L_{eq}	24-Hour CNEL		
Odin Avenue										
– South of Cahuenga Blvd. N	Multi-Residential	35	66.5	67.3	65.6	64.5	67.6	63.6	Yes	Conditionally Acceptable
Highland Avenue										
– Between Hollywood Bowl Rd. and Odin Ave.	Park	90	73.4	72.5	72.5	72.4	71.7	71.4	Yes	Normally Unacceptable
– South of Odin Ave.	Multi-Residential, Hotel, Commercial	45	76.6	75.5	75.6	75.8	74.6	74.8	Yes	Clearly Unacceptable

[a] *Detailed calculation worksheets are included in Appendix J.*

[b] *Noise compatibility is based on the most stringent land use, per City's land use compatibility as provided in Table IV.I-2 on page IV.I-7 and the higher of the calculated CNEL during weekday and weekend days.*

[c] *Representing the commuter peak-hour period (i.e., the busiest one hour during the A.M. peak period between 7:00 A.M. and 10:00 A.M. or the P.M. peak hour between 4:00 P.M. and 6:00 P.M.)*

[d] *Representing the one hour period preceding a weekday evening event (i.e., 7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

[e] *Representing the one hour period preceding a weekend midday event (11:00 A.M. to 12:00 P.M. for a 12:00 P.M. event).*

[f] *Representing the one hour period preceding a weekend peak-hour event (7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

Source: AES, 2014.

sensitive receptor locations were based on field measurement data (see Table IV.I-9 on page IV.I-17). 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. Additional noise attenuations were assigned to receptor locations where the line of sight to the Project Site was interrupted by the presence of intervening structures.

(2) Off-Site Construction Haul Trucks

Project-related off-site construction haul trucks noise impacts 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 Project's construction traffic analysis (refer to Section IV.K, Traffic, Access, and Parking, of this Draft EIR). The TNM noise model calculates the hourly L_{eq} noise levels generated by construction-related haul trucks. Noise impacts were determined by comparing the predicted noise level with that of the existing ambient noise levels along the Project's haul route.

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

On-site stationary point-source noise impacts were evaluated by identifying the noise levels that would be generated by the Project, calculating the noise level from each noise source at the surrounding sensitive receptor property line locations, and comparing such noise levels to ambient noise levels to determine significance. The maximum allowable noise emission level from the on-site noise sources (e.g., outdoor mechanical equipment, amplified sound system, outdoor spaces, and parking facilities) was calculated based on typical sources levels and the maximum sound level permitted by the County.

(4) Off-Site Roadway Noise (Operation)

As discussed in Section 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 noise impacts.

(5) Construction Vibration

Ground-borne vibration impacts due to Project construction activities were evaluated by identifying potential vibration sources (i.e., construction equipment), estimating the

vibration levels at the potentially affected receptor, and comparing with the Project significance thresholds, as described below.

(6) Operational Vibration

The primary sources of vibration associated with operation of the Project would include passenger vehicle circulation within the proposed parking structures, which would be similar to the existing vibration levels at the existing surface parking lots. The Project would also include a new central plant, emergency generator, and typical commercial-grade air ventilation system (mounted at the roof level), which would incorporate vibration attenuation mounts (to reduce the vibration transmission to the building). Typically, ground-borne vibration attenuates rapidly as a function of distance from the vibration source. Therefore, Project operations would not increase the existing vibration levels in the immediate vicinity of the Project Site, and as such, vibration impacts associated with Project operations would be less than significant. Accordingly, the ground-borne vibration analysis presented in this report is limited to Project-related construction activities.

b. Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, Project impactswith regard to noise would be significant if the Project would 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;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the vicinity of the project above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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; or
- 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.

(1) Construction Noise

The analysis of construction noise was conducted based on the use of the more restrictive thresholds or limitations established between the City of Los Angeles *L.A. CEQA Thresholds Guide* and the County's Noise Ordinance. The City's threshold for construction noise lasting more than 10 days is 5 dBA above the ambient, whereas the County's construction noise limit is 60 dBA at residential uses. Thus, the more restrictive threshold or limit would depend on the existing ambient noise levels. Specifically, if the existing ambient noise level at the sensitive receptor is higher than 60 dBA, the County's noise limit (i.e., 60 dBA) would be more restrictive than the City's limit (ambient plus 5 dBA). However, if the existing ambient noise level at the sensitive receptor is less than 55 dBA, the City's limit (e.g., ambient of 54 dBA plus 5 dBA is equal to 59 dBA) is more restrictive than the County's limit (60 dBA). In addition to the allowable construction noise levels, the City and County also have limitations regarding hours for construction activities. The City limits construction activities between the hours of 7 A.M. to 9 P.M. (within 500 feet of a residential use), while the County limits daytime construction limits from 7 A.M. to 8 P.M. Based on these facts, the following thresholds have been utilized in determining significant impacts associated with construction activities:

- Construction activities would exceed the ambient noise levels by 5 dBA at noise-sensitive receptors with an existing ambient noise level of less than 55 dBA (L_{eq}); or

- Construction activities would exceed 60 dBA (L_{eq}) at noise-sensitive receptors with an existing ambient level between 55 and 65 dBA (L_{eq}); or

- Construction activities would exceed the ambient noise levels at noise-sensitive receptors with an existing ambient level greater than 65 dBA (L_{eq}).

(2) Construction Vibration

Neither the City nor the County has a significance threshold to assess vibration impacts with respect to building damage during construction. Thus, based on 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 that are extremely susceptible to vibration damage, such as historic buildings.

With respect to human annoyance, the County has a vibration limit of 0.01 inch/second, which is equal to 80 VdB. However, the vibration limit as provided by the FTA guidelines is 72 VdB, which is more stringent than the County's limit. Therefore, using the more stringent limit, construction vibration impacts associated with human annoyance would be significant if the following were to occur:

- Project construction activities cause ground-borne vibration levels to exceed 72 VdB at the off-site sensitive uses.

(3) Operational Noise

In the context of the above questions from Appendix G of the CEQA Guidelines, the thresholds of significance for the Project's on-site operational noise sources are based on the County's Noise Ordinance (i.e., not to exceed the ambient), which are more stringent than the City's Noise Ordinance (i.e., increase the ambient by 5 dBA). Neither the City nor the County Noise Ordinances are applicable to the off-site traffic traveling on public roads. Therefore the following thresholds provided in the *L.A. CEQA Threshold Guides*, are used for off-site roadway noise impacts:

- Project off-site noise sources (i.e., roadway traffic noise) cause 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.I-2 on page IV.I-7 for a description of these categories); or

- Project off-site noise sources cause the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 5 dBA in CNEL or greater; or

- Project on-site (i.e., non-roadway) noise sources such as outdoor building mechanical/electrical equipment, outdoor activities, or parking facilities generate noise levels that would exceed the ambient noise level (L_{eq}) at noise sensitive receptors.

As discussed in the Initial Study prepared for the Project, which is included in Appendix A of this Draft EIR, the Project is not located within an airport land use plan or

within 2 miles of a public or private airport, or within the vicinity of a private airstrip. Therefore, the Project would not expose people residing or working in the Project area to excessive noise levels associated with a public or private airport or a private airstrip. As such, no further analysis of airport operation-related noise is necessary.

c. Project Design Features

The Project includes the following Project Design Features related to Project operations:

Project Design Feature I-1: Project-related outdoor mechanical equipment shall be designed to meet the County's Noise Ordinance.

Project Design Feature I-2: The design of the project amplified sound system for the Amphitheater shall include the sound level regulator programmed to a maximum sound level of 95 dBA, as measured in "slow" response, at the house mixer locations.

Project Design Feature I-3: The building structure for the 299-seat theatre and the Flex Space shall provide a minimum 25 dBA indoor to outdoor noise reduction.

d. Analysis of Project Impacts

(1) Construction Noise

Project construction is anticipated to occur over several phases and may be completed as early as 2020. Construction of the Project would include demolition of several existing structures and surface parking areas, grading and excavation, and construction of new structures and related infrastructure. It is estimated that approximately 107,094 cubic yards of export would be required for the Project.

(a) On-Site Construction Noise

Noise impacts from Project construction activities occurring within the Project Site would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noise-generating construction activities, and the relative distance to noise sensitive receptors. Construction activities would generally include demolition, grading and excavation, and building construction. Each stage of construction would involve the use of various types of construction equipment and would, therefore, have its own distinct noise characteristics. Demolition generally involves the use of backhoes, front-end loaders, and heavy-duty trucks. Grading and excavation typically requires the use of earth moving equipment, such as excavators, front-end loaders, and heavy-duty trucks. Building construction typically involves the use of cranes, forklifts,

concrete trucks, 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 that would be used for Project construction 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.I-12 on page IV.I-27. These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites often operates 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 stage is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage.[25] These noise levels are typically associated with multiple pieces of equipment operating simultaneously.

Table IV.I-13 on page IV.I-28 provides the estimated construction noise levels for various construction stages at the off-site noise sensitive receptors. The estimated noise levels represent the worst-case scenario in which all construction equipment was assumed to operate simultaneously and was assumed to be located at the construction area nearest to the affected receptors. These assumptions represent the worst-case noise scenario as construction activities would typically be spread out throughout the entire site further away from the affected receptors. As indicated in Table IV.I-13, the estimated construction noise levels at the nearest off-site receptors R1, R2 and R4 would be well below the existing daytime ambient noise levels. At receptor R3, the estimated construction-related noise levels would be consistent with the lowest measured ambient noise levels. The estimated construction-related noise levels would be below the Project significance threshold. Therefore, noise impacts associated with the Project's on-site construction activities would be less than significant.

(b) Off-Site Construction Noise

In addition to on-site construction noise sources, materials delivery, concrete mix, haul trucks, and construction worker vehicles would require access to the Project Site during the construction phase. The major noise sources associated with off-site construction trucks would be associated with haul and delivery trucks. Construction trucks

[25] *Pursuant to the FHWA Roadway Construction Noise Model User's Guide, 2005, 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.I-12
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
Dump/Haul Truck	40	76
Excavator	40	81
Paver	50	77
Pump	50	81
Roller	20	80
Rubber Tired Loader	40	79
Tractor/Loader/Backhoe	40	80
Delivery Truck	40	74
Welders	40	74

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

would generally access the Project Site from the US-101. Inbound traffic would travel northbound on Cahuenga Boulevard East from the US-101 to the Project Site. Outbound traffic would travel northbound on Cahuenga Boulevard East to the US-101.

The peak period with the highest number of construction trucks (haul and delivery trucks) would occur during the combined site grading/excavation/building construction phase. During this peak period, there would be a maximum of 64 haul and 28 delivery coming to and leaving the Project Site (equal to 92 haul truck trips) per day. There would also be haul trucks and delivery trucks during other construction phases of the Project. However, the level of construction-related truck activity during the other phases would be lower with a maximum of 6 to 16 delivery/haul trucks per day. Therefore, to present a worst-case analysis, the analysis of off-site construction truck traffic noise impacts is based on the haul truck trips during a maximum worst-case day during the peak construction

Table IV.I-13
Construction Noise Impacts

Off-Site Receptor Location	Approximate Linear Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases L_{eq} (dBA)				Measured Ambient Noise Levels, L_{eq} (dBA)	Significance Threshold,[a] L_{eq} (dBA)	Significant Impact?
		Demolition	Grading/ Excavation	Building Foundation/ Construction	Landscape			
R1	675	43.4	40.9	40.9	39.1	51.3	56.3	No
R2	240	62.4	59.9	59.8	58.1	75.2	75.2	No
R3	1000	50.0	47.5	47.4	45.7	50.0	55.0	No
R4	325	54.8	52.3	52.2	50.5	75.9	75.9	No

[a] *Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA where the ambient noise level is less than 55 dBA and equal to the ambient where the ambient noise level is greater than 65 dBA.*

Source: AES, 2014.

phase. Based on an eight-hour workday and a uniform distribution of trips, there would be a maximum of 12 truck trips per hour during the peak construction period. Table IV.I-14 on page IV.I-30 presents the estimated construction-related haul truck noise levels along the proposed haul routes with noise sensitive receptors. As indicated on Table IV.I-14, the noise level generated by haul trucks would be well below the existing daytime ambient noise level at the noise sensitive receptors along the haul routes. Therefore, noise impacts from off-site construction traffic would be less than significant.

(2) Construction Vibration

Construction activities can generate varying degrees of ground vibration, depending on the construction procedures and the type of construction equipment used. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receptor buildings. The results from vibration can range from no perceptible effects at the lowest vibration levels to low rumbling sounds and perceptible vibration at moderate levels. However, ground-borne vibrations from construction activities rarely reach levels that damage structures. Project construction activities would generate ground-borne vibration during site demolition and excavation/ grading activities when heavy construction equipment, such as large bulldozers, would be used. The FTA has published standard vibration velocities for various construction equipment operations. The typical vibration levels (in terms of inch-per-second Peak Particle Velocity, PPV) at a reference distance of 25 feet for construction equipment anticipated to be used during Project construction are listed in Table IV.I-15 on page IV.I-30.[26] Also included in Table IV.I-15 are the estimated vibration velocity levels at the nearest off-site structures to the Project construction area. As indicated in Table IV.I-15, vibration velocities from typical heavy construction equipment operations that would be used during construction of the Project would range from 0.003 to 0.210 PPV at 25 feet from the equipment. The estimated vibration velocity levels (from all construction equipment) would be well below the Project significance thresholds. Therefore, vibration impacts associated with potential building damage to off-site building structures during construction activities would be less than significant.

The existing on-site Amphitheatre is a historic structure. As discussed above, the appropriate significance threshold for older buildings that are susceptible to building damage is 0.12 PPV. Vibration velocities from typical heavy construction equipment operations that would be used during construction of the Project would range from 0.003 to

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

Table IV.I-14
Off-Site Construction Haul Truck Noise Impacts

Haul Routes with Noise Sensitive Receptor	Maximum Number of Haul Truck Trips per Hour	Estimated Noise Levels from Haul Trucks, L_{eq} (dBA)	Measured Ambient Noise Levels,[a] L_{eq} (dBA)	Significance Threshold,[b] L_{eq} (dBA)	Significant Impact?
Cahuenga Boulevard East—South of Project Site (receptor R2)	12	64.8	75.2	75.2	No
Cahuenga Boulevard East—North of Project Site (receptor R4)	12	54.6	75.9	75.9	No

[a] *Measured daytime ambient noise levels. (See Table IV.I-9 on page IV.I-17).*

[b] *Significance thresholds are equivalent to the measured daytime ambient noise levels.*

Source: AES, 2014.

Table IV.I-15
Construction Vibration Impacts—Building Damage

Equipment	Reference Vibration Velocity Levels at 25 ft. inch/second (PPV)	Estimated Vibration Velocity Levels at the Nearest Off-Site Structures from the Project Construction Equipment, inch/second (PPV)			
		240 ft. to the South (residential building)	325 ft. to the North (apartment building)	775 ft. to the East (residential building)	850 ft. to the West (Hollywood Bowl)
Vibratory roller	0.210	0.007	0.005	0.001	0.001
Large bulldozer	0.089	0.003	0.002	0.001	<0.001
Caisson drilling	0.089	0.003	0.002	0.001	<0.001
Loaded trucks	0.076	0.003	0.002	<0.001	<0.001
Jackhammer	0.035	0.001	0.001	<0.001	<0.001
Small bulldozer	0.003	<0.001	<0.001	<0.001	<0.001
Significance Threshold, inch/second (PPV)		**0.2**	**0.2**	**0.2**	**0.2**

Source: FTA, 2006, AES, 2014.

0.210 PPV at 25 feet from the equipment. Therefore, potential vibration impacts from building damage could be significant. With implementation of Mitigation Measure I-3 provided below, which would require that construction activities in close proximity (within approximately 20 feet) of the existing Amphitheatre structure utilize smaller equipment, such as a small bulldozer and handheld compactors, vibration levels would be reduced to

less than 0.12 PPV.. Therefore, with implementation of this mitigation measure, potential vibration impacts with respect to building damage would be reduced to less than significant.

Table IV.I-16 on page IV.I-32 provides the estimated vibration levels relative to human annoyance due to construction equipment at the off-site sensitive uses. As indicated in Table IV.I-16, the estimated ground-borne vibration levels from construction equipment would be below the significance threshold for human annoyance at all off-site sensitive receptors. Therefore, vibration impacts on human annoyance during the construction period would be less than significant.

Haul trucks during construction would generate ground-borne vibration as they travel along the Project designated haul routes. Thus, an analysis of potential vibration impacts associated with building damage from ground-borne vibration along the local haul route was conducted. Based on FTA data, the vibration generated by a typical truck would be approximately 63 VdB (0.006 PPV) at a distance of 50 feet from the truck.[27] At the shortest distance between haul trucks and sensitive receptors, haul/delivery trucks would be approximately 10 feet from nearby sensitive receptors along Cahuenga Boulevard East

(between the 101 Freeway northbound off-ramp and the Project Site). Vibration levels generated by the haul trucks at this distance would be 0.063 PPV, which would be well below the building damage threshold of 0.2 PPV for the residential buildings along Cahuenga Boulevard East. In addition, vibration levels generated by Project construction trucks along the haul routes would be similar to the existing truck traffic (e.g., delivery and trash collection trucks) already traveling on the same roads. Therefore, potential impacts associated with vibration from delivery/haul trucks traveling along the designated haul routes would be less than significant.

(3) Operational Noise

This section provides a discussion of potential operational noise impacts on nearby noise-sensitive receptors. Specific operational noise sources addressed herein include on-site stationary noise sources, which consist of outdoor mechanical equipment (e.g., HVAC ventilation system and exhaust fans), activities associated with the outdoor spaces and parking facilities, and off-site mobile (roadway traffic) noise sources.

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

Table IV.I-16
Construction Vibration Impacts—Human Annoyance

Equipment	Reference Vibration Velocity Levels at 25 ft., VdB	Estimated Vibration Velocity Levels at the Off-Site Sensitive Uses, VdB			
		R1 (675 feet from construction site)	R2 (240 feet from construction site)	R3 (1,000 feet from construction site)	R4 (325 feet from construction site)
Vibratory roller	94	51	65	46	61
Large bulldozer	87	44	58	39	54
Caisson drilling	87	44	58	39	54
Loaded trucks	86	43	57	38	53
Jackhammer	79	36	50	31	46
Small bulldozer	58	15	29	10	25
Significance Threshold, VdB		72	72	72	72

Source: FTA, 2006, AES, 2014.

(a) On-Site Stationary Noise Sources

(i) Mechanical Equipment

As part of the Project, new mechanical equipment (e.g., HVAC ventilation equipment and exhaust fans) would be located in various locations throughout the Project Site. Although operation of this equipment would generate noise, Project Design Feature I-1, provided above would ensure compliance with the County's Noise Ordinance, which would limit noise from mechanical equipment from exceeding the ambient noise levels on the premises of other occupied properties. In addition, as the Project's mechanical equipment would be designed to minimize noise to on-site uses and patrons, noise levels to off-site receptors from mechanical equipment would be further reduced. Therefore, noise impacts from mechanical equipment would be less than significant.

(ii) Outdoor Areas

The Project includes three outdoor plazas including the Ford Terrace, the Transit Plaza, and the Ford Plaza. For the noise analysis, it was estimated that up to 200 people could gather at the Ford Terrace, up to 250 people could gather at the Transit Plaza/Flex Space gathering area, and up to 1,200 people could gather at the Ford Plaza. To evaluate noise from these areas, reference noise levels of 75 dBA and 71 dBA L_{eq} at a distance of

3.3 feet were used to represent males and females speaking in a loud voice, respectively.[28] 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 Project would include a restaurant located at the Ford Plaza that would include an outdoor seating area with an amplified sound system. In order to comply with the County's Noise Ordinance, the amplified sound system at the restaurant outdoor seating area would be designed so as not to exceed a maximum noise level of 90 dBA (L_{eq}) at the restaurant outdoor seating area. Table IV.I-17 on page IV.I-34 presents the estimated noise levels from the outdoor areas at the off-site sensitive receptors. As indicated in Table IV.I-17, the estimated noise levels at all off-site locations would not exceed the existing ambient noise levels. Therefore, noise impacts from outdoor spaces would be less than significant.

(iii) Transportation Facilities

The Project includes two new three-level parking structures that would generally be located within the existing north and south surface parking areas that would be removed as part of the Project. Sources of noise within the parking structures would primarily include car movements (i.e., engine noise), doors opening, people talking, and intermittent car alarms. The Project would also introduce a new Transit Center at the north parking structure that would include a staging area for buses to load and unload. It is anticipated that there would be up to 10 buses loading/unloading at the Transit Center at any given time. Table IV.I-18 on page IV.I-35 presents the estimated noise levels from parking and transit areas at the off-site sensitive receptors. As indicated in Table IV.I-18, the estimated noise levels at all off-site locations would be below the existing ambient noise levels. Therefore, noise impacts from the parking structures and the transit center operations would be less than significant.

(iv) Performance Spaces

The proposed improvements to the existing Amphitheatre include a new 800 square-foot projection booth and control room, a new sound wall (up to 48 feet in height) along the rear of the Amphitheatre, and a retractable shade structure that would provide cover for the Amphitheatre during day time performances. The new sound wall would provide shielding of the freeway noise for the Amphitheatre. In addition, the sound wall would also provide shielding of the Amphitheatre sound system to the exterior. Although the proposed sound wall could be as high as 48 feet, which would provide substantial sound attenuation, to provide a conservative analysis, a sound wall height of 27 feet was used as this is the lowest height the sound wall could be. The Project also includes two new performance

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

Table IV.I-17
Estimated Noise Levels from Outdoor Areas

Receptor Location	Existing Nighttime Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Outdoor Plazas,[a] dBA (L_{eq})	Estimated Noise Levels from the Restaurant Outdoor Seating Area,[b] dBA (L_{eq})	Significance Threshold[c]	Significant Impact?
R1	50.9	29.8	39.7	50.9	No
R2	75.3	35.0	45.2	75.3	No
R3	50.0[d]	36.8	39.6	50.0	No
R4	75.9	33.7	47.2	75.9	No

[a] *Assumed capacity of up to 200 people at the Ford Terrace, 250 people at the Transit Plaza/Flex Space gathering area, and 1,200 people at the Ford Plaza at any given time.*

[b] *Assumed amplified sound system with maximum sound level of 90 dBA (L_{eq}) at the restaurant outdoor seating area.*

[c] *Significance thresholds are equivalent to the measured ambient noise levels (see Table IV.I-9 on page IV.I-17).*

[d] *Lowest measured existing ambient noise levels recorded between 8:00 A.M. and 11:00 P.M. (Project operational hours).*

Source: AES, 2014.

venues including a 299 seat indoor theater located at the Ford Plaza and a Flex Space that would provide for a 99 seat indoor theater. The analysis for the performance spaces accounted for audience cheering as well as an amplified sound system. For the audience cheering source, noise levels of 88 dBA and 85 dBA (L_{eq} at a distance of 3.3 feet distance for males and females, respectively were used.[29] As specified by Project Design Feature I-2, the proposed amplified sound system for the Amphitheatre would be designed to generate a maximum sound level of 95 dBA (L_{eq}) at as measured in "slow" response at the house mixer location). Similarly, the assumed sound levels generated by the amplified sound system inside the 299 seat theater and the 99 seat Flex Space would be approximately 95 dBA (L_{eq}). In addition, in accordance with Project Design Feature I-3, the building structure of the 299-seat theatre and the Flex Space would be designed to provide a minimum 25 dBA noise reduction.

Table IV.I-19 on page IV.I-36 presents the estimated noise levels from the performance spaces at the off-site sensitive receptors. Noise levels from the Amphitheatre are estimated to be similar to the existing conditions, as the size, types of programs and

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

Table IV.I-18
Estimated Noise Levels from Parking Structures and Transit Center

Receptor Location	Existing Nighttime Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Parking Structures, dBA (L_{eq})	Estimated Noise Levels from the Transit Center,[a] dBA (L_{eq})	Significance Threshold[b]	Significant Impact?
R1	50.9	26.2	28.8	50.9	No
R2	75.3	30.6	31.1	75.3	No
R3	50.0[c]	26.4	28.0	50.0	No
R4	75.9	39.0	36.1	75.9	No

[a] *Assumed 10 buses loading/unloading at the Transit Center at any given time.*

[b] *Significance thresholds are equivalent to the measured ambient noise levels (see Table IV.I-9 on page IV.I-17).*

[b] *Lowest measured existing ambient noise levels recorded between 8:00 A.M. and 11:00 P.M. (Project operational hours).*

Source: AES, 2014.

seating capacity would remain similar to existing conditions. In addition, the sound system for the Amphitheatre would be design to limit the sound output from the speakers to 95 dBA at the house mixer location, similar to existing conditions. As indicated in Table IV.I-19 on page IV.I-36, the estimated noise levels from the performance spaces would be well below the ambient noise levels at receptors R2 and R4. The estimated noise levels from the Amphitheatre amplified sound systems at receptors R1 and R3 would be approximately 0.5 dBA and 2.7 dBA higher than the existing ambient noise levels. However, the measured ambient noise levels do not include the existing Amphitheatre operation-related activities, which would result in higher ambient noise levels due to noise generated from performances within the Amphitheatre. It is further noted that the noise levels from the new 299-seat theatre and Flex Space would be contained within the building structures and are estimated to be well below the existing ambient noise levels. Therefore, the noise levels from the performance spaces including the new facilities would be similar to existing conditions with the Amphitheatre being in operation. As such, noise impacts from the performance spaces would be less than significant.

(v) Loading Dock/Trash Collection Areas

The Project would include a new Service Court, which would include a new loading dock and trash/recycling areas. Based on measured noise levels from typical loading dock facilities, delivery trucks (while idling at the loading dock) could generate noise levels of approximately 71 dBA (L_{eq}) at a distance of 50 feet from the noise source. In addition, trash compactors would generate noise levels of approximately 66 dBA (L_{eq}) at a distance

Table IV.I-19
Estimated Noise Levels from Performance Spaces

Receptor Location	Existing Nighttime Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from the Performance Spaces, dBA (L_{eq})				Significance Threshold[b]	Significant Impact?
		Amphitheatre	299-Seat Theatre	Flex Space Theatre	Composite Noise of Three Theatres[a]		
R1	50.9	51.4	21.0	17.5	51.4	50.9	No[d]
R2	75.3	52.3	24.5	19.2	52.3	75.3	No
R3	50.0[c]	52.7	21.6	16.6	52.7	50.0	No[d]
R4	75.9	48.7	22.8	25.5	48.7	75.9	No

[a] *Composite noise levels with all three theatres operating concurrently.*

[b] *Significance thresholds are equivalent to the measured daytime ambient noise levels (see Table IV.I-9 on page IV.I-17).*

[c] *Lowest measured existing ambient noise levels recorded between 8:00 A.M. and 11:00 P.M. (Project operational hours).*

[c] *Although the estimated noise levels from the Amphitheatre are higher than the existing ambient noise levels, noise impacts would be less than significant. This is because the measured existing ambient noise levels do not include the existing Amphitheatre operations, which are expected to remain the same as existing conditions.*

Source: AES, 2014.

of 50 feet. Table IV.I-20 on page IV.I-37 presents the estimated noise levels from the loading dock/trash collection areas at the off-site sensitive receptors. As indicated in Table IV.I-20, the estimated noise levels from the loading dock/trash collection areas at all off-site locations would be well below the existing ambient noise levels. Therefore, noise impacts from loading dock/trash collection operations would be less than significant.

(b) Off-Site Traffic (Mobile Sources)

(i) Future plus Project

Future roadway noise levels were calculated along 11 off-site roadway segments in the vicinity of the Project Site. The off-site roadway noise levels were calculated using the traffic data provided in the Project's traffic study. As discussed in the traffic study, the Project is expected to generate 35 net new trips during the weekday A.M. peak hour, 60 net new trips during the weekday P.M. peak hour, 117 net new trips during the weekday event peak hour, 92 net new trips during the Saturday midday event peak hour, and 92 net new trips during the Saturday evening event peak hour.

Table IV.I-20
Estimated Noise Levels from Loading Dock and Trash Collection Areas

Receptor Location	Existing Daytime Ambient Noise Levels, dBA (L_{eq})	Estimated Noise Levels from Loading Dock/ Trash Collection Areas, dBA (L_{eq})	Significance Threshold[a]	Significant Impact?
R1	51.3	23.5	51.3	No
R2	75.3	23.6	75.3	No
R3	50.0	37.1	50.0	No
R4	75.9	20.4	75.9	No

[a] *Significance thresholds are equivalent to the measured ambient noise levels (see Table IV.I-9 on page IV.I-17).*

Source: AES, 2014.

The off-site traffic noise impacts for a typical weekday and weekend day are presented in Table IV.I-21 and Table IV.I-22 on pages IV.I-38 and IV.I-40), respectively. The calculated CNEL levels overestimate noise levels as they are calculated in front of the roadways and do not account for the presence of any physical sound barriers or intervening structures. As shown therein, the Project would result in a maximum increase of 0.2 dBA (peak-hour L_{eq} and 24-CNEL) in traffic-related noise levels along Odin Avenue during both the weekday and weekend. The estimated noise increase due to Project-related traffic would be well below the 3 dBA significance threshold. Therefore, off-site traffic noise impacts associated with future plus Project conditions would be less than significant.

(ii) Existing plus Project

The analysis of off-site traffic noise impacts above was based on the incremental increase in traffic noise levels attributable to future with Project conditions as compared to future without Project conditions. Additional analysis was made to determine the potential noise impacts based on the increase in noise levels due to Project-related traffic compared with the existing baseline traffic noise conditions.

Table IV.I-23 and Table IV.I-24 on pages IV.I-42 and IV.I-44 present the off-site traffic noise impacts as compared with existing conditions, for a typical weekday and weekend day. As indicated therein, the maximum Project-related traffic noise increase would be 0.2 dBA CNEL along Odin Avenue. The estimated increase in off-site traffic noise levels would be below the 3-dBA CNEL significance threshold. Therefore, off-site traffic noise impacts associated with the existing plus Project traffic conditions would be less than significant.

Table IV.I-21
Roadway Traffic Noise Impacts—Future plus Project, Weekday

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Future Without Project			Future With Project			Noise Increase in Traffic Noise Levels Due to Project			
		Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Barham Boulevard											
– East of Cahuenga Blvd. East	Residential	76.3	75.8	75.3	76.3	75.8	75.3	0.0	0.0	0.0	No
Cahuenga Boulevard East											
– Between Barham Blvd. and Pilgrimage Bridge	Residential	75.9	75.0	74.9	75.9	75.0	74.9	0.0	0.0	0.0	No
– Between Pilgrimage Bridge and US 101 NB off-ramp	Residential	76.2	75.9	75.2	76.2	75.9	75.2	0.0	0.0	0.0	No
Cahuenga Boulevard West											
– South of Barham Blvd.	Residential, School	72.6	72.1	71.6	72.6	72.1	71.6	0.0	0.0	0.0	No
– North of Pilgrimage Bridge	Residential	74.1	73.5	73.1	74.1	73.5	73.1	0.0	0.0	0.0	No
– Between Pilgrimage Bridge and Hollywood Bowl Rd.	Park	74.7	73.8	73.7	74.7	73.8	73.7	0.0	0.0	0.0	No
Cahuenga Boulevard North											
– Between US 101 NB off-ramp and Odin Ave.	Park	76.8	75.1	75.9	76.9	75.1	75.9	0.1	0.0	0.0	No
– South of Odin Ave.	Park	77.0	74.5	76.0	77.0	74.5	76.0	0.0	0.0	0.0	No

Table IV.I-21 (Continued)
Roadway Traffic Noise Impacts—Future plus Project, Weekday

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Future Without Project			Future With Project			Noise Increase in Traffic Noise Levels Due to Project			
		Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Odin Avenue											
– South of Cahuenga Blvd. N	Residential	66.8	67.6	65.9	67.0	67.6	66.1	0.2	0.0	0.2	No
Highland Avenue											
– Between Hollywood Bowl Rd. and Odin Ave.	Park	74.8	74.1	73.9	74.9	74.1	73.9	0.1	0.0	0.0	No
– South of Odin Ave.	Residential, Hotel, Commercial	78.0	77.1	77.0	78.0	77.1	77.0	0.0	0.0	0.0	No

[a] *Detailed calculation worksheets are included in Appendix J.*

[b] *Representing the busiest one hour during the A.M. peak hours (7:00 A.M. and 10:00 A.M.) or P.M. peak hours (4:00 P.M. and 6:00 P.M.).*

[c] *Representing the one-hour period preceding a weekday event (i.e., 7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

Source: AES, 2014.

Table IV.I-22
Roadway Traffic Noise Impacts—Future plus Project, Weekend

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Future Without Project			Future With Project			Noise Increase in Traffic Noise Levels due to Project			
		Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Barham Boulevard											
– East of Cahuenga Blvd. East	Residential	73.8	74.1	72.8	73.8	74.1	72.8	0.0	0.0	0.0	No
Cahuenga Boulevard East											
– Between Barham Blvd. and Pilgrimage Bridge	Residential	72.8	73.2	71.9	72.8	73.2	71.9	0.0	0.0	0.0	No
– Between Pilgrimage Bridge and US 101 NB off-ramp	Residential	73.9	75.3	73.0	74.0	75.3	73.0	0.1	0.0	0.0	No
Cahuenga Boulevard West											
– South of Barham Blvd.	Residential, School	70.8	71.1	69.8	70.8	71.1	69.8	0.0	0.0	0.0	No
– North of Pilgrimage Bridge	Residential	73.6	73.4	72.7	73.7	73.5	72.7	0.1	0.1	0.0	No
– Between Pilgrimage Bridge and Hollywood Bowl Rd.	Park	74.3	73.6	73.3	74.3	73.6	73.3	0.0	0.0	0.0	No
Cahuenga Boulevard North											
– Between US 101 NB off-ramp and Odin Ave.	Park	73.2	74.4	72.3	73.3	74.4	72.3	0.1	0.0	0.0	No
– South of Odin Ave.	Park	72.5	74.0	71.5	72.5	74.0	71.5	0.0	0.0	0.0	No

Table IV.I-22 (Continued)
Roadway Traffic Noise Impacts—Future plus Project, Weekend

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Future Without Project			Future With Project			Noise Increase in Traffic Noise Levels due to Project			
		Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Odin Avenue											
– South of Cahuenga Blvd. N	Residential	64.9	67.9	63.9	65.1	68.0	64.1	0.2	0.1	0.2	No
Highland Avenue											
– Between Hollywood Bowl Rd. and Odin Ave.	Park	74.4	73.9	73.4	74.4	73.9	73.4	0.0	0.0	0.0	No
– South of Odin Ave.	Residential, Hotel, Commercial	77.6	76.9	76.7	77.6	76.9	76.7	0.0	0.0	0.0	No

[a] *Detailed calculation worksheets are included in Appendix J.*

[b] *Representing the midday peak hour preceding a weekend event (11:00 A.M. to 12:00 P.M. for a 12:00 P.M. event).*

[c] *Representing the weekend evening peak hour preceding an event (7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

Source: AES, 2014.

Table IV.I-23
Roadway Traffic Noise Impacts—Existing plus Project, Weekday

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Existing Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Barham Boulevard											
– East of Cahuenga Blvd. East	Residential	76.0	75.5	75.0	76.0	75.5	75.0	0.0	0.0	0.0	No
Cahuenga Boulevard East											
– Between Barham Blvd. and Pilgrimage Bridge	Residential	75.1	74.3	74.1	75.1	74.3	74.2	0.0	0.0	0.1	No
– Between Pilgrimage Bridge and US 101 NB off-ramp	Residential	75.3	75.0	74.3	75.3	75.0	74.4	0.0	0.0	0.1	No
Cahuenga Boulevard West											
– South of Barham Blvd.	Residential, School	71.9	71.1	71.0	72.0	71.2	71.0	0.1	0.1	0.0	No
– North of Pilgrimage Bridge	Residential	73.3	71.7	72.3	73.3	71.7	72.3	0.0	0.0	0.0	No
– Between Pilgrimage Bridge and Hollywood Bowl Rd.	Park	73.3	71.9	72.3	73.3	71.9	72.3	0.0	0.0	0.0	No
Cahuenga Boulevard North											
– Between US 101 NB off-ramp and Odin Ave.	Park	75.9	74.1	74.9	75.9	74.2	74.9	0.0	0.1	0.0	No
– South of Odin Ave.	Park	76.0	73.5	75.0	76.0	73.5	75.0	0.0	0.0	0.0	No

Table IV.I-23 (Continued)
Roadway Traffic Noise Impacts—Existing plus Project, Weekday

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Existing Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Odin Avenue											
– South of Cahuenga Blvd. N	Residential	66.5	67.3	65.6	66.7	67.3	65.8	0.2	0.0	0.2	No
Highland Avenue											
– Between Hollywood Bowl Rd. and Odin Ave.	Park	73.4	72.5	72.5	73.5	72.5	72.5	0.1	0.0	0.0	No
– South of Odin Ave.	Residential, Hotel, Commercial	76.6	75.5	75.6	76.6	75.5	75.6	0.0	0.0	0.0	No

[a] *Detailed calculation worksheets are included in Appendix J.*

[b] *Representing the busiest one hour during the A.M. peak hours (7:00 A.M. and 10:00 A.M.) or P.M. peak hours (4:00 P.M. and 6:00 P.M.).*

[c] *Representing the one-hour period preceding a weekday event (i.e., 7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

Source: AES, 2014.

Table IV.I-24
Roadway Traffic Noise Impacts—Existing plus Project, Weekend

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Existing Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Barham Boulevard											
– East of Cahuenga Blvd. East	Residential	76.0	75.5	75.0	76.0	75.5	75.0	0.0	0.0	0.0	No
Cahuenga Boulevard East											
– Between Barham Blvd. and Pilgrimage Bridge	Residential	75.1	74.3	74.1	75.1	74.3	74.2	0.0	0.0	0.1	No
– Between Pilgrimage Bridge and US 101 NB off-ramp	Residential	75.3	75.0	74.3	75.3	75.0	74.4	0.0	0.0	0.1	No
Cahuenga Boulevard West											
– South of Barham Blvd.	Residential, School	71.9	71.1	71.0	72.0	71.2	71.0	0.1	0.1	0.0	No
– North of Pilgrimage Bridge	Residential	73.3	71.7	72.3	73.3	71.7	72.3	0.0	0.0	0.0	No
– Between Pilgrimage Bridge and Hollywood Bowl Rd.	Park	73.3	71.9	72.3	73.3	71.9	72.3	0.0	0.0	0.0	No
Cahuenga Boulevard North											
– Between US 101 NB off-ramp and Odin Ave.	Park	75.9	74.1	74.9	75.9	74.2	74.9	0.0	0.1	0.0	No
– South of Odin Ave.	Park	76.0	73.5	75.0	76.0	73.5	75.0	0.0	0.0	0.0	No

Table IV.I-24 (Continued)
Roadway Traffic Noise Impacts—Existing plus Project, Weekend

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Existing Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Odin Avenue											
– South of Cahuenga Blvd. N	Residential	66.5	67.3	65.6	66.7	67.3	65.8	0.2	0.0	0.2	No
Highland Avenue											
– Between Hollywood Bowl Rd. and Odin Ave.	Park	73.4	72.5	72.5	73.5	72.5	72.5	0.1	0.0	0.0	No
– South of Odin Ave.	Residential, Hotel, Commercial	76.6	75.5	75.6	76.6	75.5	75.6	0.0	0.0	0.0	No

[a] *Detailed calculation worksheets are included in Appendix J.*

[b] *Representing the midday peak hour preceding a weekend event (11:00 A.M. to 12:00 P.M. for a 12:00 P.M. event).*

[c] *Representing the weekend evening peak hour preceding an event (7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

Source: AES, 2014.

(c) Composite Noise Level Impacts from Project Operations

In addition to considering the potential noise impacts to neighboring noise-sensitive receptors from each specific off-site and on-site noise source (i.e., traffic, mechanical equipment, outdoor areas, performance spaces, and parking facilities), an evaluation of the potential composite noise level increase (i.e., noise levels from all noise sources combined) at the analyzed sensitive receptor locations was also performed. Table IV.I-25 on page IV.I-47 presents the estimated composite noise levels in terms of CNEL at the off-site sensitive receptors. As indicated in Table IV.I-25, the Project would result in an increase of 1.0 dBA (at Location R3) to 1.4 dBA (at Location R1) at the off-site receptors in the vicinity of the Project Site. No noise increase is anticipated at Locations R2 and R4. The estimated increases in noise levels due to Project operation would be below the 3 dBA CNEL significance threshold. Therefore, composite noise level impacts due to the Project operations would be less than significant.

4. Cumulative Impacts

a. Construction Noise and Vibration

A total of 27 related projects have been identified in the vicinity of the Project Site. Noise from construction of development projects is typically localized and has the potential to affect areas within 500 feet from the construction site. 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. The nearest related project is the Related Project No. 22 (a hotel development at 1841 Highland Avenue), which is approximately 0.8 mile from the Project Site. Other related projects are located further from the Project Site. Due to the distance attenuation and intervening buildings between the related projects, cumulative noise impacts from construction activities would be less than significant.

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 close proximity of the construction site (i.e., within 50 feet). As indicated above, the nearest related project is approximately 0.8 mile from the Project. Therefore, due to the rapid attenuation characteristics of ground-borne vibration, there is no potential for a cumulative construction impact with respect to ground-borne vibration.

Table IV.I-25
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)	Increase in Noise Levels due to Project, CNEL (dBA)	Significant Impact?
		Traffic	Mechanical Equipment	Parking/ Transit Center	Outdoor Plazas/ Restaurant	Performance Spaces	Loading/ Trash Collection				
R1	55.7	36.1	32.7	28.4	41.3	50.8	15.1	51.4	57.1	1.4	No
R2	80.0	58.0	35.2	31.2	46.8	51.6	15.2	59.2	80.0	0.0	No
R3	59.3	45.1	32.0	27.9	42.6	52.0	28.1	53.3	60.3	1.0	No
R4	80.6	50.9	36.4	39.2	48.6	48.1	12.5	54.3	80.6	0.0	No

Source: AES, 2014.

b. Long-Term Operations

Due to provisions set forth in the LAMC that limit stationary source noise from items such as roof-top mechanical equipment, noise levels from these sources would be less than significant at the property line for each related project. In addition, with implementation of regulatory requirements and the proposed Project Design Features presented in this section, noise impacts associated with operations within the Project Site would be less than significant. Based on the distance of the related projects from the Project Site and the 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.

The Project and other related development in the area would produce traffic volumes (off-site mobile sources) that would generate roadway noise. Cumulative noise impacts due to off-site traffic were analyzed by comparing the projected increase in traffic noise levels from existing conditions to future plus Project conditions to the applicable significance criteria. Future cumulative conditions include traffic volumes from future ambient growth, related projects, and the Project. The calculated traffic noise levels under existing and future plus Project conditions are presented in Table IV.I-26 on page IV.I-49 (for typical weekday) and in Table IV.I-27 on page IV.I-51 (for typical weekend). As shown therein, cumulative traffic volumes during a typical weekday would result in a maximum increase of 1.9 dBA along Cahuenga Boulevard, between Pilgrimage Bridge and Hollywood Bowl Road. During a typical weekend, the maximum cumulative traffic noise increase would be 2.5 dBA (peak hour with event) along Cahuenga Boulevard, between Pilgrimage Bridge and Hollywood Bowl Road. At all other analyzed roadway segments, the increase in cumulative traffic noise would be lower. Thus, the cumulative traffic noise increase would be below the 3 dBA significance threshold. 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.

5. Mitigation Measures

a. Construction

Mitigation Measure I-1: Power construction equipment (including combustion engines), fixed and mobile, shall be equipped with state-of-the-art noise shielding and muffling devices (consistent with manufacturers' standards). All equipment shall be properly maintained to assure that no additional noise, due to worn or improperly maintained parts would be generated.

Table IV.I-26
Cumulative Roadway Traffic Noise Impacts, Weekday

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Future Cumulative Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[B] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Barham Boulevard											
– East of Cahuenga Blvd. East	Residential	76.0	75.5	75.0	76.3	75.8	75.3	0.3	0.3	0.3	No
Cahuenga Boulevard East											
– Between Barham Blvd. and Pilgrimage Bridge	Residential	75.1	74.3	74.1	75.9	75.0	74.9	0.8	0.7	0.8	No
– Between Pilgrimage Bridge and US 101 NB off-ramp	Residential	75.3	75.0	74.3	76.2	75.9	75.2	0.9	0.9	0.9	No
Cahuenga Boulevard West											
– South of Barham Blvd.	Residential, School	71.9	71.1	71.0	72.6	72.1	71.6	0.7	1.0	0.6	No
– North of Pilgrimage Bridge	Residential	73.3	71.7	72.3	74.1	73.5	73.1	0.8	1.8	0.8	No
– Between Pilgrimage Bridge and Hollywood Bowl Rd.	Park	73.3	71.9	72.3	74.7	73.8	73.7	1.4	1.9	1.4	No
Cahuenga Boulevard North											
– Between US 101 NB off-ramp and Odin Ave.	Park	75.9	74.1	74.9	76.9	75.1	75.9	1.0	1.0	1.0	No
– South of Odin Ave.	Park	76.0	73.5	75.0	77.0	74.5	76.0	1.0	1.0	1.0	No

Table IV.I-26 (Continued)
Cumulative Roadway Traffic Noise Impacts, Weekday

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Future Cumulative Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Peak Hour[B] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Odin Avenue											
– South of Cahuenga Blvd. N	Residential	66.5	67.3	65.6	67.0	67.6	66.1	0.5	0.3	0.5	No
Highland Avenue											
– Between Hollywood Bowl Rd. and Odin Ave.	Park	73.4	72.5	72.5	74.9	74.1	73.9	1.5	1.6	1.4	No
– South of Odin Ave.	Residential, Hotel, Commercial	76.6	75.5	75.6	78.0	77.1	77.0	1.4	1.6	1.4	No

[a] *Detailed calculation worksheets are included in Appendix J.*

[b] *Representing the busiest one hour during the A.M. peak hours (7:00 A.M. and 10:00 A.M.) or P.M. peak hours (4:00 P.M. and 6:00 P.M.).*

[c] *Representing the one-hour period preceding a weekday event (i.e., 7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

Source: AES, 2014.

Table IV.I-27
Cumulative Roadway Traffic Noise Impacts, Weekend

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Existing Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Barham Boulevard											
– East of Cahuenga Blvd. East	Residential	73.5	73.8	72.5	73.8	74.1	72.8	0.3	0.3	0.3	No
Cahuenga Boulevard East											
– Between Barham Blvd. and Pilgrimage Bridge	Residential	71.1	71.6	70.1	72.8	73.2	71.9	1.7	1.6	1.8	No
– Between Pilgrimage Bridge and US 101 NB off-ramp	Residential	71.7	73.7	70.8	74.0	75.3	73.0	2.3	1.6	2.2	No
Cahuenga Boulevard West											
– South of Barham Blvd.	Residential, School	69.3	69.7	68.3	70.8	71.1	69.8	1.5	1.4	1.5	No
– North of Pilgrimage Bridge	Residential	71.8	71.4	70.8	73.7	73.5	72.7	1.9	2.1	1.9	No
– Between Pilgrimage Bridge and Hollywood Bowl Rd.	Park	72.2	71.1	71.2	74.3	73.6	73.3	2.1	2.5	2.1	No
Cahuenga Boulevard North											
– Between US 101 NB off-ramp and Odin Ave.	Park	71.1	72.7	70.1	73.3	74.4	72.3	2.2	1.7	2.2	No
– South of Odin Ave.	Park	70.2	72.4	69.2	72.5	74.0	71.5	2.3	1.6	2.3	No

Table IV.I-27 (Continued)
Cumulative Roadway Traffic Noise Impacts, Weekend

Roadway Segment	Adjacent Land Use	Calculated Traffic Noise Levels,[a] (dBA)									Significant Impacts?
		Existing Conditions			Existing Plus Project			Noise Increase in Traffic Noise Levels due to Project			
		Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	Midday Peak Hour[b] L_{eq}	Evening Peak Hour w/ Event[c] L_{eq}	24-Hour CNEL	
Odin Avenue											
– South of Cahuenga Blvd. N	Residential	64.5	67.6	63.6	65.1	68.0	64.1	0.6	0.4	0.5	No
Highland Avenue											
– Between Hollywood Bowl Rd. and Odin Ave.	Park	72.4	71.7	71.4	74.4	73.9	73.4	2.0	2.2	2.0	No
– South of Odin Ave.	Residential, Hotel, Commercial	75.8	74.6	74.8	77.6	76.9	76.7	1.8	2.3	1.9	No

[a] *Detailed calculation worksheets are included in Appendix J.*

[b] *Representing the midday peak hour preceding a weekend event (11:00 A.M. to 12:00 P.M. for a 12:00 P.M. event).*

[c] *Representing the weekend evening peak hour, the one hour preceding an event (7:00 P.M. to 8:00 P.M. for an 8:00 P.M. event).*

Source: AES, 2014.

Mitigation Measure I-2: Project construction shall not include the use of driven pile systems.

Mitigation Measure I-3: Contractor shall utilize smaller construction equipment, such as small bulldozer and hand held compactors, when construction occurs within 20 feet of the existing Amphitheatre structure.

b. Operation

As analyzed above, operation of the Project would result in less than significant. Therefore, no mitigation measures required.

6. Conclusion

a. Construction

Compliance with regulatory requirements and Implementation of the mitigation measures above would reduce noise and vibration impacts associated with Project construction to a less than significant level. As discussed above, cumulative construction noise and vibration impacts would also be less than significant.

b. Operation

Project-level and cumulative impacts with regard to operational noise would be less than significant.