4.8 NOISE

INTRODUCTION

This section of the EIR presents the results of an analysis of both existing background conditions and future noise conditions following completion of the project. These findings also reflect the project traffic study, prepared by Linscott, Law and Greenspan in December 2003. Complete copies of the traffic analysis and the acoustic analysis data are contained within ***Appendix 4.6*** *and* ***4.8*** *of this EIR, respectively.*

CHARACTERISTICS OF NOISE

Noise is usually defined as unwanted sound and can be an undesirable by-product of society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, causes actual physical harm, or has an adverse effect on health. The definition of noise as unwanted sound implies that it has an adverse effect or causes a substantial annoyance to people and their environment.

Sound pressure level alone is not a reliable indicator of loudness because the human ear does not respond uniformly to sounds at all frequencies. For example, it is less sensitive to low and high frequencies than to medium frequencies that more closely correspond with human speech. In response to the human ear sensitivity or lack thereof to different frequencies, the A-weighted noise level, referenced in units of dB(A), was developed to better correspond with peoples' subjective judgment of sound levels. In general, changes in a community noise level of less than 3 dB(A) are not typically noticed by the human ear.[1] Changes from 3 to 5 dB(A) may be noticed by some individuals who are extremely sensitive to changes in noise. An increase of greater than 5 dB(A) is readily noticeable, while the human ear perceives a 10 dB(A) increase in sound level to be a doubling of sound volume. A doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound wave energy (e.g., doubling the volume of traffic on a roadway) would result in a barely perceptible change in sound level. Common noise levels associated with certain activities are shown on **Figure 4.8-1, Common Noise Levels**.

Noise sources occur in two forms: (1) point sources, such as stationary equipment or individual motor vehicles; and (2) line sources, such as a roadway with a large number of mobile point sources (motor vehicles). Sound generated by a stationary point source typically diminishes (attenuates) at a rate of 6 dB(A) for each doubling of distance from the source to the receptor at acoustically "hard" sites, and it

1 U.S. Department of Transportation, Federal Highway Administration, *Highway Noise Fundamentals*, (Springfield, Virginia: U.S. Department of Transportation, Federal Highway Administration, September 1980), p. 81.

attenuates at a rate of 7.5 dB(A) at acoustically "soft" sites.[2] For example, a 60 dB(A) noise level measured at 50 feet from a point source at an acoustically hard site would be 54 dB(A) at 100 feet from the source and it would be 48 dB(A) at 200 feet from the source. Sound generated by a line source typically attenuates (i.e., becomes less) at a rate of 3 dB(A) and 4.5 dB(A) per doubling of distance from the source to the receptor for hard and soft sites, respectively.[3] Man-made or natural barriers can also attenuate sound levels, as illustrated in **Figure 4.8-2, Noise Attenuation by Barriers**.

Solid walls and berms may reduce noise levels by 5 to 10 dB(A).[4] The minimum attenuation of exterior to interior noise provided by typical structures in California is provided in **Table 4.8-1**.

Table 4.8-1
Outside to Inside Noise Attenuation (dB(A))

Building Type	Open Windows	Closed Windows[1]
Residences	17	25
Schools	17	25
Churches	20	30
Hospitals/Convalescent	17	25
Homes	17	25
Offices	20	30
Theaters	17	25
Hotels/Motels		

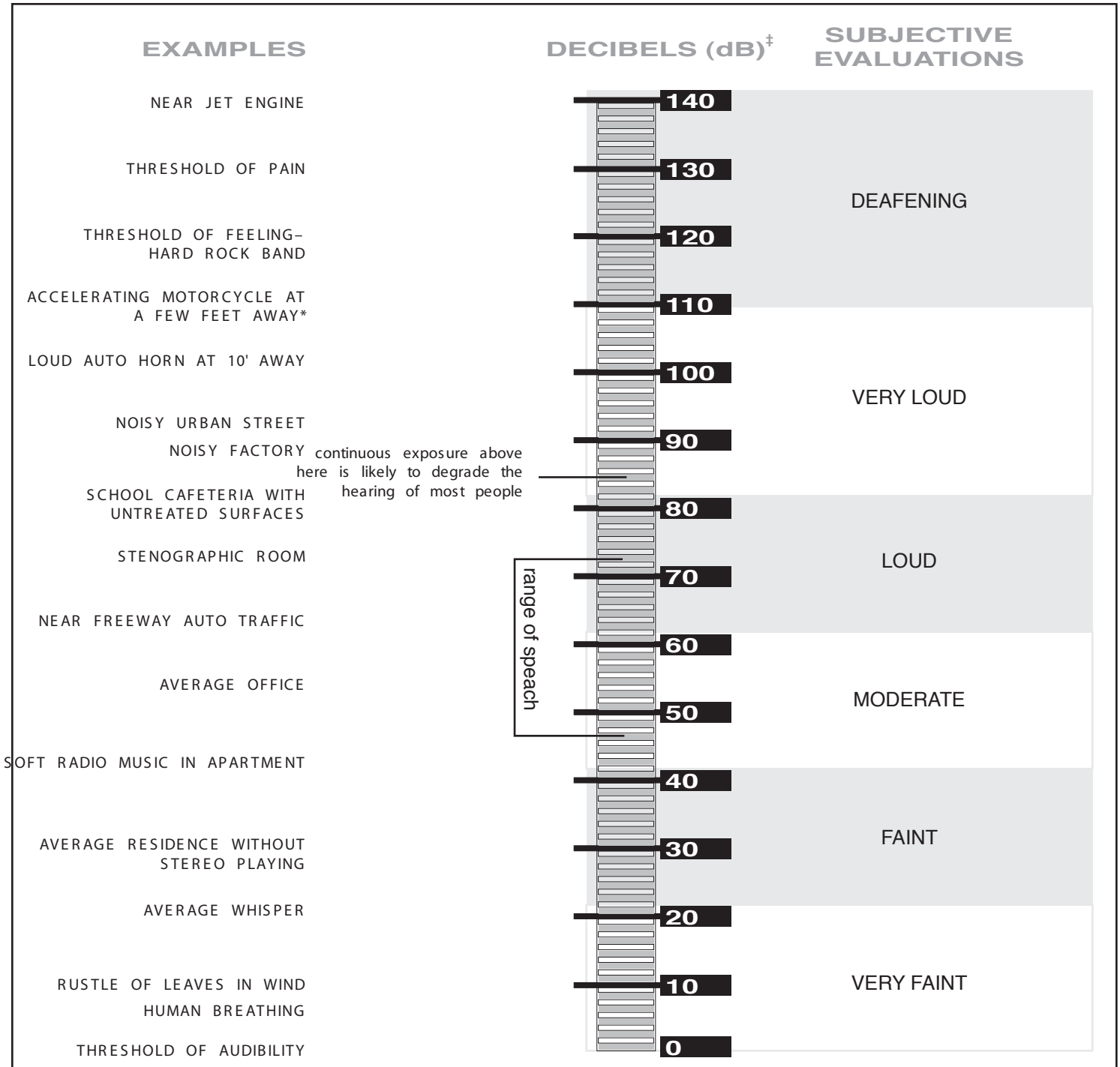
Source: Transportation Research Board, National Research Council, Highway Noise: A Design Guide for Highway Engineers*, National Cooperative Highway Research Program Report 117.*
[1] *As shown, structures with closed windows can attenuate exterior noise by a minimum of 25 to 30 dB(A).*

When assessing community reaction to noise, there is an obvious need for a scale that averages sound pressure levels over time and quantifies the result in terms of a single numerical descriptor. Several scales have been developed that address community noise levels.

2 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.

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.

4 U.S. Department of Transportation, Federal Highway Administration, *Highway Noise Mitigation*, (Springfield, Virginia: U.S. Department of Transportation, Federal Highway Administration, September 1980), p. 18.

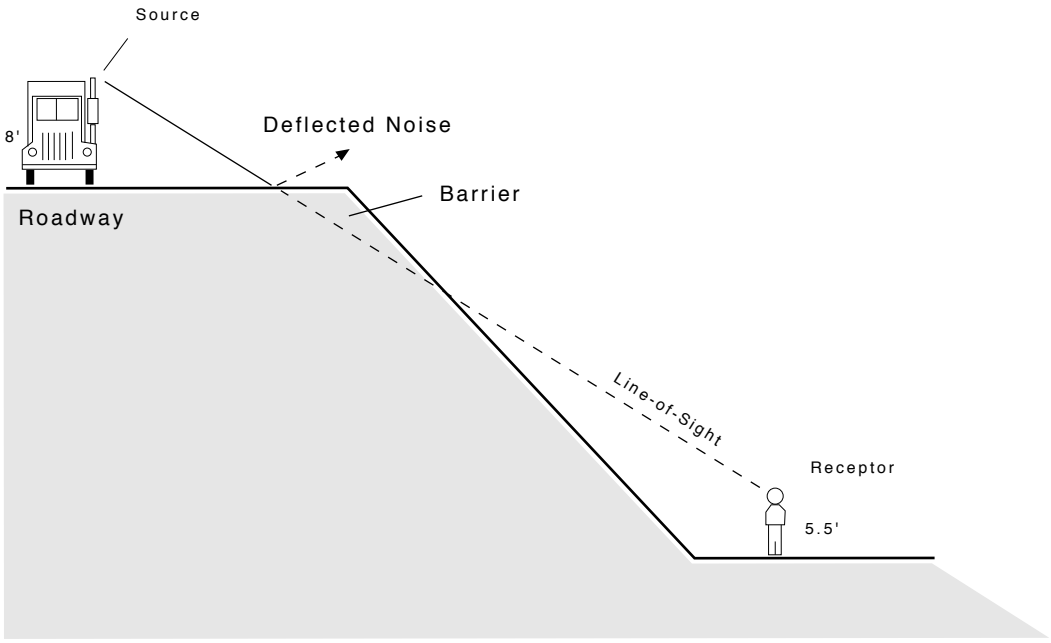


* NOTE: 50' from motorcycle equals noise at about 2000' from a four-engine jet aircraft.

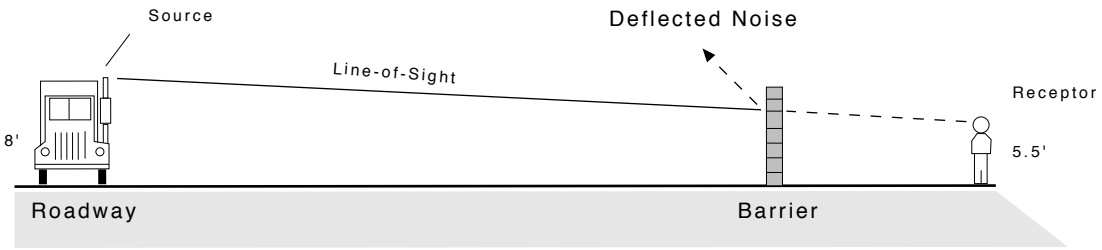
‡NOTE: dB are "average" values as measured on the A–scale of a sound–level meter.

FIGURE **4.8-1**

Common Noise Levels



"Barrier Effect" Resulting from Differences in Elevation.



"Barrier Effect" Resulting from Typical Soundwall.

SOURCE: © Impact Sciences, September 1997.

FIGURE **4.8-2**

Noise Attenuation by Barriers

Those that are applicable to this analysis are the Equivalent Noise Level (L_{eq}) and the Community Noise Equivalent Level (CNEL). L_{eq} is the average A-weighted sound level measured over a given time interval. L_{eq} can be measured over any time period, but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods. CNEL is another average A-weighted sound level measured over a 24-hour time period. However, this noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL noise measurement is obtained after adding 5 decibels to sound levels occurring during the evening from 7 PM to 10 PM, and 10 decibels to sound levels occurring during the nighttime from 10 PM to 7 AM. The 5 and 10 decibel "penalties" are applied to account for increased noise sensitivity during the evening and nighttime hours. The logarithmic effect of adding these penalties to the 1-hour L_{eq} measurements typically results in a CNEL measurement that is within approximately 3 dB(A) of the peak hour L_{eq}.[5]

CHARACTERISTICS OF VIBRATION

Vibration is a unique form of noise. It is unique because its energy is carried through structures and the earth, whereas, noise is simply carried through the air. Thus, vibration is generally felt rather than heard. Some vibration effects can be caused by noise; e.g., the rattling of windows from truck pass-bys. This phenomenon is related to the coupling of the acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Typically, ground-borne vibration generated by man-made activities attenuates rapidly as distance from the source of the vibration increases. Vibration, which spreads through the ground rapidly, diminishes in amplitude with distance from the source. The ground motion caused by vibration is measured as particle velocity in inches per second and, in the U.S. is referenced as vibration decibels (VdB).

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is the typically background vibration velocity, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

Figure 4.8-3, Typical Levels of Ground-Borne Vibration, identifies the typical groundborne vibration levels in VdB and human response to different levels of vibration.

5 California Department of Transportation, *Technical Noise Supplement; A Technical Supplement to the Traffic Noise Analysis Protocol*, (Sacramento, California: October 1998), pp. N51-N54.

REGULATORY FRAMEWORK

Applicable Plans and Policies

The criteria used to assess the acceptability of community noise levels vary with the municipality. The project is located within the City of Glendale; therefore, it is subject to the standards promulgated by the City.

Noise standards for land uses are identified in the City of Glendale's Noise Ordinance, which is located in Chapter 8.36, Section 8.360.40 of the Municipal Code. Under Section 8.36.040 of the Noise Ordinance, exterior and interior noise is regulated by reference to "presumed noise standards", which are presented below in **Tables 4.8-2** and **4.8-3**. Under Section 8.36.050 of the Noise Ordinance, where noise levels are below the "presumed noise standards", the actual ambient noise level controls, and any noise more than 5 dB(A) above the actual ambient noise level is considered a violation of the Noise Ordinance. Where the actual ambient noise level exceeds the "presumed noise standard", the actual ambient noise level also controls, and any noise more than 5 dB(A) above the actual ambient noise level is also considered a violation of the Noise Ordinance. However, under the Noise Ordinance, the actual ambient noise levels shall not exceed the "presumed noise level" by more than 5 dB(A).

Table 4.8-2
Exterior Presumed Noise Standards

Zone	Standard	Maximum	Time
Residential (multi-family, hotels, motels and transient lodgings)	60 dB(A)	65 dB(A)	Anytime
Central Business District and Commercial	65 dB(A)	70 dB(A)	Anytime

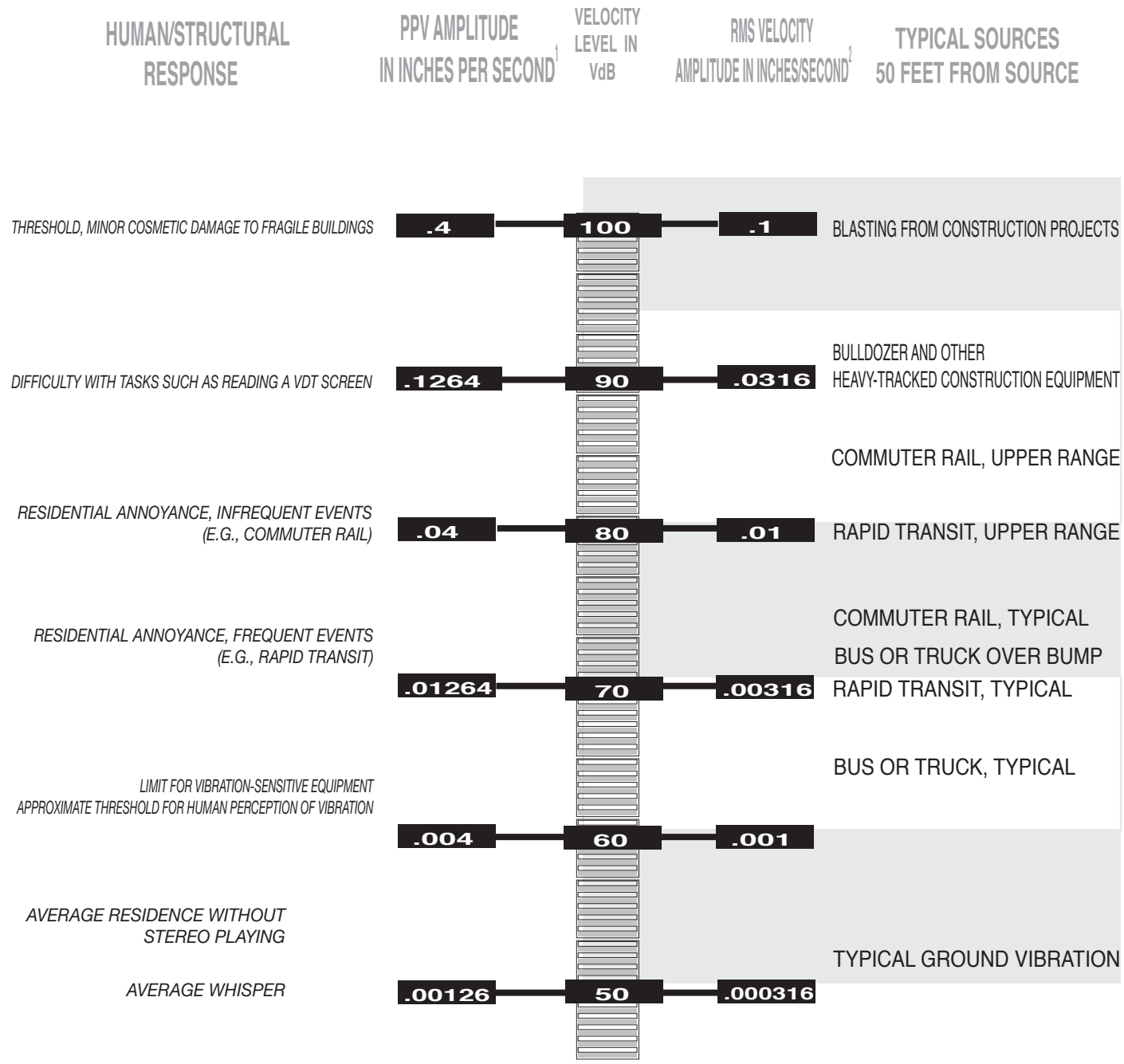
Source: City of Glendale Municipal Code.

Table 4.8-3
Interior Presumed Noise Standards

Zone	Decibels	Time
Residential	45 dB(A)	Nighttime[1]
Residential	55 dB(A)	All other times

Source: City of Glendale Municipal Code.
[1] Nighttime is defined as between 10:00 PM to 7:00 AM.

In addition, the City of Glendale General Plan Noise Element establishes noise criteria for the various land uses throughout the City. **Figure 4.8-4, Land Use Compatibility to Noise**, identifies the acceptable

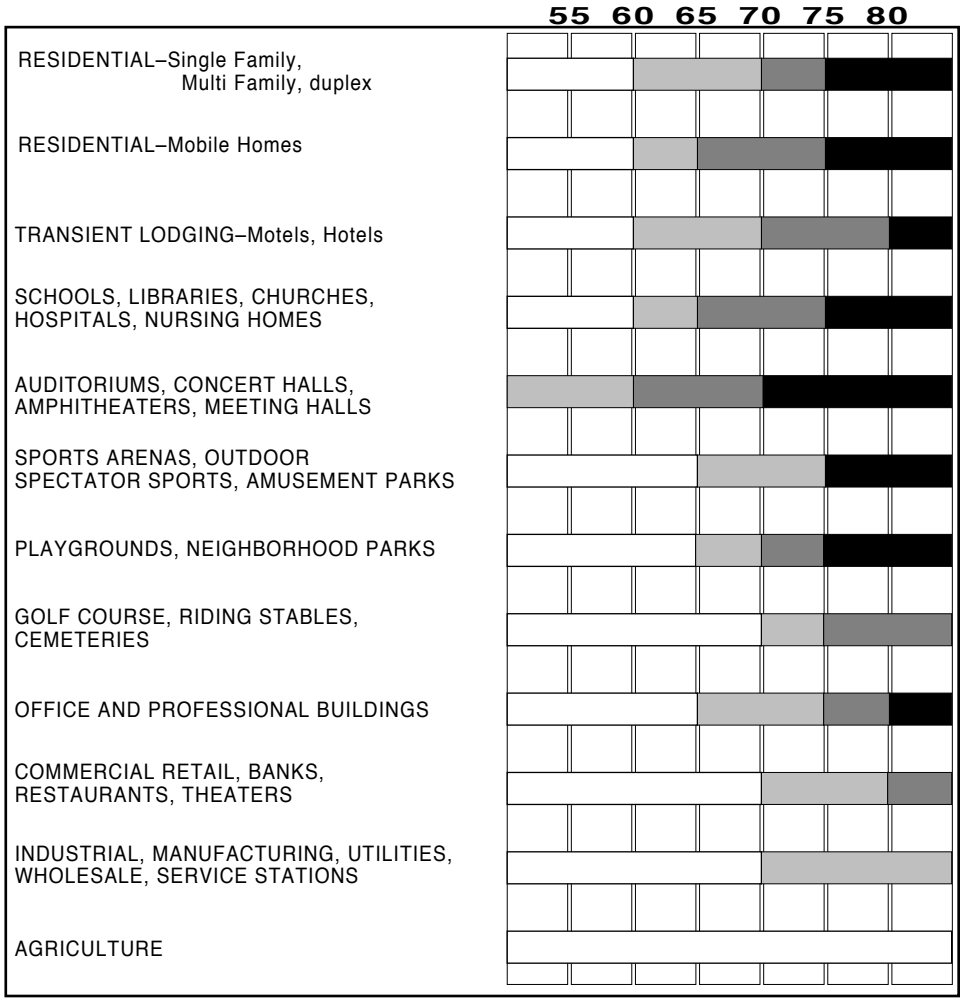


[1] *PPV is typically a factor 1.7 to 6 times greater than RMS vibration velocity. A factor of 4 was used to calculate noise levels.*

[2] *Vibration levels in terms of velocity levels are defined as: $V=20 \times \log_{10}(a/r)$*
V=velocity levels in decibels
a=RMS velocity amplitude
r=reference amplitude (accepted reference quantities for vibration velocity are 1×10^{-6} inches/second in the United States)

FIGURE **4.8-3**

Typical Levels of Ground-Borne Vibration



SOURCE: City of Glendale Noise Element

FIGURE **4.8-4**

Land Use Compatibility to Noise

limit of noise exposure for various land use categories within the City. Noise exposure for a residential land use is "normally acceptable" when the CNEL at exterior residential locations is equal to or below 60 dB(A), "conditionally acceptable" when the CNEL is between 60 to 70 dB(A), "normally unacceptable" when the CNEL is between 70 to 75 dB(A), and "clearly unacceptable" when the CNEL is greater than 75 dB(A). For commercial land uses, such as those proposed by the Glendale Town Center project, a CNEL of 70 dB(A) would be considered "normally acceptable," while for commercial uses, CNEL levels greater than 75 dB(A) would be considered "normally unacceptable." These guidelines apply to noise sources such as vehicular traffic, aircraft, and rail movements.

Section 8.36.080 of the City of Glendale Municipal Code was adopted in order to minimize intrusive noise sources that are related to construction activities. It is unlawful for any person within a residential zone, or within 500 feet of a residential zone, to operate equipment or perform any outside construction or repair work on buildings within the City between the hours of 7:00 AM and 7:00 PM, Monday through Saturday, unless a permit is obtained beforehand. No construction is allowed on Sundays and holidays without an approved permit. The project applicant has proposed to conduct construction operations outside of the hours permitted by Section 8.36.080 (beginning at 6:00 AM, Monday through Saturday, instead of 7:00 AM), subject to permit approval by the City. The City of Glendale does not have regulations that establish maximum construction noise levels. However, Section 8.36.290(K) provides an exemption from the Noise Ordinance for any activity, operation, or noise, which cannot be brought into compliance (with the Noise Ordinance) because it is technically infeasible to do so. "Technical infeasibility" for the purpose of this section means that noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers and/or any other noise reduction devices or techniques during the operation of the equipment.

Section 8.36.210 of the Noise Ordinance provides that vibration created from the operation of any device would be a violation of City standards if such vibration is above the vibration perception threshold of an individual at or beyond the property boundary of a source on private property. For sources on a public space or public right-of-way, a violation would occur if the vibration perception threshold of an individual is exceeded at a distance of 150 feet from the source. The Noise Ordinance does not define the level of vibration that is deemed to be perceptible by an individual and does not establish maximum allowable vibration levels.

ENVIRONMENTAL SETTING

Existing Conditions

Noise Environment

Noise sensitive receptors located adjacent to the project site include a recording studio and Best Western Hotel to the south of the project site along Colorado Street, and the Roadway Inn Hotel and Vagabond Inn Hotel located to the south across Colorado Street.

The project site is located in an urban location in the City of Glendale and is exposed to noise sources typical of such a setting. Stationary sources of noise on the site include commercial and office uses and parking (e.g., doors slamming, car alarms). Off-site stationary noise sources in the area that are audible on the site include activities associated with commercial and retail uses surrounding the site such as people talking, doors slamming and tires squealing, and truck deliveries. Mobile sources of noise that are audible on the site are related to traffic along Central Avenue, Brand Boulevard, Colorado Street, and Broadway Boulevard.

While stationary and mobile noise sources in areas of commercial and office use generally lessen after business hours, the areas adjacent to the Glendale Town Center site are used until late in the evening most days of the week due to the high number of restaurants, bars and cinemas located in the immediate area. To document ambient conditions, noise level monitoring was conducted by Impact Sciences, Inc., using a Brüel and Kjær Type 2238 controller Integrating Sound Level Meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Noise monitoring was conducted at six locations around the project site on October 2, 2003 and October 21, 2003 and in three different time periods: during the daytime (7:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 7:00 AM). These noise levels are conservative since they were not measured during the weekend. Noise readings were taken in L_{eq} 20-minute periods with "A" frequency fast time weighting. No unique or special events, such as high-winds or construction activities, were noted during the monitoring periods. **Figure 4.8-5, Noise Monitoring Location,** illustrates the location of noise monitoring sites, and **Table 4.8-4** provides the data associated with each monitoring period for each location. As shown, noise levels ranged from a low of 64 dB(A) to a high of 70.3 dB(A) between 7:00 AM to 7:00 PM (i.e., daytime). Between 7:00 PM to 10:00 PM (i.e., evening), noise levels ranged from a low of 63.3 dB(A) to a high of 68.9 dB(A). During the time period between 10:00 PM to 7:00 AM (i.e., nighttime), noise levels ranged from a low of 55 dB(A) to a high of 64.6 dB(A). These monitored levels are typical of commercial, office, dining and entertainment land uses.

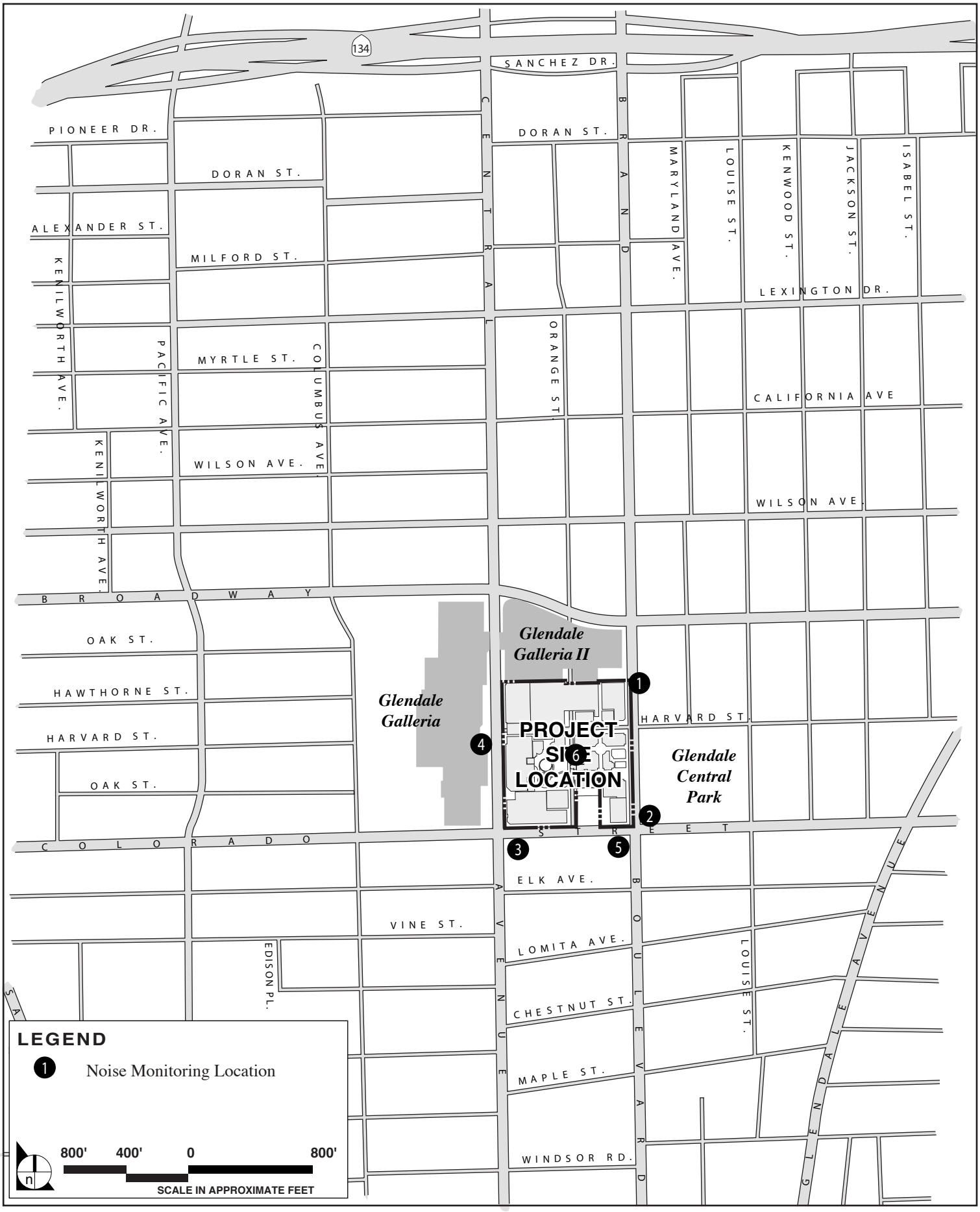


FIGURE **4.8-5**

Noise Monitoring Locations

618-01•1103

Table 4.8-4
Existing Ambient Noise Levels

Location (Time Period)	Time	Noise Levels
Daytime 7:00 AM to 7:00 PM		
Location 1	2:08 PM to 2:29 PM	67.4 dB(A)
Location 2	3:41 PM to 4:01 PM	69.6 dB(A)
Location 3	2:58 PM to 3:17 PM	64.0 dB(A)
Location 4	1:42 PM to 2:02 PM	70.3 dB(A)
Location 5	3:19 PM to 3:39 PM	64.6 dB(A)
Location 6	2:35 PM to 2:55 PM	67.0 dB(A)
Evening 7:00 PM to 10:00 PM		
Location 1	8:43 PM to 9:02 PM	66.2 dB(A)
Location 2	9:04 PM to 9:20 PM	68.9 dB(A)
Location 3	7:25 PM to 7:45 PM	65.9 dB(A)
Location 4	7:00 PM to 7:20 PM	67.8 dB(A)
Location 5	8:17 PM to 8:36 PM	65.7 dB(A)
Location 6	7:51 PM to 8:11 PM	63.3 dB(A)
Nighttime 10:00 PM to 7:00 AM		
Location 1	12:58 AM to 1:18 AM	64.6 dB(A)
Location 2	1:24 AM to 1:44 AM	59.7 dB(A)
Location 3	1:47 AM to 2:07 AM	59.0 dB(A)
Location 4	3:05 AM to 3:25 AM	56.5 dB(A)
Location 5	2:19 AM to 2:39 AM	61.3 dB(A)
Location 6	2:42 AM to 3:02 AM	55.0 dB(A)

Source: Impact Sciences, Inc., October 2 and 21, 2003.

The existing ambient noise environment for the roadways was determined by calculating noise levels based on average daily trips determined in the traffic analysis conducted for this EIR. The noise modeling effort was accomplished using the modified version of the Federal Highway Administration Highway Noise Prediction Model. The results of the weekday noise modeling are provided in **Table 4.8-5. Existing Weekday Roadway Noise Levels.** As shown, weekday roadway noise levels range from a low of 57.9 to a high of 68 dB(A).

Table 4.8-5
Existing Weekday Roadway Noise Levels

Roadway Segment	CNEL in dB(A) at 50 feet form Roadway Centerline
Pacific Ave-North of Broadway	63.6
Pacific Ave-North of Colorado	62.9
Pacific Ave-South of Colorado	63.1
Central Ave-North of Broadway	66.9
Central Ave-North of Colorado	66.5
Central Ave-South of Colorado	67.0
Central Ave-South of Chevy Chase	65.9
Brand Blvd-North of Broadway	63.4
Brand Blvd-North of Colorado	63.6
Brand Blvd-South of Colorado	64.1
Brand Blvd-South of Chevy Chase	64.3
Glendale Ave-North of Broadway	66.6
Glendale Ave-South of Colorado	66.1
Broadway-West of Pacific	60.8
Broadway-West of Central	63.5
Broadway-West of Brand	63.0
Broadway-East of Brand	63.1
Broadway-East of Glendale	62.7
Harvard-West of Brand	58.6
Harvard-East of Brand	59.4
Harvard-East of Glendale	57.9
Colorado-West of Pacific	68.0
Colorado-West of Central	67.8
Colorado-West of Brand	66.9
Colorado-East of Brand	67.0
Colorado-East of Glendale	66.9
Chevy Chase Rd-West of Glendale	63.1

Source: Impact Sciences, Inc. Model results are contained in ***Appendix 4.8****.*

Weekend noise modeling results are provided in **Table 4.8-6. Existing Weekend Roadway Noise Levels** As shown, weekend roadway noise levels range from a low of 56.5 to a high of 68 dB(A).

Table 4.8-6
Existing Weekend Roadway Noise Levels

Roadway Segment	CNEL in dB(A) at 50 feet form Roadway Centerline
Pacific Ave-North of Broadway	62.7
Pacific Ave-North of Colorado	62.0
Pacific Ave-South of Colorado	62.6
Central Ave-North of Broadway	67.2
Central Ave-North of Colorado	66.2
Central Ave-South of Colorado	66.5
Central Ave-South of Chevy Chase	65.2
Brand Blvd-North of Broadway	63.9
Brand Blvd-North of Colorado	64.6
Brand Blvd-South of Colorado	64.7
Brand Blvd-South of Chevy Chase	64.3
Glendale Ave-North of Broadway	66.7
Glendale Ave-South of Colorado	66.2
Broadway-West of Pacific	59.8
Broadway-West of Central	63.5
Broadway-West of Brand	63.1
Broadway-East of Brand	63.1
Broadway-East of Glendale	62.3
Harvard-West of Brand	59.7
Harvard-East of Brand	60.2
Harvard-East of Glendale	56.5
Colorado-West of Pacific	68.0
Colorado-West of Central	67.7
Colorado-West of Brand	67.4
Colorado-East of Brand	67.1
Colorado-East of Glendale	66.9
Chevy Chase Rd-West of Glendale	62.2

Source: Impact Sciences, Inc. Model results are contained in ***Appendix 4.8****.*

Based on noise monitoring and noise modeling conducted, the noise level around the project site already exceeds City threshold levels for residential land uses.

ENVIRONMENTAL IMPACTS

Methodology

Analysis of the existing and future noise environments presented in this EIR section is based on technical reports, noise monitoring, and noise prediction modeling. Predicted vibration impacts as a result of the implementation of the Glendale Town Center were determined using data from the Federal Transit Administration. Noise modeling procedures involved the calculation of existing and future vehicular

noise levels along individual roadway segments. This was accomplished using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108). This model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site conditions. Average vehicle noise rates (energy rates) utilized in the Federal Highway Administration Highway Model have been modified to reflect average vehicle noise rates identified for the State of California by the California Department of Transportation (Caltrans). Caltrans data shows that California automobile noise is 0.8 to 1.0 dB(A) louder than national levels and that medium and heavy-duty truck noise is 0.3 to 3 dB(A) quieter than national levels. Traffic volumes utilized as data inputs to the noise prediction model were calculated based on information provided by Linscott, Law & Greenspan, the project traffic engineer, and are consistent with the analysis provided in S**ection 4.6, Traffic, Circulation and Parking**, of this EIR.

Thresholds of Significance

The following thresholds for determining the significance of impacts related to noise are contained in the environmental checklist form contained in Appendix G of the most recent update of the California Environmental Quality Act (CEQA) *Guidelines*. The *Guidelines* ask whether, 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 groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity 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 plan has not been adopted, within two miles of a public airport or public use airport, would expose people residing or working in the project area to excessive noise levels (issue is addressed in **Section 5.0, Effects Found Not to be Significant**).
- 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 (issue is addressed in **Section 5.0, Effects Found Not to be Significant)**.

The CEQA *Guidelines* do not provide a definition for "substantial increase" in noise and they do not provide a threshold of significance for potential noise or vibration impacts. As such, the following thresholds of significance were developed for this noise analysis based upon the General Plan Noise

Element and Noise Ordinance discussed previously in this EIR section. These thresholds apply to both project impacts and cumulative impacts.

Noise

On-Site Noise Thresholds

According to **Figure 4.8-4**, retail, restaurants, banks, and theaters are "normally acceptable" with exterior noise levels of up to 70 dB(A) CNEL. Based on this information, and for purposes of this EIR, the project would result in a significant noise impact if on-site exterior locations around the commercial and retail uses would be exposed to noise levels above 70 dB(A) CNEL. For residential uses and hotels, the guidelines for noise identify 65 dB(A) CNEL as the "normally acceptable" exterior noise level threshold. A standard of 65 dB(A) for multi-family residential use is also consistent with the City's Noise Ordinance, which establishes that ambient noise levels should not exceed the "presumed noise standard" of 60 dB(A) by more than 5 dB(A). Therefore, the project would result in a significant noise impact if a person residing within the proposed residential uses would be exposed to exterior noise above 65 dB(A).

Interior noise levels for residential uses are 45 dB(A) during the nighttime and 50 dB(A) during the daytime. The City Noise Ordinance and Noise Element do not provide noise level standards for the interior of commercial-retail uses.

Off-Site Noise Thresholds

Off-site noise thresholds consider the following: the City's Noise Compatibility Criteria, community responses to changes in noise levels, and CEQA standards. As stated earlier, changes in a noise level of less than 3 dB(A) are not typically noticed by the human ear. Some individuals who are extremely sensitive to changes in noise may notice changes from 3 to 5 dB(A). Based on this information, the following thresholds have been established for this analysis:

- An increase of 3 dB(A) or greater in traffic noise level that occurs from project-related activities would be significant if the resulting noise levels would cause the City's noise compatibility thresholds for "normally acceptable" exterior or interior noise levels to be exceeded, or result in a 3 dB(A) increase in noise to a land use experiencing levels above the City's noise compatibility threshold for "normally acceptable." A noise level increase of less than 3 dB(A) under either of the previously described scenarios is not considered to be significant.
- An increase of 5 dB(A) or less in traffic noise level that occurs from project-related activities would be considered <u>not</u> significant if the resulting noise levels remain below the "acceptable" thresholds established by the City. Increases in traffic noise greater than 5 dB(A) would be considered to be significant even if the resulting noise levels are below City standards.

- Stationary noise sources proposed as part of the project that could result in increases in noise levels at adjacent land uses that exceed City standards would be considered significant.

Vibration

Vibration Thresholds

The City's Municipal Code states that a violation of City standards would occur if the operation of a device creates a vibration above the vibration perception threshold. A numerical threshold to identify the point at which a vibration impact is deemed perceptible is not identified in the City's Municipal Code. In the absence of significance thresholds for vibration from construction, the Federal Railroad Administration (FRA) identifies a maximum acceptable level threshold of 65 VdB for buildings where vibration would interfere with interior operations, and 72 VdB for residences and buildings where people normally sleep.

Impact Analysis

Thresholds: **Result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**

Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

As stated previously, based on noise monitoring and noise modeling conducted, the existing ambient noise level around the project site already exceeds City threshold exterior noise levels for residential land uses.

Impact Analysis:

Vehicle Noise – Vehicular noise can potentially affect the project site, as well as land uses located along the studied roadway system. Based on the distribution of traffic volumes, noise modeling was conducted for the roadways analyzed in **Section 4.6, Traffic, Circulation and Parking**. Specifically, forecasts were calculated by comparing the existing noise to existing plus project. The results of the modeled weekday roadway noise levels are provided below in **Table 4.8-7, Weekday Operational Roadway Noise Levels**. Changes in CNEL levels as a result of the proposed project will range from 0.0 dB(A) to 0.9 dB(A). None of the roadway segments would result in an increase in CNEL of greater than 3 dB(A) during the weekday as a result of the project's development. As discussed above, the 3 dB(A) threshold represents

the point at which only the most sensitive individuals notice a change in noise levels. Potential impacts are, therefore, considered to be less than significant.

Table 4.8-7
Weekday Operational Roadway Noise Levels

Roadway Segment	Existing Noise Levels Without Project	Existing Noise Levels Plus Project	Change in Noise Levels	Significant Project Impact
Pacific Ave-North of Broadway	63.6	63.7	0.1	No
Pacific Ave-North of Colorado	62.9	62.9	0.0	No
Pacific Ave-South of Colorado	63.1	63.3	0.2	No
Central Ave-North of Broadway	66.9	67.4	0.5	No
Central Ave-North of Colorado	66.5	67.4	0.9	No
Central Ave-South of Colorado	67.0	67.2	0.2	No
Central Ave-South of Chevy Chase	65.9	66.1	0.2	No
Brand Blvd-North of Broadway	63.4	63.8	0.4	No
Brand Blvd-North of Colorado	63.6	64.5	0.9	No
Brand Blvd-South of Colorado	64.1	64.5	0.4	No
Brand Blvd-South of Chevy Chase	64.3	64.6	0.2	No
Glendale Ave-North of Broadway	66.6	66.9	0.3	No
Glendale Ave-South of Colorado	66.1	66.1	0.0	No
Broadway-West of Pacific	60.8	60.9	0.1	No
Broadway-West of Central	63.5	63.7	0.2	No
Broadway-West of Brand	63.0	63.1	0.1	No
Broadway-East of Brand	63.1	63.4	0.3	No
Broadway-East of Glendale	62.7	62.8	0.1	No
Harvard-West of Brand	58.6	59.0	0.4	No
Harvard-East of Brand	59.4	60.2	0.6	No
Harvard-East of Glendale	57.9	58.1	0.2	No
Colorado-West of Pacific	68.0	68.4	0.4	No
Colorado-West of Central	67.8	68.2	0.4	No
Colorado-West of Brand	66.9	66.9	0.0	No
Colorado-East of Brand	67.0	67.3	0.3	No
Colorado-East of Glendale	66.9	67.2	0.3	No
Chevy Chase Rd-West of Glendale	63.1	63.2	0.1	No

All values are listed in dB(A)
Source: Impact Sciences, Inc. Model results are contained in ***Appendix 4.8****.*

The results of the modeled weekend roadway noise levels are provided below in **Table 4.8-8, Weekend Operational Roadway Noise Levels.** Changes in CNEL levels as a result of the proposed project will range from 0.0 dB(A) to 1.4 dB(A). None of the roadway segments would result in an increase in CNEL of greater than 3 dB(A) during the weekend as a result of the project's development. As discussed above, the 3 dB(A) threshold represents the point at which only the most sensitive individuals notice a change in noise levels. Potential impacts are, therefore, considered to be less than significant.

Table 4.8-8
Weekend Operational Roadway Noise Levels

Roadway Segment	Existing Noise Levels Without Project	Existing Noise Levels Plus Project	Change in Noise Levels	Significant Project Impact
Pacific Ave-North of Broadway	62.7	62.9	0.2	No
Pacific Ave-North of Colorado	62.0	62.0	0.0	No
Pacific Ave-South of Colorado	62.6	62.9	0.3	No
Central Ave-North of Broadway	67.2	67.9	0.7	No
Central Ave-North of Colorado	66.2	67.6	1.4	No
Central Ave-South of Colorado	66.5	66.8	0.3	No
Central Ave-South of Chevy Chase	65.2	65.5	0.3	No
Brand Blvd-North of Broadway	63.9	64.4	0.5	No
Brand Blvd-North of Colorado	64.6	65.8	1.2	No
Brand Blvd-South of Colorado	64.7	65.2	0.5	No
Brand Blvd-South of Chevy Chase	64.3	64.8	0.5	No
Glendale Ave-North of Broadway	66.7	67.1	0.4	No
Glendale Ave-South of Colorado	66.2	66.2	0.0	No
Broadway-West of Pacific	59.8	60.1	0.3	No
Broadway-West of Central	63.5	63.8	0.3	No
Broadway-West of Brand	63.1	63.4	0.3	No
Broadway-East of Brand	63.1	63.6	0.5	No
Broadway-East of Glendale	62.3	62.5	0.2	No
Harvard-West of Brand	59.7	60.6	0.9	No
Harvard-East of Brand	60.2	61.2	1.0	No
Harvard-East of Glendale	56.5	57.0	0.5	No
Colorado-West of Pacific	68.0	68.6	0.6	No
Colorado-West of Central	67.7	68.3	0.6	No
Colorado-West of Brand	67.4	67.6	0.2	No
Colorado-East of Brand	67.1	67.6	0.5	No
Colorado-East of Glendale	66.9	67.4	0.5	No
Chevy Chase Rd-West of Glendale	62.2	62.4	0.2	No

All values are listed in dB(A)
Source: Impact Sciences, Inc. Model results are contained in ***Appendix 4.8****.*

As shown in **Tables 4.8-7** and **4.8-8**, existing plus project noise levels 50 feet from the centerline of Brand Boulevard and adjacent to the project site would be approximately 64.5 dB(A) during the weekday and 65.8 dB(A) during the weekend. Along Colorado Boulevard, adjacent to the project site, existing plus project noise levels 50 feet from the center line would be approximately 66.9 dB(A) during the weekday and 67.6 dB(A) during the weekend. These noise levels would be above the City Municipal Code exterior noise threshold of 65 dB(A) for residential uses, as is the case under existing conditions, and if the project were to develop exterior living areas along these two roadways, such as patios, impacts would be significant.

Future residential land uses along Colorado Street and Brand Boulevard, including existing hotels, would be exposed to interior noise levels of between 40 to 43 dB(A) which is below the acceptable level for interior noise levels during both the daytime and nighttime hours. This assumes typical construction techniques generally achieve a minimum exterior to interior noise level reduction of at least 25 dB(A) and the windows are closed.[6] Impacts would be less than significant. Because the residents of the residential unit could close their windows to reduce interior levels to acceptable levels, this impact is also considered to be less than significant.

Project Design Features: None are required.

Level of Significance Before Mitigation: Significant for exterior noise levels.

Mitigation Measures: None are required.

Level of Significance After Mitigation: Significant and unavoidable.

Rooftop Mounted Equipment – New retail and commercial uses proposed on the project site could introduce various stationary noise sources, including electrical and mechanical air conditioning, most of which would be located on rooftops. Areas potentially affected by the introduction of such equipment include on-site residential uses and off-site commercial uses along Colorado Boulevard, Central Avenue, and Brand Boulevard. Typically, rooftop mounted equipment sources produce noise levels of approximately 56 dB(A) at 50 feet. Although these noise levels may be annoying within a quiet environment, the existing daytime, evening, and nighttime ambient noise levels within the area of on-site residential uses and surrounding areas would substantially mask these on-site sources. Nevertheless, given the location of on-site structures and proximity to residential uses and the existing hotels and recording studio, the possibility exists that during nighttime periods these sources could exceed the City's 65 dB(A) Municipal Code standard depending upon the location of the equipment. As such, impacts are considered to be potentially significant. Standard design features such as shielding, enclosures and parapets, as well as the location of rooftop equipment a suitable distance from sensitive receptors, would reduce this impact to less than significant.

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

Project Design Features:

PDF 4.8-1(a) The applicant shall reduce noise impacts from electrical and mechanical equipment, such as ventilation and air conditioning units by locating equipment away from receptor areas, proper selection and sizing of equipment, installation of equipment with proper acoustical shielding, and incorporating the use of parapets into building design.

***Level of Significance Before Mitigation*:** Less than significant.

Mitigation Measures: None are required.

Level of Significance After Mitigation: Less than significant.

Loading Docks – The project proposes several loading docks on the project site. All the loading and unloading docks along the northern property line would be contained within the parking garage and would not be a source of noise to on-site or off-site sensitive uses. External truck loading and unloading docks associated with the project would be located along Orange Street and the alleyway between Orange Avenue and Brand Boulevard. The operations at loading docks typically result in noise levels of between 64 to 66 dB(A) at 75 feet. The noise from loading docks would not cause an increase of more than 3 dB(A) over the time-weighted 24-hour CNEL standard due to the limited amount and duration of operations, and would not be significant from that perspective. Nonetheless, the maximum sound levels (i.e., peaks) generated by loading and unloading of trucks could exceed the exterior noise level 65 dB(A) standard contained within the Municipal Code at receptor locations. In addition, depending on the timing of operations of loading docks, relative to future residences and the existing hotels and recording studio, peak noise levels could generate short-term adverse impacts during the early morning or late night hours.

Project Design Features: None are required.

***Level of Significance Before Mitigation*:** Significant.

Mitigation Measures:

4.8-1(a) Loading docks constructed on the project site shall be designed to have either a depressed (i.e., below grade) loading dock area; an internal bay; or a wall to break the

line of sight between residential land uses and other noise sensitive uses including the hotels and recording studio, and loading operations. Acoustical analysis shall be performed to demonstrate that operation of the loading docks does not result in noise levels that exceed City standards at exterior on-site residences' living areas or off-site sensitive uses. These components shall be incorporated into the plans to be submitted by the applicant to the City of Glendale for review and approval prior to the issuance of building permits.

Level of Significance After Mitigation: Less than significant.

Parking Structures – Development of the proposed project would introduce three parking structures on the project site. Two of the garages would be subterranean and would not be a source of noise due to being fully enclosed. The remaining parking structure would be a maximum of seven levels aboveground and would be located on the northern portion of the project site. In general, noise associated with parking structures is not of sufficient volume to exceed community standards based on the time-weighted CNEL scale. Parking structures can be a source of annoyance due to automobile engine start-ups and acceleration, and the activation of car alarms. On-site residential land uses would be the closest sensitive receptors within the project area and would thus represent the worst-case impact associated with parking structure noise from the project. Parking structures can generate L_{eq} noise levels of between 49 dB(A) L_{eq} (tire squeals) to 74 dB(A) L_{eq} (car alarms) at 50 feet. Due to the high level of traffic noise along streets surrounding the project site, normal daytime parking structure L_{eq} noise would not likely be audible due to the masking of noise by traffic on nearby roadways. However, single noise events could be an annoyance to on-site residents, the off-site hotels, and the recording studio, and would exceed the 65 dB(A) Municipal Code threshold at receptor locations.

Project Design Features: None are required.

Level of Significance Before Mitigation: Significant.

Mitigation Measures:

4.8-1(b) Sound attenuation measures shall be incorporated into the design to minimize noise leakage from the aboveground parking structure into the surrounding community. These measures may include a half-wall on the grade-level parking deck and/or full walls on the sides of the structure that are facing nearby receptors and/or noise control louvers on selected structure facades that potentially influence receptor areas. Acoustical

analysis shall be performed to demonstrate that the aboveground parking structure does not result in noise levels that exceed City standards at exterior on-site residences or off-site sensitive uses. These components shall be incorporated into the plans to be submitted by the applicant to the City of Glendale for review and approval prior to the issuance of building permits.

Level of Significance After Mitigation: Less than significant.

Street Sweepers – Other noise sources that may be associated with the parking structure areas include the use of sweepers in the early morning or late evening hours. Noise levels generated by sweepers are generally higher than parking lot noise associated with automobile activities. Sweepers can generate noise levels of 68 dB(A) L_{eq} at 50 feet for normal sweeping activities.[7] The noise from sweepers would not cause an increase in long-term noise of more than 3 dB(A) over the time-weighted CNEL, and would not be significant from that perspective. However, the peak sound levels generated by the sweepers could exceed the single noise event threshold for on-site residences, the off-site hotels and the recording studio. Depending on the timing of operations, this noise source would result in significant noise impacts during quieter morning and evening periods, and would exceed the Municipal Code 65 dB(A) threshold for exterior uses at receptor locations.

Project Design Features: None are required.

***Level of Significance Before Mitigation*:** Significant.

Mitigation Measures:

4.8-1(c) On-site sweeper operations shall be restricted to the hours of 7:00 AM to 10:00 PM.

In addition to this mitigation measure, the implementation of design features associated with the parking structure would reduce noise impacts associated with sweepers.

Level of Significance After Mitigation: Less than significant.

7 Keating, Janice, *Street Sweepers Picking Up Speed and Quieting Down*, The Journal for Surface Water Quality.

On-Site Retail and Entertainment Uses – Future residents and existing sensitive uses located within the project site may experience noise due to an increase in human activity within the area from patrons using commercial/retail businesses and the public open and park space proposed on site. Potential noise sources associated with retail and entertainment uses on site include people talking, music from late-night and dining uses, and the occasional outdoor concert in the public open and park space. The loudest of these activities would be associated with a concert in the public open and park space. In general, country music is presented at an average sound level of 90 dB(A) L_{eq}, while rock music typically averages sound levels of approximately 105 dB(A). These noise levels would exceed the Municipal Code 65 dB(A) threshold for exterior uses at on-site sensitive receptor locations. All other areas surrounding the project site would be buffered by on-site buildings of sufficient height to reduce noise levels to below the 65 dB(A) threshold.

Project Design Features: None are required.

Level of Significance Before Mitigation: Significant.

Mitigation Measures:

4.8-1(d) Use of the public open and park space for concerts or other noise generating events shall be limited to the hours of 7 AM to 10 PM on weekdays and on weekends.

4.8-1(e) Speakers shall be oriented toward the interior of the public open and park space and/or directed downward. The sound system shall be limited to produce a maximum noise level of 65 dB(A) in the areas of on-site residential use if no sound attenuation has been provided around outdoor areas. Based upon the effectiveness of breaks in the line of sight provided around exterior living areas, noise levels can be increased to the extent permitted at residential areas. Acoustical analysis shall be performed to demonstrate that the concert noise levels do not result in noise levels that exceed City standards within exterior living areas.

Level of Significance After Mitigation: Less than significant.

Residential On-Site Development – Future residents located on the project site, as well as off-site hotels and the recording studio, may experience noise due to an increase in human activity within the area. Potential residential-type noise sources include people talking, doors slamming, stereos, domestic animals and other noises associated with human activity. These noise sources are not unique and

generally contribute to the ambient noise levels experienced in all residential areas. Noise levels for residential areas are typically between 48 to 52 dB(A) CNEL.[8] Overall, the noise generated by the project's residential land uses would not exceed the City's compatibility thresholds and is considered to be less than significant.

Project Design Features: None are required.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: None are required.

Level of Significance After Mitigation: Less than significant.

***Threshold*:** **Result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.**

Impact Analysis: Ground vibrations from construction activities very rarely reach the levels that can damage structures, but they can achieve the audible range and be felt in buildings very close to the site. The primary and most intensive vibration source associated with the development of the project would be the use of bulldozers during construction. Bulldozers can create intense noise that is disturbing and can result in ground vibrations. Pile drivers would not be used for construction of the proposed project.

The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Ground vibrations from construction activities rarely reach the levels that can damage structures, but they can achieve the audible and perceptible ranges in buildings close to the construction site. **Table 4.8-9, Vibration Source Levels for Construction Equipment,** below, lists vibration source levels for construction equipment.

8 U.S. Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974.

Table 4.8-9
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB			
	25 Feet	50 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	77	75
Loaded trucks	86	80	76	74
Jackhammer	79	73	69	67
Small Bulldozer	58	52	48	46

Source: Federal Railroad Administration, 1998.

As indicated in **Table 4.8-9**, large bulldozers are capable of producing approximately 87 VdB at 25 feet. The closest location where vibration levels could be experienced by an individual or sensitive interior use would be approximately 25 feet from the property line of the project site and would include the existing off-site recording studio and hotels to the south. Vibration at the recording studio would be above the acceptable level of 65 VdB, and at the hotel locations would be at or near the 75 VdB threshold during short-term construction activities depending on the equipment in use. In addition, the hotels across Colorado Street could experience vibration levels of approximately 75 VdB. It should be noted that these vibration levels would be occurring primarily during the daytime hours and would be unlikely to hamper guests sleeping at the hotel locations. Nonetheless, groundborne vibration generated from the construction of the proposed project at these receptor locations would be significant.

Project Design Features: None are required.

Level of Significance Before Mitigation: Significant.

Mitigation Measures:

4.8-2(a) Provide notification to the recording studio and hotels, at least 10 days in advance, of construction activities that are anticipated to result in vibration levels above the thresholds.

4.8-2(b) Demolition, earthmoving, and ground-impacting operations shall be conducted so as not to occur in the same time period.

4.8-2(c) Select demolition method to minimize vibration, where possible (e.g., sawing masonry into sections rather than demolishing it by pavement breakers).

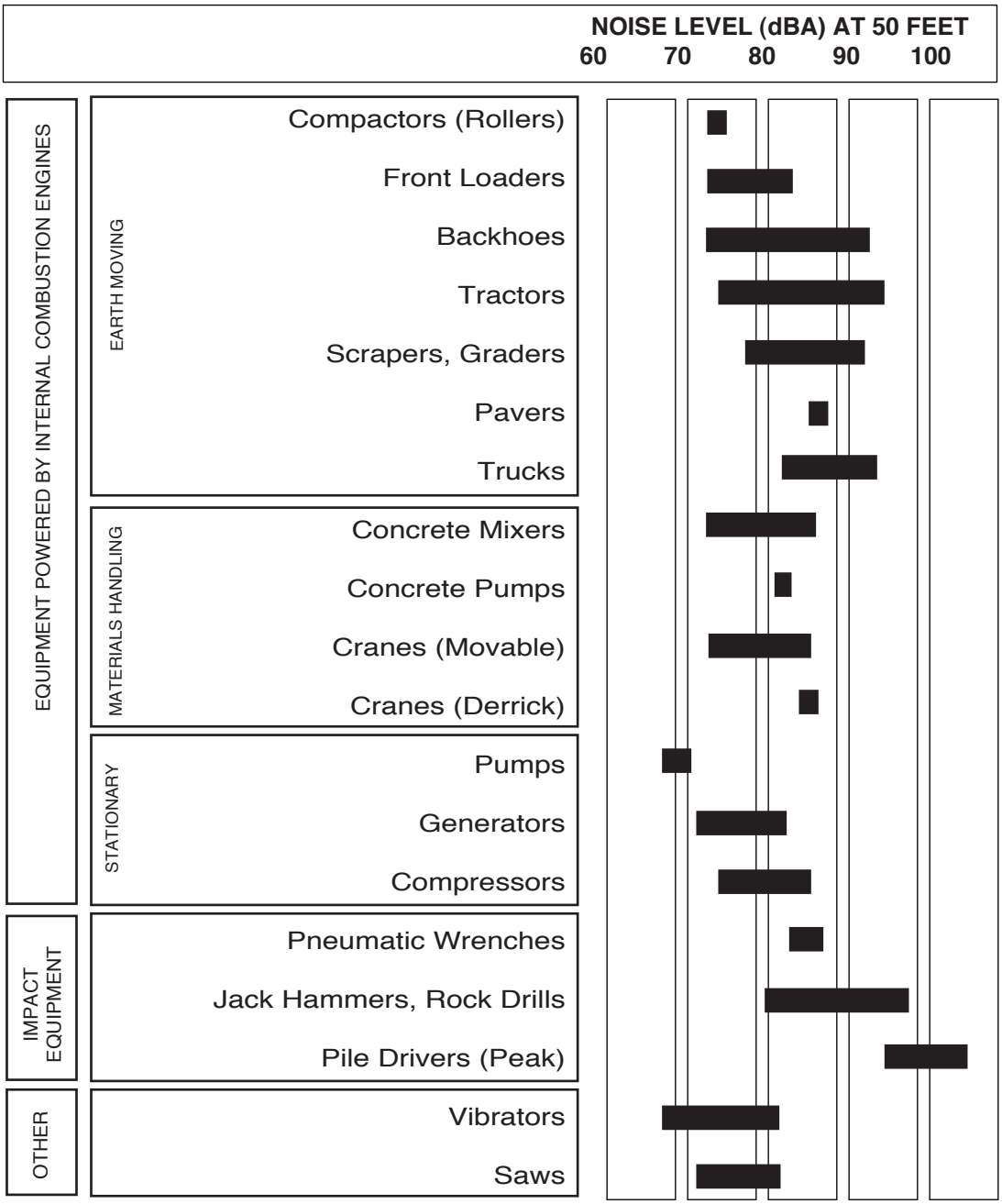
4.8-3(d) Operate earthmoving equipment on the construction site as far away from vibration-sensitive sites as possible.

4.8-2(e) The applicant shall provide sound attenuation barriers and/or trenching around the sensitive receptor areas.

***Level of Significance After Mitigation*:** Significant and unavoidable.

***Threshold*: Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.**

Impact Analysis: Project development activities such as demolition, earthmoving, and construction of on-site and off-site infrastructure would involve the use of heavy equipment, such as scrapers, tractors, loaders, concrete mixers, and cranes. Trucks would be used to deliver building materials, to haul away demolition wastes, and to import and export fill materials. Smaller equipment, such as jackhammers, pneumatic tools, saws, and hammers may also be used throughout the site during the construction activities. This equipment would generate both steady state and episodic noise that would be heard both on and off the project site. Noise levels generated during construction would primarily affect the patrons of the commercial and retail uses including the hotel and recording studio uses adjacent to the project site. The project construction hours, if approved by the City, would be between 6:00 AM to 7:00 PM, Monday through Saturday.



NOTE: Based on limited available data samples.

SOURCE: United States Environmental Protection Agency, 1971, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1

FIGURE **4.8-6**

Noise Levels of Typical Construction Equipment

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. This data is presented in **Figure 4.8-6, Typical Construction Equipment Noise Levels**. As shown, noise levels generated by heavy equipment can range from approximately 68 dB(A) to noise levels in excess of 95 dB(A) when measured at 50 feet. Because loud construction equipment, such as tractors, backhoes, trucks, and jackhammers would be utilized during project construction, noise levels over 95 dB(A) are anticipated within 50 feet of operation.

Construction activities associated with the project would occur at approximately 25 feet from existing retail, hotel, and recording studio uses. Employment of all feasible noise attenuation devices and techniques is capable of reducing noise levels for stationary equipment to some degree, but trucks and other mobile equipment cannot be surrounded by noise barriers. Given these factors, periodic noise levels of 95 dB(A) would be anticipated at 50 feet from various types of mobile and stationary construction equipment. Potential construction-related noise impacts are considered significant due to exceeding the noise threshold of 65 db(A), as allowed by the Municipal Code.

Besides equipment noise associated with construction activities, construction traffic would generate noise along access routes to the proposed development areas. The major pieces of heavy equipment would be moved onto the development only one time for each construction activity (i.e., demolition, grading, etc). In addition, daily transportation of a maximum of 800 construction workers is expected to cause increases in noise levels along project roadways, although noise levels from such trips would be less than peak hour noise levels generated by project trips during project operation. Given that it takes a doubling of average daily trips on roadways to increase noise by 3 dB(A) and that there would not be this amount of average daily trips from construction activities to result in a doubling of trip volume, the noise level increases along major arterials in the City of Glendale would be less than 3 dB(A), and potential impacts would be less than significant.

As indicated above, the project applicant has proposed to undertake construction activity outside the hours permitted by Section 8.36.080 of the Municipal Code, which allows construction between the hours of 7:00 AM and 7:00 PM, Monday through Saturday. In the event that the City approves the necessary permit to allow additional hours of construction, noise levels would be significant and unavoidable. Even though the same mitigation measures applicable to noise from construction activity would apply during the additional hour of construction, it is recognized that background noise levels outside the normally permitted hours of construction are less, and that noise receptors would be at a higher level of sensitivity to noise from 6:00 AM to 7:00 AM. To this extent, and even though noise levels during the additional hour of construction would not exceed noise generated during regularly permitted

construction hours (and in most cases, would be less), the significance of noise impacts from construction activity would be increased during the additional hour, if approved by the City.

Construction of the project would also require the use of a helicopter to transport air conditioning equipment to the top of the completed structures at the project site. Using a helicopter to lift heavy rooftop equipment on to the completed buildings eliminates the need for cranes, which require additional construction time and would generate additional project-related construction noise. Approximately ten to fifteen helicopter transport trips will be required to move the necessary rooftop equipment into place on the project site. Noise generated from the helicopter flights over the site would more than likely constitute a single event noise increase in excess of the thresholds identified for land uses. Therefore, noise generated from the use of a helicopter to transport the rooftop air conditioning equipment is considered a significant single event noise impact that cannot be mitigated.

Project Design Features: None are required.

Level of Significance Before Mitigation: Significant.

***Mitigation Measures*:**

4.8-2(f) The project developer shall implement all of the following measures to reduce potential construction noise impacts.

- All construction equipment shall be equipped with appropriate mufflers and be in good working condition.
- Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, use of electric air compressors and similar power tools rather than diesel equipment, shall be used where feasible.
- Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow for surrounding owners and residents to contact the job superintendent. If the City or the job superintendent receives a complaint, the superintendent shall investigate, take appropriate corrective action, and report the action taken to the reporting party.

Level of Significance After Mitigation: Significant and unavoidable.

Cumulative Impacts

For purposes of this analysis, development of the related projects provided in **Table 4.0-1** in **Section 4.0** will be considered to contribute to cumulative noise impacts. Noise by definition is a localized phenomenon, and drastically reduces as distance from the source increases. Consequently, only projects and growth due to occur in the general area of the project site would contribute to cumulative noise impacts.

Thresholds: **Result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**

Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

***Impact Analysis*:** Cumulative development would be subject to the California Noise Insulation and City of Glendale standards, which require that new hotels, apartment houses, and dwellings achieve an interior noise level of 45 dB(A) , and that commercial and office uses achieve interior noise levels of 55 dB(A). Nonetheless, it cannot be guaranteed that all cumulative development associated with related projects would or could comply with these standards , which could result in the exposure of persons to noise levels in excess of applicable standards. Thus the cumulative impact could be significant. The project impacts would be less than significant, as all residential and commercial development under the project would be designed to be in compliance with these standards, and as noted above, would achieve compliance. Consequently, the project contribution to noise is not considered to be cumulatively considerable.

Cumulative development from related projects would not result in a cumulative impact in terms of a substantial permanent increase in ambient noise levels. A substantial permanent increase is most likely to originate from an increase in noise levels due to roadway traffic. For the purposes of this EIR, an increase of 5 dB(A) at any roadway location is considered a significant impact, and if the resulting noise level would exceed the land use compatibility criteria, then an increase of 3 dB(A) is considered significant. In order to determine whether the project would result in a cumulatively significant impact, the increase between existing conditions and future with the project conditions was determined. Refer to **Table 4.8-10, Cumulative Weekday Roadway Noise Levels,** and **Table 4.8-11 Cumulative Weekend Roadway Noise Levels**. As shown, no increase above 1.8 dB(A) CNEL is anticipated either during weekday or weekend periods. Consequently, there would be no cumulatively significant impact with regard to roadway noise. In addition, because the contribution of the project was included in the future with project conditions, the project's impact is also less than significant.

Table 4.8-10
Cumulative Weekday Roadway Noise Levels

Roadway Segment	Existing	Future Noise Levels With Project	Cumulative Change in Noise Levels	Cumulative Project Impact
Pacific Ave-North of Broadway	63.6	63.8	0.2	No
Pacific Ave-North of Colorado	62.9	63.0	0.1	No
Pacific Ave-South of Colorado	63.1	63.4	0.3	No
Central Ave-North of Broadway	66.9	68.0	1.1	No
Central Ave-North of Colorado	66.5	67.9	1.4	No
Central Ave-South of Colorado	67.0	67.7	0.7	No
Central Ave-South of Chevy Chase	65.9	66.6	0.7	No
Brand Blvd-North of Broadway	63.4	64.3	0.9	No
Brand Blvd-North of Colorado	63.6	64.9	1.3	No
Brand Blvd-South of Colorado	64.1	64.9	0.8	No
Brand Blvd-South of Chevy Chase	64.3	65.0	0.6	No
Glendale Ave-North of Broadway	66.6	67.1	0.5	No
Glendale Ave-South of Colorado	66.1	66.3	0.2	No
Broadway-West of Pacific	60.8	61.2	0.4	No
Broadway-West of Central	63.5	64.1	0.6	No
Broadway-West of Brand	63.0	63.3	0.3	No
Broadway-East of Brand	63.1	63.7	0.8	No
Broadway-East of Glendale	62.7	63.2	0.5	No
Harvard-West of Brand	58.6	59.1	0.5	No
Harvard-East of Brand	59.4	60.3	0.9	No
Harvard-East of Glendale	57.9	58.2	0.3	No
Colorado-West of Pacific	68.0	68.6	0.6	No
Colorado-West of Central	67.8	68.5	0.7	No
Colorado-West of Brand	66.9	67.2	0.3	No
Colorado-East of Brand	67.0	67.4	0.6	No
Colorado-East of Glendale	66.9	67.4	0.5	No
Chevy Chase Rd-West of Glendale	63.1	63.3	0.2	No

Source: Impact Sciences, Inc. Model results are contained in ***Appendix 4.8****.*

Table 4.8-11
Cumulative Weekend Roadway Noise Levels

Roadway Segment	Existing	Future Noise Levels With Project	Cumulative Change in Noise Levels	Cumulative Project Impact
Pacific Ave-North of Broadway	62.8	63.0	0.2	No
Pacific Ave-North of Colorado	62.0	62.2	0.2	No
Pacific Ave-South of Colorado	62.6	63.0	0.4	No
Central Ave-North of Broadway	67.2	68.4	1.2	No
Central Ave-North of Colorado	66.2	68.0	1.8	No
Central Ave-South of Colorado	66.5	67.2	0.7	No
Central Ave-South of Chevy Chase	65.2	66.0	0.8	No
Brand Blvd-North of Broadway	63.9	64.8	0.9	No
Brand Blvd-North of Colorado	64.6	65.8	1.2	No
Brand Blvd-South of Colorado	64.7	65.5	0.8	No
Brand Blvd-South of Chevy Chase	64.3	65.1	0.8	No
Glendale Ave-North of Broadway	66.7	67.3	0.6	No
Glendale Ave-South of Colorado	66.2	66.3	0.1	No
Broadway-West of Pacific	59.8	60.4	0.6	No
Broadway-West of Central	63.5	64.0	0.5	No
Broadway-West of Brand	63.1	63.6	0.5	No
Broadway-East of Brand	63.1	63.9	0.8	No
Broadway-East of Glendale	62.3	62.9	0.6	No
Harvard-West of Brand	59.7	60.6	0.9	No
Harvard-East of Brand	60.2	61.3	1.1	No
Harvard-East of Glendale	56.5	57.2	0.7	No
Colorado-West of Pacific	68.0	68.7	0.7	No
Colorado-West of Central	67.7	68.5	0.8	No
Colorado-West of Brand	67.4	67.7	0.3	No
Colorado-East of Brand	67.1	67.7	0.6	No
Colorado-East of Glendale	66.9	67.5	0.6	No
Chevy Chase Rd-West of Glendale	62.2	62.5	0.3	No

Source: Impact Sciences, Inc. Model results are contained in ***Appendix 4.8****.*

With regard to stationary sources, there could be a cumulatively significant impact resulting from cumulative development. The major stationary sources of noise that would be introduced in the area by related projects would include rooftop equipment, loading docks, and parking structures. Since these projects would be required to adhere to City of Glendale noise standards, all the stationary sources would be required to provide shielding or other noise abatement measures so as not to cause a substantial increase in ambient noise levels. Moreover, due to distance, it is unlikely that noise from multiple related projects would interact to create a significant combined noise impact. As such, it is not anticipated that a significant cumulative increase in permanent ambient noise levels would occur and the impact would be less than significant. Additionally, the project would reduce impacts associated with on-site stationary

equipment through the application of **Mitigation Measures 4.8-1(a)** through **4.8-1(f)** to a less than significant impact. Consequently, the project contribution to cumulative noise impacts is not considered to be cumulatively considerable.

Project Design Features: None are required.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: None are required.

Level of Significance After Mitigation: Less than significant.

***Threshold*:** **Result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.**

Impact Analysis: Vibration impacts are localized in nature and decrease with distance. Consequently, in order to achieve a cumulative increase in vibration, more than one source emitting high levels of vibration would need to be in close proximity to the noise receptor. One such related project, the Glendale Galleria project is located in close enough proximity to the project site to result in cumulative vibration impacts. The Glendale Galleria project by itself could generate vibration levels above the acceptable threshold of 65 VdB at the recording studio and above 75 VdB at the hotel locations. The combination of construction activities associated with the Glendale Galleria and Glendale Town Center projects could all or partially occur during the same period. Therefore, there is the potential for combined construction vibration impacts if activities are occurring simultaneous. While these projects would implement standard construction techniques to reduce vibration, the combined vibration effect of the related projects and the project's contribution would be cumulatively significant.

Project Design Features: None are required.

Level of Significance Before Mitigation: Significant.

Mitigation Measures: Implementation of project-specific mitigation measures for cumulative projects.

These include the following:

4.8-3(a) Provide notification to the recording studio and hotels, at least 10 days in advance, of construction activities that are anticipated to result in vibrations levels above the thresholds.

4.8-3(b) Demolition, earthmoving, and ground-impacting operations shall be conducted so as not to occur in the same time period.

4.8-3(c) Select demolition method to minimize vibration, where possible (e.g., sawing building into sections rather than demolishing it by pavement breakers).

4.8-4(d) Operate earthmoving equipment on the construction site as far away from vibration-sensitive sites as possible.

4.8-5(e) The applicant shall provide for sound and vibration attenuation barriers such as trenching around the sensitive receptor areas.

Level of Significance After Mitigation: Significant and unavoidable.

Threshold: **Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.**

Impact Analysis: Noise impacts are localized in nature and decrease with distance. Consequently, in order to achieve a cumulative increase in noise, more than one source emitting high levels of noise would need to be located in close proximity to the noise receptor. One such related project, the Glendale Galleria project is located in close enough proximity to the project site to result in cumulative noise impacts. The Glendale Galleria project by itself would generate noise levels above the acceptable City of Glendale noise threshold of 65 dB(A). The combination of construction activities associated with the Glendale Galleria and Glendale Town Center projects could all or partially occur during the same period. Therefore, there is the potential for combined construction noise impacts if activities are occurring simultaneous. While the projects would implement standard construction techniques to reduce noise, the combined noise effect of related projects and the project's contribution would be cumulatively significant.

Project Design Features: None are required.

Level of Significance Before Mitigation: Significant.

Mitigation Measures: Implementation of project-specific mitigation measures for cumulative projects, as identified in **Mitigation Measure 4.8-2(f)**. These include the following:

4.8-2(f) The project developer shall implement all of the following measures to reduce potential construction noise impacts.

- All construction equipment shall be equipped with appropriate mufflers and be in good working condition.
- Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, use of electric air compressors and similar power tools rather than diesel equipment, shall be used where feasible.
- Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow for surrounding owners and residents to contact the job superintendent. If the City or the job superintendent receives a complaint, the superintendent shall investigate, take appropriate corrective action, and report the action taken to the reporting party.

***Level of Significance After Mitigation*:** Significant and unavoidable.