4.10 NOISE

4.10.1 INTRODUCTION

This section addresses the potential for short- and long-term noise impacts resulting from implementation of the proposed project and measures to mitigate potentially significant noise impacts. This analysis satisfies the City of West Hollywood's (City) requirement for a project-specific noise impact analysis by examining the short-term and long-term impacts on the project site and by evaluating the effectiveness of mitigation measures incorporated as part of the design of the proposed project. The potential noise impacts of the proposed project are discussed in detail in the *Revised Noise Impact Analysis* (LSA Associates, Inc., April 2012), which is included in Appendix I of this Recirculated Draft EIR and is summarized in this section.

4.10.2 METHODOLOGY

Evaluation of noise impacts associated with the proposed project includes the following:

- Determine the short-term construction noise impacts on off-site, noise-sensitive uses;
- Determine the long-term noise impacts on on-site and off-site, noise-sensitive uses, including vehicular traffic and aircraft activities; and
- Determine the required mitigation measures to reduce long-term on-site noise impacts from all sources.

4.10.3 EXISTING ENVIRONMENTAL SETTING

Fundamentals of Noise

Noise Definition. Noise impacts can be described in three categories. The first is audible impact, which refers to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 decibels (dB) or greater, because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant and adverse.

Characteristics of Sound. Sound is increasing in the environment and can affect quality of life. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep. To the human ear, sound has two specific characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave resulting in the tone's range from high to low. Loudness is the strength of a sound and describes a noisy or quiet environment; it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves, combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effect on adjacent noise sensitive land uses.

Measurement of Sound. Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units, such as inches or pounds, decibels are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 dB are 10 times more intense than 1 dB, 20 dB are 100 times more intense, and 30 dB are 1,000 times more intense. Thirty dB represent 1,000 times more acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 A-weighted decibels (dBA) (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source, such as highway traffic or railroad operations, the sound decreases 3 dB for each doubling of distance in a hard site environment. Line source noise in a relatively flat environment with absorptive vegetation, decreases 4.5 dB for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. The predominant rating scales for human communities in the State of California are the L_{eq} and community noise equivalent level (CNEL) or the day-night average level (L_{dn}) based on dBA. CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours. The City of West Hollywood uses the CNEL noise scale for long-term noise impact assessments.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

Another noise scale often used together with the L_{max} in noise ordinances for enforcement purposes is noise standards in terms of percentile noise levels. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Physiological Effects of Noise. Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions and thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160-165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in less-developed areas.

Vibration. Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible but without the effects associated with the shaking of a building there is less adverse reaction. Vibration energy propagates from a source through intervening soil and rock layers, to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by the occupants as motion of building surfaces, rattling of items on shelves or hanging on walls, or as a low-frequency rumbling noise. The rumble noise is caused by the vibrating walls, floors, and ceilings radiating sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of groundborne vibration are construction activities (e.g., blasting, pile driving and operating heavy duty earth-moving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with groundborne vibration and noise from these sources are usually localized to areas within about 100 feet from the vibration source, although there are examples of groundborne vibration causing interference out to distances greater than 200 feet (Federal Transit Administration [FTA] 2006). When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that groundborne vibration from street traffic will not exceed the impact criteria; however, construction of the project could result in groundborne vibration that could be perceptible and annoying.

Groundborne noise is not likely to be a problem because noise arriving via the normal airborne path usually will be greater than groundborne noise.

Groundborne vibration has the potential to disturb people as well as to damage buildings. It is not uncommon for construction processes such as blasting and pile driving to cause vibration of sufficient amplitudes to damage nearby buildings (FTA 2006). Groundborne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). RMS is best for characterizing human response to building vibration and PPV is used to characterize potential for damage. Ground vibrations from construction activities do not often reach the levels that can damage structures, but they can achieve the audible and sensate ranges in buildings very close to the site. Problems with groundborne vibration from construction sources are usually localized to areas within approximately 100 feet from the vibration source.

Factors that influence groundborne vibration and noise include the following:

- Vibration Source: Vehicle suspension, wheel types and condition, track/roadway surface, track support system, speed, transit structure, and depth of vibration source
- Vibration Path: soil type, rock layers, soil layering, depth to water table, and frost depth
- Vibration Receiver: foundation type, building construction, and acoustical absorption

Among the factors listed above, there are significant differences in the vibration characteristics when the source is underground compared to at the ground surface. In addition, soil conditions are known to have a strong influence on the levels of groundborne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock.

Table 4.10.A illustrates human response to various vibration levels, as described in the Federal Transit Administration Transit Noise and Vibration Impact Assessment (FTA 2006).

Existing Sensitive Land Uses in the Project Vicinity

Certain land uses are considered more sensitive to noise than others. Examples of these include residential uses, educational facilities, hospitals, childcare facilities, and senior housing. The closest off-site noise sensitive land use to the project site is residential. Single-family and multifamily dwellings are located approximately 200 feet south of the project site along Rangely Avenue.

Buildings in the surrounding area along Santa Monica Boulevard include two-story buildings primarily sited immediately adjacent to the public sidewalks and occupied by commercial and restaurant uses. The development on the east side of Almont Drive and the south side of Melrose Avenue consists of one- and two-story structures with a variety of building functions, including office and retail. An exception includes two commercial uses located in converted residential structures.

Table 4.10.A: Human Response to Different Levels of Groundborne Noise and Vibration

Vibration Velocity Level	Noise Level		Human Response
	Low Frequency[1]	Mid Frequency[2]	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible, mid-frequency sound excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level unacceptable. Low-frequency noise acceptable for sleeping areas, mid-frequency noise annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise unacceptable for sleeping areas, mid-frequency noise unacceptable even for infrequent events with institutional land uses such as schools and churches.

Source: Federal Transit Administration 2006
[1] Approximate noise level when vibration spectrum peak is near 30 Hz.
[2] Approximate noise level when vibration spectrum peak is near 60 Hz.
dBA = A-weighted decibels
Hz = hertz
VdB = velocity in decibels

Overview of the Existing Noise Environment

The primary existing noise sources in the project area are transportation facilities. Traffic on Santa Monica Boulevard and Melrose Avenue is the dominant source contributing to the area's ambient noise levels.

Existing Traffic Noise

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to identify and evaluate highway traffic-related noise conditions along Santa Monica Boulevard, Melrose Avenue, and other roads in the vicinity of the project site. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and road geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The existing average daily traffic (ADT) volumes in the area were taken from the *Revised Traffic Impact Analysis* (LSA, March 2012, also included in Appendix K of this Recirculated Draft EIR). The resultant noise levels were weighted and summed over 24-hour periods to determine the CNEL values. As shown in Table 4.10.B, traffic noise along these road segments ranges from low to moderately high. For Foothill Road and portions of Elevado Avenue, the 70 dBA CNEL, 65 dBA CNEL, and 60 dBA CNEL traffic noise contours are confined within the rights-of-way for these roads. For Robertson Boulevard and Doheny Drive, only the 70 dBA CNEL traffic noise contour is confined within the road right-of-way. Along Santa Monica Boulevard, the 70 dBA CNEL contour extends as much as 79 feet from the road centerline.

Table 4.10.B: Existing (2012) Baseline Traffic Noise Levels

Roadway Segment	Average Daily Traffic	Centerline to 70 CNEL (ft)	Centerline to 65 CNEL (ft)	Centerline to 60 CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane
La Cienega Blvd. north of Santa Monica Blvd.	22,300	62	128	273	69.3
La Cienega Blvd. between Santa Monica Blvd. and Melrose Ave.	20,800	59	122	261	69.0
La Cienega Blvd. south of Melrose Ave.	25,800	67	141	301	69.9
San Vicente Blvd. north of Melrose Blvd.	15,500	< 50[1]	101	215	67.7
San Vicente Blvd. south of Melrose Blvd.	15,100	< 50	99	211	67.6
Robertson Blvd. north of Santa Monica Blvd.	4,900	< 50	< 50	66	61.1
Robertson Blvd. between Santa Monica Blvd. and Melrose Ave.	8,200	< 50	< 50	93	63.3
Robertson Blvd. between Melrose Ave. and Beverly Blvd.	12,600	< 50	58	124	65.2
Robertson Blvd. south of Beverly Blvd.	11,900	< 50	56	119	64.9
Doheny Dr. north Sunset Blvd.	4,300	< 50	< 50	61	60.5
Doheny Dr. between Sunset Blvd. and Elevado Ave.	10,300	< 50	78	164	65.9
Doheny Dr. between Elevado Ave. and Santa Monica Blvd.	12,200	< 50	87	183	66.7
Doheny Dr. between Santa Monica Blvd. and Beverly Blvd.	10,500	< 50	79	166	66.0
Doheny Dr. south of Beverly Blvd.	12,400	< 50	88	185	66.7
Foothill Rd. north of Santa Monica Blvd.	800	< 50	< 50	< 50	53.2
Sunset Blvd west of Doheny Dr.	24,800	66	137	293	69.8
Sunset Blvd east of Doheny Dr.	27,100	69	145	311	70.1
Elevado Ave. west of Doheny Dr.	3,200	< 50	< 50	< 50	59.2
Elevado Ave. east of Doheny Dr.	420	< 50	< 50	< 50	50.4
Santa Monica Blvd. west of Foothill Rd.	33,300	79	166	357	71.0
Santa Monica Blvd. between Foothill Rd. and Doheny Dr.	29,000	72	152	326	70.4
Santa Monica Blvd. between Doheny Dr. and Robertson Blvd.	25,400	67	139	298	69.9
Santa Monica Blvd. between Robertson Blvd. and La Cienega Blvd.	28,600	72	151	323	70.4
Santa Monica Blvd. east of La Cienega Blvd.	21,900	61	126	270	69.2
Melrose Ave. west of Robertson Blvd.	9,200	< 50	72	152	65.4
Melrose Ave. between Robertson Blvd. and San Vicente Blvd.	13,500	< 50	92	196	67.1
Melrose Ave. between San Vicente Blvd. and La Cienega Blvd.	16,300	< 50	104	222	67.9
Melrose Ave. east of La Cienega Blvd.	20,000	58	119	254	68.8
Beverly Blvd. west of Doheny Dr.	17,400	< 50	109	232	68.2
Beverly Blvd. between Doheny Dr. and Robertson Blvd.	20,000	58	119	254	68.8
Beverly Blvd. east of Robertson Blvd.	21,400	60	125	266	69.1

Source: LSA Associates, Inc., March 2012
1 Traffic noise within 50 ft of roadway centerline requires site-specific analysis.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = feet

4.10.4 REGULATORY SETTING

Federal Regulations and Policies

Federal Transit Administration. The Federal Transit Administration (FTA) establishes acceptable levels of groundborne vibration for building types that are sensitive to vibration. These levels are based on the maximum levels for a single event. Additionally, in the *Transit Noise and Vibration Impact Assessment* (FTA, May 2006), the FTA provided groundborne vibration and noise impact criteria guidance. The criteria established by the FTA account for variation in project types, as well as the frequency of events, which differ widely among projects. Although the criteria are provided for community response to groundborne vibration from rapid rail transit systems, they also provide good guidelines for human response to vibration in general. Table 4.10.C lists the groundborne vibration and noise impact criteria for human annoyance.

Table 4.10.C: Groundborne Vibration and Noise Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 micro inch/sec)		Groundborne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent[1] Events	Infrequent[2] Events	Frequent[1] Events	Infrequent[2] Events
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[3]	65 VdB[3]	–[4]	–[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	83 VdB	40 dBA	48 dBA

Source: Federal Transit Administration, 2006.
1 Frequent Events are defined as more than 70 events per day.
2 Infrequent Events are defined as fewer than 70 events per day.
3 This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4 Vibration-sensitive equipment is not sensitive to groundborne noise.
dB = decibels
dBA = A-weighted decibels
HVAC = heating, ventilation, and air conditioning
inch/sec = inches per second
VdB = vibration velocity decibel

Based on the *Transit Noise and Vibration Impact Assessment* (FTA, May 2006), and depending on the building category of the nearest buildings adjacent to the potential pile-driving area, the potential construction vibration damage criteria vary. For example, as shown in Table 4.10.D, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 102 velocity decibels (VdB) (equivalent to 0.5 inch per second [in/sec] in RMS) (FTA, May 2006) is considered safe and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction vibration damage criterion is 94 VdB (0.2 in/sec in RMS). No thresholds have been adopted or recommended for commercial and office uses.

Table 4.10.D: Construction Vibration Damage Criteria

Building Category	PPV (inch/sec)	Approximate Lv[1]
Reinforced-concrete, steel or timber (no plaster)	0.5	102
Engineered concrete and masonry (no plaster)	0.3	98
Non-engineered timber and masonry buildings	0.2	94
Buildings extremely susceptible to vibration damage	0.12	90

Source: Transit Noise and Vibration Impact Assessment, May 2006.
[1] RMS VdB regarding 1 micro-inch/sec.
inch/sec = inches per second
$Lv = 20 \log_{10} [V/V_{ref}]$
PPV = peak particle velocity
RMS = root-mean-square
VdB = velocity in decibels

State Regulations and Policies

California Health and Safety Code, Division 28, Noise Control Act. The California Noise Control Act of 1973 states that excessive noise is a serious hazard to public health and welfare; therefore, it is the policy of the State to provide an environment for all Californians that is free from noise that jeopardizes their health or welfare. The goal is to minimize the number of people that would be exposed to excessive noise but not create an environment completely free from any noise.

California Government Code Section 65302. Section 65302(f) of the California Government Code and the Guidelines for the Preparation and Content of the Noise Element of the General Plan prepared by the California Department of Health Services and included in the 1990 State of California General Plan Guidelines published by the State Office of Planning and Research (Guidelines) provide requirements and guidance to local agencies in the preparation of their Noise Elements.

The Guidelines require that major noise sources and areas containing noise-sensitive land uses be identified and quantified by preparing generalized noise exposure contours for current and projected conditions. Contours may be prepared in terms of either the CNEL or the Day-Night Average Level (L_{dn}), which are descriptors of total noise exposure at a given location for an annual average day. The CNEL and L_{dn} are generally considered to be equivalent descriptors of the community noise environment within +/- 1.0 dB.

The Safety and Noise Element contained in the City of West Hollywood General Plan is in compliance with the Guidelines and is further discussed below.

Local Regulations and Policies

City of West Hollywood Safety and Noise Element of the General Plan. The Safety and Noise Element of the General Plan establishes noise standards to prevent the degradation of noise environment from land use intensification and to minimize adverse effects of currently existing noise sources, particularly from vehicular traffic in the City. The noise standard is 65 dBA CNEL for residential uses and 70 dBA CNEL for commercial uses.

In addition, the following goals and policies in the City's Safety and Noise Element are applicable to the proposed project.

> **SN-3.1:** As feasible, ensure that construction and occupancy of new development is compatible with and does not exceed thresholds defining the acceptable noise environment in surrounding areas.
>
> **SN-3.6:** Require development projects to implement mitigation measures, where necessary, to reduce noise levels to meet the adopted standards and criteria. Such measures may include, but are not limited to, berms, walls, and sound attenuating architectural design and construction methods.
>
> **SN-5.2:** Require that mixed-use structures and areas be designed to prevent transfer of noise from commercial uses to residential uses.

City of West Hollywood Municipal Code. WHMC Chapter 9.08, the Noise Control Ordinance (Noise Ordinance), does not establish numerical standards, but does prohibit excessive noise in an effort to protect the safety and comfort of all City residents. Specifically, the Noise Ordinance mandates that operation of any motor may not be audible at more than 50 feet from the source (9.08.050[c]), loading or unloading activities are generally prohibited from 10:00 p.m. to 8:00 a.m. (9.08.050[e]), and commercial activities may not be plainly audible at any residence between 10:00 p.m. and 8:00 a.m. (9.08.050[k]). Construction activities are also prohibited as follows: exterior construction activities between the hours of 7:00 p.m. and 8:00 a.m. on weekdays and all day on Saturdays, Sundays, and City holidays; interior construction activities between the hours of 7:00 p.m. and 8:00 a.m. on weekdays and Saturdays and all day on Sundays and City holidays.

4.10.5 THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance criteria are based on Appendix G of the CEQA Guidelines. Based on these thresholds, implementation of the proposed project would have a significant impact related to noise if it would:

Threshold 4.10.1: Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

Threshold 4.10.2: Expose persons to or generate excessive groundborne vibration or groundborne noise levels;

Threshold 4.10.3: Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

Threshold 4.10.4: Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

Threshold 4.10.5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; and

Threshold 4.10.6: For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

4.10.6 IMPACTS

This section focuses on the potential increase in noise associated with the construction and operation of the proposed project and the traffic in the project area. The applicable noise standards governing the project site are the criteria in the City of West Hollywood General Plan Noise Element and the WHMC.

Threshold 4.10.1: Would the proposed project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially Significant Impact

Short-Term Construction-Related Impacts. Two types of short-term noise impacts could occur during construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on roads leading to the project site. A relatively high single-event noise exposure potential would exist at a maximum level of 87 dBA L_{max} with trucks passing at 50 feet. However, the projected construction traffic volume would be low when compared to the existing traffic volumes on Santa Monica Boulevard, Melrose Avenue, and other affected streets, and its associated long-term noise level change would not be perceptible. Therefore, short-term construction-related worker commutes and equipment transport noise impacts would not be substantial and the impact from the proposed project would be less than significant.

The second type of short-term noise impact is related to noise generated during excavation, grading, and construction on the project site. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on site over the construction period. Therefore, the noise levels would vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 4.10.E lists maximum noise levels recommended for noise impact assessments for typical construction equipment, based on a distance of 50 feet between the equipment and a noise receptor.

Typical maximum noise levels range up to 93 dBA at 50 feet during the noisiest construction phases (noise from rock drills, not commonly used, can range up to 96 dBA). The site preparation phase, which includes demolition, excavation, and grading of the project site, would generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes machinery such as pile drivers, jackhammers, backhoes, and concrete breaking machines. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three or four minutes at lower-power settings.

Table 4.10.E: Typical Maximum Construction Equipment Noise Levels (L_{max})

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 ft)	Suggested Maximum Sound Levels for Analysis (dBA at 50 ft)
Pile drivers, 12,000–18,000 ft-lb/blow	81–96	93
Rock drills	83–99	96
Jack hammers	75–85	82
Pneumatic tools	78–88	85
Pumps	74–84	80
Bulldozers	77–90	85
Scrapers	83–91	87
Haul trucks	83–94	88
Cranes	79–86	82
Portable generators	71–87	80
Rollers	75–82	80
Tractors	77–82	80
Front-end loaders	77–90	86
Hydraulic backhoe	81–90	86
Hydraulic excavators	81–90	86
Graders	79–89	86
Air compressors	76–89	86
Trucks	81–87	86

Source: Noise Impact Analysis (Appendix I).
dBA = A-weighted decibels
ft = feet
ft-lb/blow = feet per pound per blow

Demolition, grading, and construction of the proposed project would require the use of jackhammers, backhoes, concrete breaking machines, pile drivers, earthmovers, bulldozers, water trucks, and pickup trucks on the project site. Based on Table 4.10.E, the maximum noise level generated by each pile driver on the proposed project site is assumed to be 93 dBA L_{max} at 50 feet from the pile driver. Each backhoe would also generate 86 dBA L_{max} at 50 feet. The maximum noise level generated by water and pickup trucks is approximately 86 dBA L_{max} at 50 feet from these vehicles. Each doubling of a sound source with equal strength increases the noise level by 3 dBA.

The closest existing residences to the project site are 200 feet from the project construction areas. Assuming that each piece of construction equipment operates at some distance from the other equipment, the worst-case combined noise level at the closest residences may be subject to short-term noise reaching 84 dBA L_{max}.

The following noise reduction measures outlined in Mitigation Measure NOI-1 would reduce noise impacts during the project construction period to a less than significant level:

- Use of manufacturer-certified mufflers would generally reduce construction equipment noise by 8 to 10dBA

- Directing the noise-generating portions of the construction equipment away from sensitive receptors will reduce noise levels; amount of reduction will depend on the distance and directivity of the equipment noise emissions; and
- Locating the staging area from the sensitive receptors will also reduce the noise levels; amount of reduction will depend on the distance involved and whether any intervening structures exist.

The following noise reduction measures outlined in Mitigation Measure NOI-2 would specifically reduce noise impacts from pile-driving activities during the project construction period to a less than significant level:

- Use of a shock-absorbing pad between the ram and the pile cap would reduce pile driving noise by 3 to 5 dBA;
- Use of a sound mufflers on the pile rig would reduce noise from the hammer's air exhaust by 5 to 10 dBA;
- Use of sound damping materials on each pile driver would reduce the ringing noise of steel piles by 3 to 5 dBA; and
- Use of of cast-in-place in drilled hole or auger cast piles for a pile-supported transfer slab foundation system would also reduce noise levels from pile-driving.

The City of West Hollywood Municipal Code does not limit construction-related noise level as long as the construction activities are limited to the hours specified and is not excessive or unecessary. To reduce construction noise levels further and minimize noise impacts, mitigation requiring specific construction equipment maintenance and placement, as identified in Mitigation Measure NOI-1, would be required.

The specifications for the number and characteristics of the piles to be used, as well as the type of the pile hammer to be used, requires further analysis to evaluate pile drivability and to develop driving criteria as recommended in the *Report of Geotechnical Consultation Proposed Melrose Triangle Mixed-Use Project* (MACTEC, April 27, 2010). The recommendations contained in the Report of Geotechnical Consultation would be incorporated into the final design and structural plans, as required by Mitigation Measures GEO-1 and GEO-2 (refer to Geology and Soils, Section 4.5). Once the pile-driving criteria are determined, the measures outlined in Mitigation Measure NOI-2 would be implemented to further reduce potential pile-driving noise. With adherence to the City's construction hours and implementation of Mitigation Measures NOI-1 and NOI-2, construction noise impacts would be less than significant.

Long-Term On-Site Operational Noise Impacts.

Stationary Source Noise Impacts. Potential noise associated with operation of the proposed project takes into consideration noise from truck deliveries, loading/unloading activities, and other related activities in the loading and parking areas, as described in the following sections. The proposed project does not include any occupied uses on the rooftops of the structures, and no noise from such uses would occur. In addition, any commercial businesses that operate in the evenings (such as clubs or restaurants) would be required to comply with the City's Noise Ordinance for such uses.

Truck Deliveries and Loading/Unloading. Delivery activities on the project site are anticipated to generate a noise level of approximately 75 dBA L_{max} at 50 feet from the delivery activities. The loading/unloading areas would be located on level B-1 within the structure. As noise spreads from a source it loses energy, so the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6 dBA reduction in the noise level for each doubling of distance from a single-point source of noise, such as an idling truck, to a noise-sensitive receptor. The location of the proposed delivery and loading/unloading areas would provide a 10 to 15 dBA in noise reduction for the proposed project's residential units, which are located on the floors above the commercial uses. The distance would also attenuate the noise another 6 to 8 dBA. Total noise attenuation would be 16 to 23 dBA. Therefore, on-site loading/unloading noise would be reduced to below 59 dBA at the nearest noise sensitive receptor on the project site. Existing residential uses in the neighborhood would be farther away from the loading areas than the proposed residential uses on the project site and, therefore, they would experience less noise associated with delivery or loading activities.

The City of West Hollywood sets restrictions for the hours of loading/unloading activities and commercial business hours to protect sensitive users from excessive noise. Implementation of the City of West Hollywood Standard Condition NOI-I, as included below, would reduce operational noise impacts from on-site activities on adjacent noise-sensitive uses to a less than significant level. Compliance with the restrictions in the City of West Hollywood Noise Ordinance would further reduce potential noise impacts associated with the project and would ensure that truck loading/unloading noise impacts would be less than significant.

Parking Structure Activities. Parking-related activities, such as customers talking and car doors slamming, would generate approximately 60 dBA L_{max} at 50 feet. This level of noise would be much lower than that associated with truck delivery and loading/unloading activities. With the noise attenuation attributable to the distance and the intervening walls and floors, noise in the parking areas would be attenuated to below 52 dBA L_{max} and would not cause a significant noise impact with respect to the noise-sensitive uses on the project site or existing residences in the area. Nonetheless, compliance with the restrictions in the City of West Hollywood Noise Ordinance (SC-1) would further reduce any potential noise impacts associated with the on-site parking structure. With adherence to SC-1, operational noise impacts would be less than significant.

On-Site Traffic Noise Impacts. The proposed project would include residential units that front Santa Monica Boulevard, Melrose Avenue, and Almont Avenue. The proposed residential units along Santa Monica Boulevard and Melrose Avenue would be exposed to excessive traffic noise levels with implementation of the proposed project.

Proposed residential units along Santa Monica Boulevard are approximately 80 feet from the roadway centerline, which places them within the 70 dBA CNEL noise contour (which is out to 85 feet between Doheny Drive and Robertson Boulevard). At 80 feet, these residential units would be exposed to a traffic noise level of 70 dBA CNEL. Outdoor active use areas, including balconies and/or decks are proposed for these dwelling units and mitigation measures, such as a combination concrete/Plexiglas wall with a minimum effective height of 5 feet, would be required for the perimeter of the balconies or decks. In addition, mechanical ventilation, such as an air-conditioning system, would also be required for bedrooms fronting Santa Monica Boulevard. Based on the *Protective Noise Levels: Condensed Version of EPA Levels* document, combinations of exterior walls, doors, and windows, which is standard construction for Southern California residential buildings, would provide more than 24 dBA in exterior-to-interior noise reduction with windows closed and 12 dBA or more with windows open (national average is 25 dBA with windows closed and 15 dBA with windows open). With windows and doors closed, interior noise levels in these units would potentially reach 50 dBA CNEL (74 dBA - 24 dBA = 50 dBA).

Proposed residential units along Melrose Avenue are within 40 feet of the roadway centerline, placing them within the 65 dBA CNEL noise contour (which is out to 81 feet west of Robertson Boulevard). At 40 feet, these residential units would be exposed to a traffic noise level of 70 dBA CNEL. If outdoor active use areas such as balconies or decks are proposed for these dwelling units, mitigation measures, such as a combination concrete/plexiglass wall with a minimum effective height of 5 feet, would be required for the perimeter of the balconies or decks and would reduce noise levels by 5dBA. In addition, mechanical ventilation, such as an air-conditioning system, would also be required for bedrooms fronting Melrose Avenue. With windows and doors closed, interior noise levels in these units would potentially reach 47 dBA CNEL (70 dBA - 24 dBA = 46 dBA). Therefore, as previously stated, double-paned windows with a STC-30 or higher and a mechanical ventilation system, such as an air-conditioning system, would be required for bedrooms in the dwelling units fronting Melrose Avenue and would reduce noise levels by 5 dBA.

Project-related and cumulative traffic levels on Almont Drive would not generate sufficient noise levels to produce a significant noise impact at or within the proposed residential units.

Mitigation Measure NOI-3 specifies special building design and mechanical ventilation to reduce adverse traffic noise impacts on the proposed residential uses on the project site to below a level of significance. Therefore, with implementation of Mitigation Measure NOI-3, traffic noise impacts for balconies/decks and interior spaces in the project's dwelling units would be reduced to a less than significant level.

Threshold 4.10.2: Would the proposed project expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact

Construction Vibration. Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building, there is less adverse reaction.

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and the 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, to slight damage at the highest levels. Groundborne vibration from construction activities rarely reaches the levels that damage structures. The FTA has published standard vibration velocities for construction equipment operations. At a distance of 50 feet or more, vibration level associated with a large bulldozer or a loaded truck would be reduced to 0.0415 inch/sec or lower.

Groundborne vibration decreases rapidly with distance. Based on the FTA data, vibration velocities from heavy duty construction equipment operations used during project construction range from 0.003 to 0.644 inch/sec PPV at 25 feet from the source of activity. At 75 feet from the source of activity, vibration velocities would range from 0.001 to 0.124 inch/sec PPV. Groundborne vibration would be generated primarily during site clearing and grading activities on the project site and by off-site haul truck travel. The peak particle velocity (PPV) from bulldozer and heavy truck operations would range from 0.089 PPV to 0.076 PPV, respectively, at a distance of 25 feet. As each of these values is below the 2.0 inch/sec PPV significant threshold, and no vibration-sensitive receptors are located within 25 feet of the project site where heavy duty construction equipment would be used, vibration impacts associated with construction of the proposed project would be less than significant and no mitigation measures would be required.

Similarly, in terms of the human annoyance scale of VdB, bulldozers and other heavy-tracked construction equipment generate approximately 92 VdB of groundborne vibration when measured at 50 feet, based on Transit Noise and Vibration Impact Assessment (FTA, May 2006). This level of groundborne vibration exceeds the threshold of human perception, which is around 65 VdB. Based on the California Department of Transportation's *Transportation-Related Earthborne Vibration, Technical Advisory* (Rudy Hendricks, July 24, 1992), the vibration level at 100 feet is approximately 6 VdB lower than the vibration level at 50 feet. Vibration at 200 feet from the source is more than 6 VdB lower than the vibration level at 100 feet, or more than 12 VdB lower than the vibration level at 50 feet. Every doubling of distance from 50 feet results in the reduction of the vibration level by 6 VdB; therefore, receptors at 100 and 200 feet from the construction activity may be exposed to groundborne vibration levels up to 86 and 80 VdB, respectively. The existing structures in the project vicinity would be located at least 100 feet from the project site and would be exposed to groundborne vibration below 86 VdB. Therefore, construction on the project site would result in the exposure of persons to excessive groundborne vibration or groundborne noise levels; however, this range of vibration levels would be below the 102 VdB threshold considered by the FTA to be safe for buildings constructed with current building standards.

Nearest Commercial Buildings. At a distance of 60 feet, the resulting PPV associated with the use of pile drivers would be 0.118 inch/sec. This range of the vibration levels would be much lower than the 0.5 inch/sec PPV thresholds for modern commercial buildings from continuous or frequent intermittent sources, or much smaller than the 2.0 inch/sec PPV threshold from transient sources for modern commercial buildings. Additionally, the proposed project could incorporate cast-in-drilled-hole (CIDH) as an alternative to pile drivers, as included in Mitigation Measure NOI-2. The vibration generated using the CIDH method would be much lower than impact pile drivers and would be negligible at a distance of 60 feet.

Nearest Residential Buildings. At a distance of 130 feet, the resulting PPV at the nearest residential buildings would drop to 0.059 inch/sec. This range of the vibration levels would be much lower than the 0.3 inch/sec PPV threshold for older residential buildings from continuous or frequent intermittent sources, or much smaller than the 0.5 inch/sec PPV threshold from transient sources for older residential buildings. It would also be much lower than the 0.5 inch/sec PPV threshold for new residential buildings from continuous or frequent intermittent sources, or much smaller than the 1.0 inch/sec PPV threshold from transient sources for new residential buildings.

Therefore, vibration from construction activities associated with the proposed project, including those from pile driving, would not result in substantial vibration levels at the nearest commercial or residential structures adjacent to the site.

In conclusion, groundborne vibration during construction activity would be temporary and lower than established thresholds; therefore, impacts from project-related groundborne vibration during construction of the proposed project would be less than significant and no mitigation would be required.

Operational Vibration. The proposed project would not include stationary equipment that would result in high vibration levels. The main vibration sources would be passenger vehicle circulation within the proposed parking facility, delivery truck activity, and loading dock area activity. Operations of the proposed project would not involve any vibration sources that would cause exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels and no mitigation would be required.

Threshold 4.10.3: Would the proposed project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Potentially Significant Impact

Off-Site Traffic Noise Impacts. The Noise Impact Analysis prepared for the proposed project evaluated highway traffic-related noise conditions along the roadway segments in the project vicinity. Although project-related long-term vehicular trip increases are anticipated to be low, these traffic trips would potentially impact road links and intersections in the project vicinity. Existing off-site sensitive receptors in the vicinity of the project site would be potentially affected by noise associated with these new traffic trips.

Tables 4.10.F, 4.10.G, and 4.10.H show noise levels along Santa Monica Boulevard, Melrose Avenue, and other roads in the project vicinity. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn.

Table 4.10.F shows the traffic noise levels for the existing year at the time the Noise Study was prepared (2012) with the proposed project. Traffic noise levels would continue to range from low to

Table 4.10.F: Existing (2012) With Proposed Project Traffic Noise Levels

Roadway Segment	Average Daily Traffic	Centerline to 70 CNEL (ft)	Centerline to 65 CNEL (ft)	Centerline to 60 CNEL (ft)	CNEL (dBA) 50 ft from Outermost Lane	Change from No Project Level (dBA)
La Cienega Blvd. north of Santa Monica Blvd.	22,600	62	129	276	69.4	0.1
La Cienega Blvd. between Santa Monica Blvd. and Melrose Ave.	20,900	59	123	262	69.0	0.0
La Cienega Blvd. south of Melrose Ave.	26,000	68	141	303	70.0	0.1
San Vicente Blvd. north of Melrose Blvd.	15,500	< 50	101	215	67.7	0.0
San Vicente Blvd. south of Melrose Blvd.	15,500	< 50	101	215	67.7	0.1
Robertson Blvd. north of Santa Monica Blvd.	4,900	< 50	< 50	66	61.1	0.0
Robertson Blvd. between Santa Monica Blvd. and Melrose Ave.	8,200	< 50	< 50	93	63.3	0.0
Robertson Blvd. between Melrose Ave. and Beverly Blvd.	12,900	< 50	59	126	65.3	0.1
Robertson Blvd. south of Beverly Blvd.	12,100	< 50	56	120	65.0	0.1
Doheny Dr. north Sunset Blvd.	4,300	< 50	< 50	61	60.5	0.0
Doheny Dr. between Sunset Blvd. and Elevado Ave.	10,600	< 50	79	167	66.1	0.2
Doheny Dr. between Elevado Ave. and Santa Monica Blvd.	12,600	< 50	88	187	66.8	0.1
Doheny Dr. between Santa Monica Blvd. and Beverly Blvd.	10,700	< 50	80	168	66.1	0.1
Doheny Dr. south of Beverly Blvd.	12,700	< 50	89	188	66.8	0.1
Foothill Rd. north of Santa Monica Blvd.	800	< 50	< 50	< 50	53.2	0.0
Sunset Blvd west of Doheny Dr.	25,000	66	138	295	69.8	0.0
Sunset Blvd east of Doheny Dr.	27,100	69	145	311	70.1	0.0
Elevado Ave. west of Doheny Dr.	3,200	< 50	< 50	< 50	59.2	0.0
Elevado Ave. east of Doheny Dr.	420	< 50	< 50	< 50	50.4	0.0
Santa Monica Blvd. west of Foothill Rd.	33,800	80	168	361	71.1	0.1
Santa Monica Blvd. between Foothill Rd. and Doheny Dr.	29,500	73	154	329	70.5	0.1
Santa Monica Blvd. between Doheny Dr. and Robertson Blvd.	26,200	68	142	304	70.0	0.1
Santa Monica Blvd. between Robertson Blvd. and La Cienega Blvd.	29,200	73	153	327	70.5	0.1
Santa Monica Blvd. east of La Cienega Blvd.	22,200	61	128	273	69.3	0.1
Melrose Ave. west of Robertson Blvd.	10,300	< 50	78	164	65.9	0.5
Melrose Ave. between Robertson Blvd. and San Vicente Blvd.	14,300	< 50	96	204	67.4	0.3
Melrose Ave. between San Vicente Blvd. and La Cienega Blvd.	16,800	< 50	106	227	68.1	0.2
Melrose Ave. east of La Cienega Blvd.	20,200	58	120	256	68.9	0.1
Beverly Blvd. west of Doheny Dr.	17,400	< 50	109	232	68.2	0.0
Beverly Blvd. between Doheny Dr. and Roberts on Blvd.	20,000	58	119	254	68.8	0.0
Beverly Blvd. east of Robertson Blvd.	21,500	60	125	267	69.1	0.0

Source: LSA Associates, Inc., March 2012.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = feet

Table 4.10.G: Year 2016 Baseline Traffic Noise Levels

Roadway Segment	Average Daily Traffic	Centerline to 70 CNEL (ft)	Centerline to 65 CNEL (ft)	Centerline to 60 CNEL (ft)	CNEL (dBA) 50 ft from Outermost Lane
La Cienega Blvd. north of Santa Monica Blvd.	26,700	69	144	308	70.1
La Cienega Blvd. between Santa Monica Blvd. and Melrose Ave.	26,000	68	141	303	70.0
La Cienega Blvd. south of Melrose Ave.	31,000	75	159	340	70.7
San Vicente Blvd. north of Melrose Blvd.	20,200	58	120	256	68.9
San Vicente Blvd. south of Melrose Blvd.	20,500	58	121	259	68.9
Robertson Blvd. north of Santa Monica Blvd.	5,000	< 50	< 50	67	61.2
Robertson Blvd. between Santa Monica Blvd. and Melrose Ave.	9,400	< 50	< 50	102	63.9
Robertson Blvd. between Melrose Ave. and Beverly Blvd.	14,400	< 50	63	135	65.8
Robertson Blvd. south of Beverly Blvd.	13,000	< 50	59	126	65.3
Doheny Dr. north Sunset Blvd.	4,300	< 50	< 50	61	60.5
Doheny Dr. between Sunset Blvd. and Elevado Ave.	12,700	< 50	89	188	66.8
Doheny Dr. between Elevado Ave. and Santa Monica Blvd.	15,200	< 50	100	212	67.6
Doheny Dr. between Santa Monica Blvd. and Beverly Blvd.	14,200	< 50	95	203	67.3
Doheny Dr. south of Beverly Blvd.	16,800	< 50	106	227	68.1
Foothill Rd. north of Santa Monica Blvd.	1,500	< 50	< 50	< 50	56.0
Sunset Blvd west of Doheny Dr.	28,500	72	150	322	70.4
Sunset Blvd east of Doheny Dr.	32,000	77	162	348	70.9
Elevado Ave. west of Doheny Dr.	3,200	< 50	< 50	< 50	59.2
Elevado Ave. east of Doheny Dr.	420	< 50	< 50	< 50	50.4
Santa Monica Blvd. west of Foothill Rd.	45,200	96	204	437	72.4
Santa Monica Blvd. between Foothill Rd. and Doheny Dr.	40,000	89	188	403	71.8
Santa Monica Blvd. between Doheny Dr. and Robertson Blvd.	36,800	84	178	381	71.5
Santa Monica Blvd. between Robertson Blvd. and La Cienega Blvd.	39,000	87	185	397	71.7
Santa Monica Blvd. east of La Cienega Blvd.	31,500	76	160	344	70.8
Melrose Ave. west of Robertson Blvd.	9,900	< 50	76	160	65.8
Melrose Ave. between Robertson Blvd. and San Vicente Blvd.	14,700	< 50	98	208	67.5
Melrose Ave. between San Vicente Blvd. and La Cienega Blvd.	20,600	59	122	259	68.9
Melrose Ave. east of La Cienega Blvd.	22,600	62	129	276	69.4
Beverly Blvd. west of Doheny Dr.	19,500	57	117	250	68.7
Beverly Blvd. between Doheny Dr. and Robertson Blvd.	22,400	62	128	274	69.3
Beverly Blvd. east of Robertson Blvd.	23,300	63	132	282	69.5

Source: LSA Associates, Inc., March 2012.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = feet

Table 4.10.H: Year 2016 with Proposed Project Traffic Noise Levels

Roadway Segment	Average Daily Traffic	Centerline to 70 CNEL (ft)	Centerline to 65 CNEL (ft)	Centerline to 60 CNEL (ft)	CNEL (dBA) 50 ft from Outermost Lane	Change from No Project Level (dBA)
La Cienega Blvd. north of Santa Monica Blvd.	27,000	69	145	311	70.1	0.0
La Cienega Blvd. between Santa Monica Blvd. and Melrose Ave.	26,000	68	141	303	70.0	0.0
La Cienega Blvd. south of Melrose Ave.	31,300	76	160	343	70.8	0.1
San Vicente Blvd. north of Melrose Blvd.	20,200	58	120	256	68.9	0.0
San Vicente Blvd. south of Melrose Blvd.	20,900	59	123	262	69.0	0.1
Robertson Blvd. north of Santa Monica Blvd.	5,000	< 50	< 50	67	61.2	0.0
Robertson Blvd. between Santa Monica Blvd. and Melrose Ave.	9,400	< 50	< 50	102	63.9	0.0
Robertson Blvd. between Melrose Ave. and Beverly Blvd.	14,600	< 50	64	136	65.8	0.0
Robertson Blvd. south of Beverly Blvd.	13,200	< 50	59	128	65.4	0.1
Doheny Dr. north Sunset Blvd.	4,300	< 50	< 50	61	60.5	0.0
Doheny Dr. between Sunset Blvd. and Elevado Ave.	12,900	< 50	90	190	66.9	0.1
Doheny Dr. between Elevado Ave. and Santa Monica Blvd.	15,500	< 50	101	215	67.7	0.1
Doheny Dr. between Santa Monica Blvd. and Beverly Blvd.	14,400	< 50	96	205	67.4	0.1
Doheny Dr. south of Beverly Blvd.	17,100	< 50	108	229	68.1	0.0
Foothill Rd. north of Santa Monica Blvd.	1,500	< 50	< 50	< 50	56.0	0.0
Sunset Blvd west of Doheny Dr.	28,600	72	151	323	70.4	0.0
Sunset Blvd east of Doheny Dr.	32,000	77	162	348	70.9	0.0
Elevado Ave. west of Doheny Dr.	3,200	< 50	< 50	< 50	59.2	0.0
Elevado Ave. east of Doheny Dr.	420	< 50	< 50	< 50	50.4	0.0
Santa Monica Blvd. west of Foothill Rd.	45,700	97	205	441	72.4	0.0
Santa Monica Blvd. between Foothill Rd. and Doheny Dr.	40,500	89	189	407	71.9	0.1
Santa Monica Blvd. between Doheny Dr. and Robertson Blvd.	37,600	85	180	387	71.6	0.1
Santa Monica Blvd. between Robertson Blvd. and La Cienega Blvd.	39,600	88	187	401	71.8	0.1
Santa Monica Blvd. east of La Cienega Blvd.	31,700	77	161	345	70.8	0.0
Melrose Ave. west of Robertson Blvd.	11,000	< 50	81	171	66.2	0.4
Melrose Ave. between Robertson Blvd. and San Vicente Blvd.	15,500	< 50	101	215	67.7	0.2
Melrose Ave. between San Vicente Blvd. and La Cienega Blvd.	21,100	59	123	264	69.1	0.2
Melrose Ave. east of La Cienega Blvd.	22,800	62	130	278	69.4	0.0
Beverly Blvd. west of Doheny Dr.	19,500	57	117	250	68.7	0.0
Beverly Blvd. between Doheny Dr. and Robertson Blvd.	22,400	62	128	274	69.3	0.0
Beverly Blvd. east of Robertson Blvd.	23,300	63	132	282	69.5	0.0

Source: LSA Associates, Inc., March 2012.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = feet

moderately high. The increase in project-related traffic noise levels would be very small, at 0.5 dBA for Melrose Avenue, 0.2 dBA for Doheny Drive, and 0.1 dBA for La Cienega Boulevard, San Vicente Boulevard, Robertson Boulevard, and Santa Monica Boulevard. Therefore, project-related traffic noise impacts on off-site land uses would be small and less than significant. Existing baseline traffic noise along Santa Monica Boulevard and Melrose Avenue is relatively high and makes such a small project contribution not perceptible. The residential uses along nearby nonarterial streets are not anticipated to be impacted by noise as a result of the proposed project because project-related traffic would not use such streets, unless such traffic represents a cut-through opportunity to avoid congestion on the more major thoroughfares.

Tables 4.10.G and 4.10.H show the traffic noise levels for 2016 with and without the project. Traffic noise levels would continue to be low to moderately high. The project-related traffic noise level increase would be 0.4 dBA for Melrose Avenue and 0.1 dBA for San Vicente Boulevard, Robertson Boulevard, Doheny Drive, Sunset Boulevard, and Santa Monica Boulevard, which would not be audible to the human ear. Therefore, the project-related traffic noise impact on off-site land uses for existing conditions and after buildout of the proposed project would be less than significant, and no mitigation is required.

Threshold 4.10.4: Would the proposed project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Potentially Significant Impact

As described above for short-term construction noise impacts, maximum combined noise levels from proposed project-related construction activities could range up to 84 dBA L_{max} at the closest residences. These short-term construction-related noise levels would be higher than existing ambient noise levels, and therefore, construction activities would result in temporary increases in ambient noise levels in the project vicinity. However, construction would be limited to the hours specified in the City's Municipal Code. In addition, with implementation of Mitigation Measures NOI-1 and NOI-2, which outline measures for reducing short-term noise impacts, including pile driving, temporary increases in ambient noise levels in the proposed project vicinity associated with project construction would be reduced to less than significant levels.

Threshold 4.10.5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the proposed project expose people residing or working in the project area to excessive noise levels?

No Impact

The project site is approximately 7.5 miles northeast of the Santa Monica Airport, approximately 10 miles southwest of Burbank International Airport, and approximately 12 miles north of Los Angeles International Airport. Based on the aircraft noise contours produced by the airports, the project site does not lie within the 60 dBA CNEL contour of any of these airports. Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels from a public or private airport. Because no significant noise impacts from airport-related activities would occur, no mitigation is required.

Threshold 4.10.6: For a project within the vicinity of a private airstrip, would the proposed project expose people residing or working in the project area to excessive noise levels?

No Impact

The project site is not within the vicinity of a private airstrip. Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels associated with a private airstrip, and no mitigation is required.

4.10.7 STANDARD CONDITION

The following standard condition would ensure that operational noise from on-site activities would not result in significant noise impacts on adjacent noise-sensitive uses.

Standard Condition NOI-1: The Applicant shall adhere to the following standard conditions as required by the City for on-site operations:

- Loading or unloading activities are limited to 8:00 a.m. to 10:00 p.m.;
- Commercial activities may not be plainly audible at any residence between 10:00 p.m. to 8:00 a.m.; and
- Ambient noise levels may not be increased by commercial activities more than 5 decibels (dB), with a 70 A-weighted decibels (dBA) maximum.

4.10.8 MITIGATION MEASURES

Construction Noise Mitigation Measures

NOI-1: Prior to issuance of demolition or grading permits, the Applicant shall submit grading and construction plans for review and approval by the City of West Hollywood's Building Official. The plans shall include a condition that the construction contractor shall implement the following during construction activities to reduce potential construction noise impacts on nearby sensitive receptors:

- During all site excavation and grading, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards;
- The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site; and

- The construction contractor shall locate equipment staging to create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

NOI-2: Prior to issuance of demolition or grading permits, the Applicant shall submit final grading and construction plans for review and approval by the City of West Hollywood's Building Official. The plans shall include a condition that the construction contractor shall implement one or more of the following measures during construction to reduce pile-driving noise impacts:

- Use of a resilient yet stiff shock-absorbing pad between the ram and the pile cap (3 to 5 A-weighted decibels [dBA] reduction);
- Use of a sound muffler on the pile rig to reduce the hammer's air exhaust noise (5 to 10 dBA reduction);
- Use of sound damping materials across the web of each pile driver to reduce the ringing sound of steel piles (a 3 to 5 dBA reduction); and/or
- Use of cast-in-place/cast in drilled hole (CIDH) or auger cast piles for a pile-supported transfer slab foundation system.

Traffic Noise Mitigation Measure

NOI-3: Prior to issuance of building permits, the Applicant shall submit the building plans for review and approval by the City's Building Official to ensure that the following items are included in the plans to reduce noise levels within the development to an acceptable level:

- Building facade upgrades consisting of double-paned windows with a minimum rating of sound transmission class (STC) 30 shall be required for bedrooms in the frontline dwelling units along Santa Monica Boulevard (a 5 A-weighted decibel (dBA) reduction to an interior noise level of 41 dBA Community Noise Equivalent Level [CNEL]);
- Building facade upgrades such as double-paned windows with a minimum rating of STC-30 shall be required for bedrooms in the frontline dwelling units along Melrose Avenue (a 5 dBA reduction to an interior noise level of 41 dBA CNEL);
- Air-conditioning systems, a form of mechanical ventilation, shall be required for dwelling units along Santa Monica Boulevard and Melrose Avenue; and
- Patios and balconies located within the 65 dBA CNEL noise contours of Santa Monica Boulevard and Melrose Avenue shall require sound barriers, such as a combination concrete/Plexiglas or glass wall. Units with patios and balconies along Santa Monica Boulevard and Melrose Avenue shall require 5-foot-high barriers to meet the exterior noise standard (a 5 dBA reduction to an exterior noise level of 65 dBA CNEL).

4.10.9 CUMULATIVE IMPACTS

Construction for the proposed project has the potential to overlap with construction of one or more related projects. A cumulative noise or vibration impact would occur if multiple sources of noise and vibration combine to create impacts in close proximity to a sensitive receptor. The closest related project is located at 623 N. La Peer Drive, approximately 200 feet to the east of the project site. Because construction noise and vibration are localized and rapidly attenuate within an urban environment, the related projects are located too far from the project site to contribute to cumulative impacts related to noise levels due to construction activities. Construction activity at any related project site would not result in a noticeable increase in noise to sensitive receptors adjacent to the project site. Furthermore, each related project would be required to comply with the City of West Hollywood Noise Ordinance. Therefore, cumulative construction impacts would be less than significant.

Cumulative noise impacts could occur as a result of increased traffic volumes on local roadways due to future growth and increased development in the project area. Cumulative traffic noise impacts are based on the difference between existing traffic volumes and future traffic volumes after buildout of the project and in combination with related projects currently being proposed or built within the project area. An increase of 3.0 dBA CNEL at any roadway location is considered a significant impact. As shown in Table 4.10.G, none of the roadway segments within the vicinity of the project site is expected to experience a noise level increase of greater than 3.0 dBA CNEL. The proposed project's incremental contributions would be between 0.1 and 0.4 dBA along these roadway segments. Therefore, the proposed project would not contribute to cumulative roadway noise impacts and would have a less than cumulatively considerable impact.

4.10.10 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementation of Standard Condition NOI-1 and Mitigation Measures NOI-1, NOI-2, and NOI-3 would reduce potential project impacts related to construction and operation noise to a less than significant level. All other potential project impacts related to noise and vibration would be less than significant.

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