IV. Environmental Impact Analysis

J. Noise

1. Introduction

This Section of the Draft EIR analyzes potential noise and vibration impacts of the Project. Included in this section is a description of the existing noise environment within the Project Site area, an estimation of future noise and vibration levels at surrounding sensitive land uses associated with construction and operation of the Project, a description of the potential significant impacts, and the inclusion of mitigation measures to address any identified potential significant impacts. Additionally, this section of the Draft EIR evaluates the Project's incremental contribution to potential cumulative noise and vibration impacts resulting from past, present, and probable future projects. This section summarizes the noise and vibration information analyses provided in the Noise Calculation Worksheets included in Appendix J of the Draft EIR.

2. Environmental Setting

Due to the technical nature of noise and vibration impacts, a brief overview of basic noise principles and descriptors is provided below.

a. Noise and Vibration Basics

(1) Noise Principles and Descriptors

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as undesirable (i.e., loud, unexpected, or annoying) sound. Acoustics is defined as the physics of sound and addresses its propagation and control.[1] In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver.

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[1] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, September 2013.*

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement and reflects the way people perceive changes in sound amplitude.[2] The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of feeling pain. Pressure waves traveling through air exert a force registered by the human ear as sound.[3]

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but, rather, a broad band of frequencies varying in levels of magnitude. When all of the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.[4]

The typical human ear is not equally sensitive to the frequency range from 20 to 20,000 Hz. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to these extremely low and extremely high frequencies. This method of frequency filtering or weighting is referred to as A-weighting, expressed in units of A-weighted decibels (dBA), which is typically applied to community noise measurements.[5] Some representative common outdoor and indoor noise sources and their corresponding A-weighted noise levels are shown in Figure IV.J-1 on page IV.J-3.

(2) Noise Exposure and Community Noise

Community noise exposure is typically measured over a period of time; a noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the sound sources contributing to the community noise

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

[3] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.3, September 2013.*

[4] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.3, September 2013.*

[5] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.1.3, September 2013.*

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**70**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**60**	
		Large business office
Quiet urban daytime	**50**	Dishwasher in next room
Quiet urban nighttime	**40**	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Figure IV.J-1
Decibel Scale and Common Noise Sources

Source: State of California, Department of Transportation (Caltrans), Technical Noise Supplement, 2009.

environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with many unidentifiable individual contributors. Single-event noise sources, such as aircraft flyovers, sirens, etc., may cause sudden changes in background noise level.[6] However, generally, background noise levels change gradually throughout the day, corresponding with the addition and subtraction of distant noise sources, such as changes in traffic volume.

These successive additions of sound to the community noise environment change the community noise level from moment to moment, requiring the noise exposure to be measured over periods of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. The following noise descriptors are used to characterize environmental noise levels over time.[7]

L_{eq}: The equivalent sound level over a specified period of time, typically, 1 hour (L_{eq}). The L_{eq} may also be referred to as the energy-average sound level.

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

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

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

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

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

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[6] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, Section 2.2.1, September 2013.*

[7] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.2.2.*

(3) Effects of Noise on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., startle response); and
- Physical effects (e.g., hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep.

The World Health Organization's Guidelines for Community Noise details the adverse health effects of high noise levels, which include hearing impairment, speech intelligibility, sleep disturbance, physiological functions (e.g., hypertension and cardiovascular effects), mental illness, performance of cognitive tasks, social and behavioral effects (e.g., feelings of helplessness, aggressive behavior), and annoyance.[8]

With regard to the subjective effects, the responses of individuals to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity. Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise

[8] *World Health Organization Team, edited by Birgitta Berglund, Thomas Lindvall, and Dietrich H. Schwela, Guidelines for Community Noise, 1999.*

level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:[9]

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

These relationships between change in noise level and human hearing response occur in part because of the logarithmic nature of sound and the dB scale. Because the dBA scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but, rather, logarithmically. Under the dBA scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and 10 sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.[10]

(4) Noise Attenuation

When noise propagates over a distance, the noise level reduces, or attenuates, with distance depending on the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, referred to as “spherical spreading.” The rate of sound attenuation for a point source, such as a piece of mechanical or electrical equipment (e.g., air conditioner) or idling vehicle (e.g., bulldozer), is 6 dBA per doubling of distance from the noise source to the receptor

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[9] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.2.1.*

[10] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.2.1.1.*

over acoustically "hard" sites and 7.5 dBA per doubling of distance from the noise source to the receptor over acoustically "soft" sites.[11] Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the reduction in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, which in addition to geometric spreading, provides an excess ground attenuation value of 1.5 dBA (per doubling distance).[12] For example, an outdoor condenser fan that generates a sound level of 60 dBA at a distance of 50 feet from a point source at an acoustically hard site would attenuate to 54 dBA at a distance of 100 feet from the point source and attenuate to 48 dBA at 200 feet from the point source.

Roadways and highways consist of several localized noise sources on a defined path, and, hence, are treated as "line" sources, which approximate the effect of several point sources.[13] Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading."[14] Line sources (e.g., traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[15] Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

Structures (e.g., buildings and solid walls) and natural topography (e.g., hills and berms) that obstruct the line-of-sight between a noise source and a receptor further reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as "barrier insertion loss." If a receptor is located behind the wall but still has a view of the source (i.e., the line-of-sight is not fully blocked), barrier insertion loss would still occur but to a lesser extent. Additionally, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall can reflect noise back to the receptor, thereby compounding the noise. Noise barriers can provide noise level reductions ranging from approximately 5 dBA (where the barrier just breaks the line-of-sight

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[11] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Sections 2.1.4.1 and 2.1.4.2.*

[12] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Sections 2.1.4.1 and 2.1.4.2.*

[13] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.1.4.1.*

[14] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.1.4.1.*

[15] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.1.4.1.*

between the source and receiver) to an upper range of 20 dBA with a larger barrier.[16] Additionally, structures with closed windows can further attenuate exterior noise by a minimum of 20 dBA to 30 dBA.[17]

Receptors located downwind from a noise source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels.[18] Atmospheric temperature inversion (i.e., increasing temperature with elevation) can increase sound levels at long distances. Other factors such as air temperature, humidity, and turbulence can, under the right conditions, also have substantial effects on noise levels.[19]

(5) Vibration Fundamentals

Vibration can be interpreted as energy transmitted in waves through the ground or man-made structures, which generally dissipate with distance from the vibration source. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Since energy is lost during its transfer from one particle to another, vibration becomes less perceptible with increasing distance from the source.

As described in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual*, groundborne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard.[20] In contrast to airborne noise, groundborne vibration is not a common environmental problem, as it is unusual for vibration from sources such as rubber-tired buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, heavy trucks traveling on rough roads, and certain construction activities, such as blasting, pile-driving, and operation of heavy earth-moving equipment.[21] Groundborne vibration generated by

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[16] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Sections 2.1.4.24 and 5.1.1.*

[17] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 7.4.2, Table 7-1.*

[18] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.1.4.3.*

[19] *California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013, Section 2.1.4.3.*

[20] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 7.*

[21] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 7.*

man-made activities (e.g., road traffic, construction operations) typically weakens with greater horizontal distance from the source of the vibration.

Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec), and is most frequently used to describe vibration impacts to buildings.[22] The root mean square (RMS) amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body.[23] Decibel notation (VdB) is commonly used to express RMS vibration velocity amplitude. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. PPV is typically a factor of 1.7 to 6 times greater than RMS vibration velocity; FTA uses a crest factor of 4.[24] The decibel notation VdB acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include buildings where vibration would interfere with operations within the building or cause damage (especially older masonry structures), locations where people sleep, and locations with vibration sensitive equipment.[25]

Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to the vibration of floors and walls; it is perceptible only inside buildings.[26] The relationship between groundborne vibration and groundborne noise depends on the frequency of the vibration and the acoustical absorption characteristics of the receiving room. For typical buildings, groundborne vibration that causes low frequency noise (i.e., the vibration spectrum peak is less than 30 Hz) results in a groundborne noise level that is approximately 50 decibels lower than the velocity level. For groundborne vibration that causes mid-frequency noise (i.e., the vibration spectrum peak is between 30 and 60 Hz), the groundborne noise level will be approximately 35 to 37 decibels lower than the velocity level.[27] Therefore, for typical buildings, the groundborne noise decibel level is lower than the groundborne vibration velocity level at low frequencies.

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[22] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[23] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[24] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[25] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 6.1, 6.2, and 6.3.*

[26] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Section 5.1.*

[27] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 63 and Table 614.*

b. Regulatory Framework

There are several plans, regulations, and programs that include policies, requirements, and guidelines regarding Noise at the federal, State, regional, and local levels. As described below, these plans, guidelines, and laws include the following:

- Noise Control Act of 1972
- Federal Transportation Administration Vibration Standards
- Occupational Safety and Health Act of 1970
- Office of Planning and Research Guidelines for Noise Compatible Land Use
- Los Angeles County Airport Land Use Commission Comprehensive Land Use Plan
- City of Los Angeles Municipal Code
- City of Los Angeles General Plan Noise Element

(1) Federal

(a) Noise Control Act of 1972

Under the authority of the Noise Control Act of 1972, the United States Environmental Protection Agency (USEPA) established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the Code of Federal Regulations (CFR) that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, USEPA issued guidance levels for the protection of public health and welfare in residential areas of an outdoor L_{dn} of 55 dBA and an indoor L_{dn} of 45 dBA.[28] These guidance levels are not standards or regulations and were developed without consideration of technical or economic feasibility. There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Project. Moreover, the federal noise standards are not reflective of urban environments that range by land use, density, proximity to commercial or industrial centers, etc. As such, for purposes of determining acceptable sound levels to determine and evaluate intrusive noise sources and increases, this document utilizes the City of Los Angeles Noise Regulations, discussed below.

[28] *U.S. Environmental Protection Agency, EPA Identifies Noise Levels Affecting Health and Welfare, April 1974.*

(b) Federal Transit Administration Vibration Standards

There are no federal vibration standards or regulations adopted by any agency that are applicable to evaluating vibration impacts from land use development projects, such as the Project. However, the FTA has adopted vibration criteria for use in evaluating vibration impacts from construction activities.[29] The vibration damage criteria adopted by the FTA are shown in Table IV.J-1 on page IV.J-12.

The FTA has also adopted standards associated with human annoyance for determining the groundborne vibration and noise impacts from ground-borne noise on the following three off-site land-use categories: Vibration Category 1—High Sensitivity, Vibration Category 2—Residential, and Vibration Category 3—Institutional.[30] The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but that still potentially involve activities that could be disturbed by vibration. The vibration thresholds associated with human annoyance for these three land-use categories are shown in Table IV.J-2 on page IV.J-12. No thresholds have been adopted or recommended for commercial or office uses.

(c) Occupational Safety and Health Act of 1970

Under the Occupational Safety and Health Act of 1970 (29 United States Code [USC] Sections 1919 et seq.), the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring noise to which workers are exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.[31]

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[29] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 7-5, p. 86.*

[30] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 6-1, p. 124.*

[31] *U.S. Department of Labor, Occupational Safety and Health Act, 1970.*

Table IV.J-1
Construction Vibration Damage Criteria

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

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

Table IV.J-2
Groundborne Vibration and Groundborne Impact Criteria for General Assessment

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

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

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

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

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

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

(2) State

(a) Office of Planning and Research Guidelines for Noise Compatible Land Use

The State of California has not adopted statewide standards for environmental noise, but the Governor's Office of Planning and Research (OPR) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as presented in Figure IV.J-2 on page IV.J-13.[32]

[32] *State of California, Governor's Office of Planning and Research, General Plan 2017 Guidelines, p. 377.*

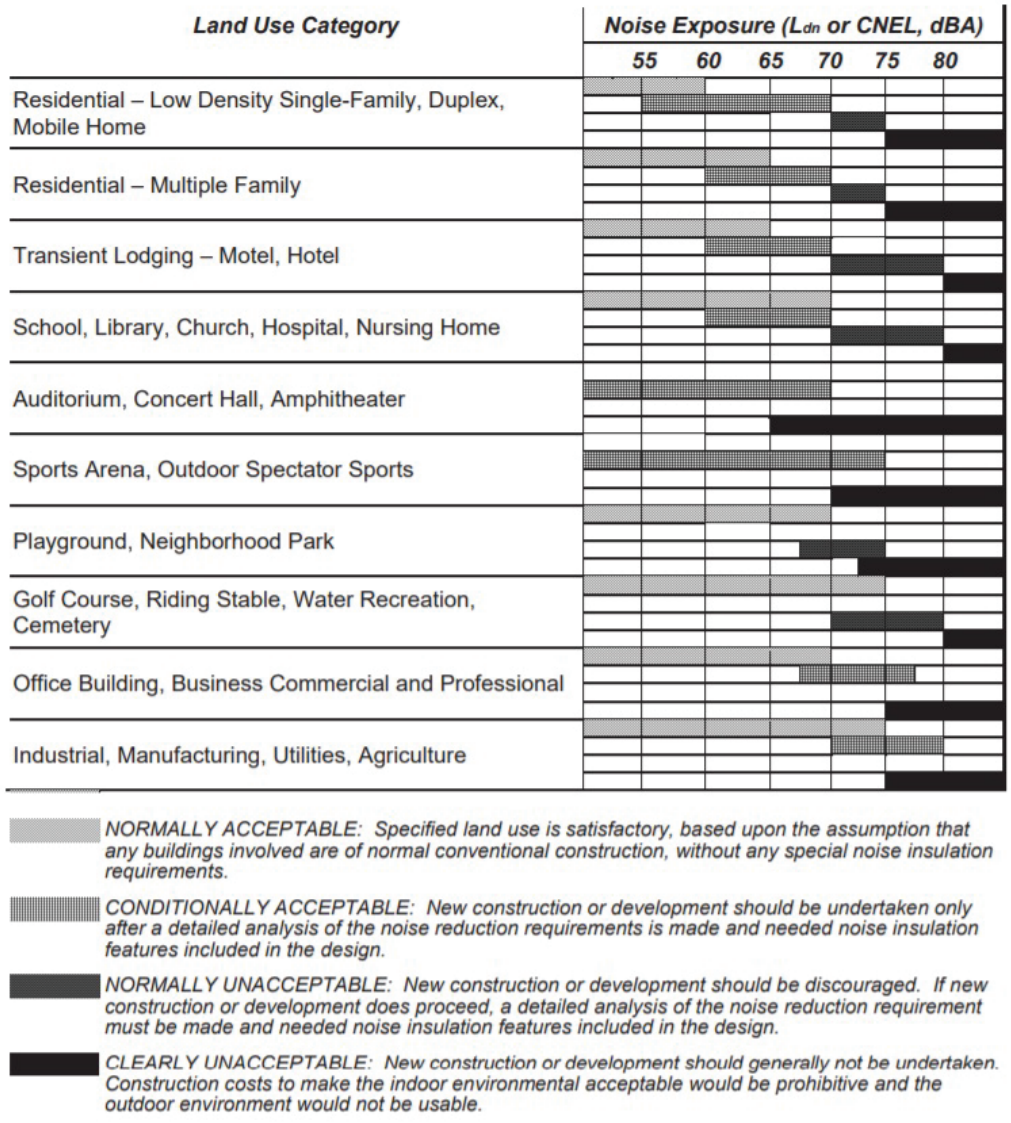

Figure IV.J-2
Guidelines for Noise Compatible Land Use

Source: State of California, General Plan Guidelines, Governor's Office of Planning and Research, 2003.

The purpose of these guidelines is to maintain acceptable noise levels in a community setting for different land use types. Noise levels are divided into four general categories, which vary in range according to land use type: "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable." The City has developed its own compatibility guidelines in the Noise Element of the General Plan based in part on OPR Guidelines. California Government Code Section 65302 requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(f) requiring a noise element to be included in the general plan. The noise element must identify and appraise noise problems in the community and analyze and quantify current and projected noise levels.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels. These requirements are collectively known as the California Noise Insulation Standards (Title 24 of the California Code of Regulations [CCR]). The noise insulation standards set forth an interior standard of 45 dBA CNEL in any habitable room. The standards require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to exterior noise levels greater than 60 dBA CNEL. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

(3) Regional

(a) Los Angeles County Airport Land Use Commission Comprehensive Land Use Plan

In Los Angeles County the Regional Planning Commission has the responsibility for acting as the Airport Land Use Commission (ALUC) and for coordinating the airport planning of public agencies within the county. The ALUC coordinates planning for the areas surrounding public use airports. The Comprehensive Land Use Plan provides for the orderly expansion of Los Angeles County's public use airports and the area surrounding them. It is intended to provide for the adoption of land use measures that will minimize the public's exposure to excessive noise and safety hazards. In formulating the Comprehensive Land Use Plan, the Los Angeles County ALUC has established provisions for safety, noise insulation, and the regulation of building height within areas adjacent to each of the public airports in the County.

(4) Local

(a) Los Angeles Municipal Code

The City of Los Angeles Noise Regulations are provided in Chapter XI of the Los Angeles Municipal Code (LAMC). LAMC Section 111.02 provides procedures and criteria

for the measurement of the sound level of "offending" noise sources. In accordance with the LAMC, a noise source that causes a noise level increase of 5 dBA over the existing average ambient noise level as measured at an adjacent property line creates a noise violation. This standard applies to radios, television sets, air conditioning, refrigeration, heating, pumping and filtering equipment, powered equipment intended for repetitive use in residential areas, and motor vehicles driven on-site. To account for people's increased tolerance for short-duration noise events, the Noise Regulations provide a 5-dBA allowance for a noise source that causes noise lasting more than 5 but less than 15 minutes in any 1-hour period, and an additional 5 dBA allowance (for a total of 10 dBA) for a noise source that causes noise lasting 5 minutes or less in any 1-hour period.[33]

The LAMC provides that in cases where the actual ambient conditions are not known, the City's presumed daytime (7:00 A.M. to 10:00 P.M.) and nighttime (10:00 P.M. to 7:00 A.M.) minimum ambient noise levels as defined in LAMC Section 111.03 should be used. The presumed ambient noise levels for these areas where the actual ambient conditions are not known as set forth in the LAMC Sections 111.03 are provided in Table IV.J-3 on page IV.J-16. For example, for residential-zoned areas, the presumed ambient noise level is 50 dBA during the daytime and 40 dBA during the nighttime.

LAMC Section 112.02 limits increases in noise levels from air conditioning, refrigeration, heating, pumping and filtering equipment. Such equipment may not be operated in such manner as to create any noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than 5 dB.

LAMC Section 112.05 sets a maximum noise level for construction equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. Compliance with this standard shall not apply where compliance therewith is technically infeasible.[34] LAMC Section 41.40 prohibits construction between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, 6:00 p.m. and 8:00 a.m. on Saturday, and at any time on Sunday, unless permission is granted by the Board of Police Commissioners (i.e., construction is allowed Monday through Friday between 7:00 A.M. to 9:00 P.M.; and Saturdays and National Holidays between 8:00 A.M. to 6:00 P.M.). In general, the City's Department of Building and Safety enforces Noise Ordinance provisions relative to

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

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

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

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

Source: LAMC Section 111.03.

equipment, and the Los Angeles Police Department (LAPD) enforces provisions relative to noise generated by people.

LAMC Section 113.01 prohibits collecting or disposing of rubbish or garbage, operating any refuse disposal truck, or collecting, loading, picking up, transferring, unloading, dumping, discarding, or disposing of any rubbish or garbage, as such terms are defined in LAMC Section 66.00, within 200 feet of any residential building between the hours of 9:00 P.M. and 6:00 A.M. of the following day, unless a permit therefore has been duly obtained beforehand from the Board of Police Commissioners.

Section 91.1207.14.2 prohibits interior noise levels attributable to exterior sources from exceeding 45 dBA in any habitable room. The noise metric shall be either the day-night average sound level (L_{dn}) or the CNEL, consistent with the noise element of the local general plan.

(b) City of Los Angeles General Plan Noise Element

The Noise Element of the City's General Plan policies include the CNEL guidelines for land use compatibility as shown in Table IV.J-4 on page IV.J-17 and includes a number of goals, objectives, and policies for land use planning purposes. The overall purpose of the Noise Element is to guide policymakers in making land use determinations and in preparing noise ordinances that would limit exposure of citizens to excessive noise levels.[35] The following policies and objectives from the Noise Element apply to the Project.

[35] *City of Los Angeles, General Plan Noise Element, Adopted February 3, 1999, pp. 1.1–2.4.*

Table IV.J-4
City of Los Angeles Guidelines for Noise Compatible Land Use

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

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

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

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

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

Source: City of Los Angeles, 2006; L.A. CEQA Thresholds Guide, 2006.

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

Policy 2.2: Enforce and/or implement applicable city, state, and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.

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

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

Exhibit I of the Noise Element also contains guidelines for noise compatible land uses.[36] Table IV.J-4 on page IV.J-17 summarizes these guidelines, which are based on OPR guidelines from 1990.

c. Existing Conditions

As discussed in Section II, Project Description, of this Draft EIR, the Site Locations and static displays to be removed are located in highly urbanized areas. The predominant source of noise in the vicinity of the Site Locations is noise related to the rail uses, as well as vehicular traffic on adjacent roadways. Ambient noise sources in the vicinity of the Site Locations include rail uses, automobile and truck traffic; commercial and industrial activities; surface parking lot activities; construction noise from developing properties in the area; and other miscellaneous noise sources associated with typical urban activities.

(1) Noise-Sensitive Receptors

Some land uses are considered more sensitive to intrusive noise than others based on the types of activities typically involved at the receptor location. The 2006 *L.A. CEQA Thresholds Guide* states that noise-sensitive uses include residences, transient lodgings (hotels), schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks.[37] Similarly, the Noise Element defines noise-sensitive land uses as single-family and multi-unit dwellings, long-term care facilities (including convalescent and retirement facilities), dormitories, motels, hotels, transient lodging, and other residential uses; houses of worship; hospitals; libraries; schools; auditoriums; concert halls; outdoor theaters; nature and wildlife preserves; and parks.[38] These uses are generally considered more sensitive to noise than commercial and industrial land uses.

Based on a review of the land uses in the vicinity of the Site Locations, thirty (30) noise receptor locations were selected to represent noise-sensitive uses within 500 feet of the proposed TCN Structures. These receptor locations represent areas with land uses that could qualify as noise-sensitive uses according to the definition of such uses in the 2006 *L.A. CEQA Thresholds Guide* and the General Plan. The 30 selected noise receptor

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[36] *City of Los Angeles, General Plan Noise Element, Adopted February 3, 1999, p. I1.*

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

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

locations are shown in Figure IV.J-3, Figure IV.J-4, and Figure IV.J-5 on pages IV.J-20, IV.J-21, and IV.J-22, respectively; and described in Table IV.J-5 on page IV.J-23.

(2) Ambient Noise Levels

A total of thirty (30) noise receptor locations are identified to establish baseline noise conditions. To establish baseline noise monitoring, existing ambient noise levels were monitored at fifteen (15) off-site receptor locations (R5, R7, R8, R10, R11, R12, R18, R19, R20, R21, R22, R24, R25, R26, and R27) by AES. The ambient noise levels at the remaining 15 receptor locations (R1, R2, R3, R4, R6, R9, R12B, R13, R14, R15, R16, R17, R23, R28 and R29) were based on measured ambient noise levels from previous environmental noise studies for projects within the City of Los Angeles. These measurement locations are representative of sensitive uses in the vicinity of the Site Locations. The baseline noise monitoring was conducted on July 13, 2022, using a Larson Davis Model 870 Integrating/Logging Sound Level Meter.[39] Two 15-minute measurements were conducted at each of the 15 off-site receptor locations during daytime hours and at seven receptor locations during the nighttime hours. The daytime ambient noise levels were measured between 10:00 A.M. and 2:00 P.M., and the nighttime ambient noise levels were measured between 10:00 P.M. and 12:00 A.M. The ambient noise measurements were measured in accordance with the City's standards, which require ambient noise to be measured over a period of at least 15 minutes.[40] Construction of the TCN Structures is anticipated to occur during daytime hours pursuant to LAMC requirements, however, approximately seven locations (i.e., NFF-14, NFF-15, FF-13, FF-14, FF-26, FF-27 and FF-28) may require nighttime construction to avoid conflicts with Metro rail lines.

Table IV.J-6 on page IV.J-25 provides the ambient noise levels measured at the 30 noise receptor locations. Based on field observations, the ambient noise at the measurement locations are dominated by local traffic and, to a lesser extent, helicopter flyovers and other typical urban noises. As indicated in Table IV.J-6, the existing daytime ambient noise levels at the off-site noise receptor locations ranged from 58.0 dBA (L_{eq}) at receptor location R6 to 76.4 dBA (L_{eq}) at receptor location R16. The existing nighttime ambient noise levels ranged from 59.3 dBA (L_{eq}) at receptor locations R7, R8, R25 and R26 to 64.3 dBA (L_{eq}) at receptor location R27. Thus, the existing ambient noise levels at all off-site locations are above the City's presumed daytime and nighttime ambient noise

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[39] *This sound meter meets and exceeds the minimum industry standard performance requirements for "Type 1" standard instruments as defined in the American National Standard Institute (ANSI) S1.4. It also meets the requirement specified in Section 111.01(l) of the LAMC that instruments be "Type S2A" standard instruments or better. The sound meter was calibrated and operated according to the manufacturer's written specifications.*

[40] *LAMC Section 111.01.*

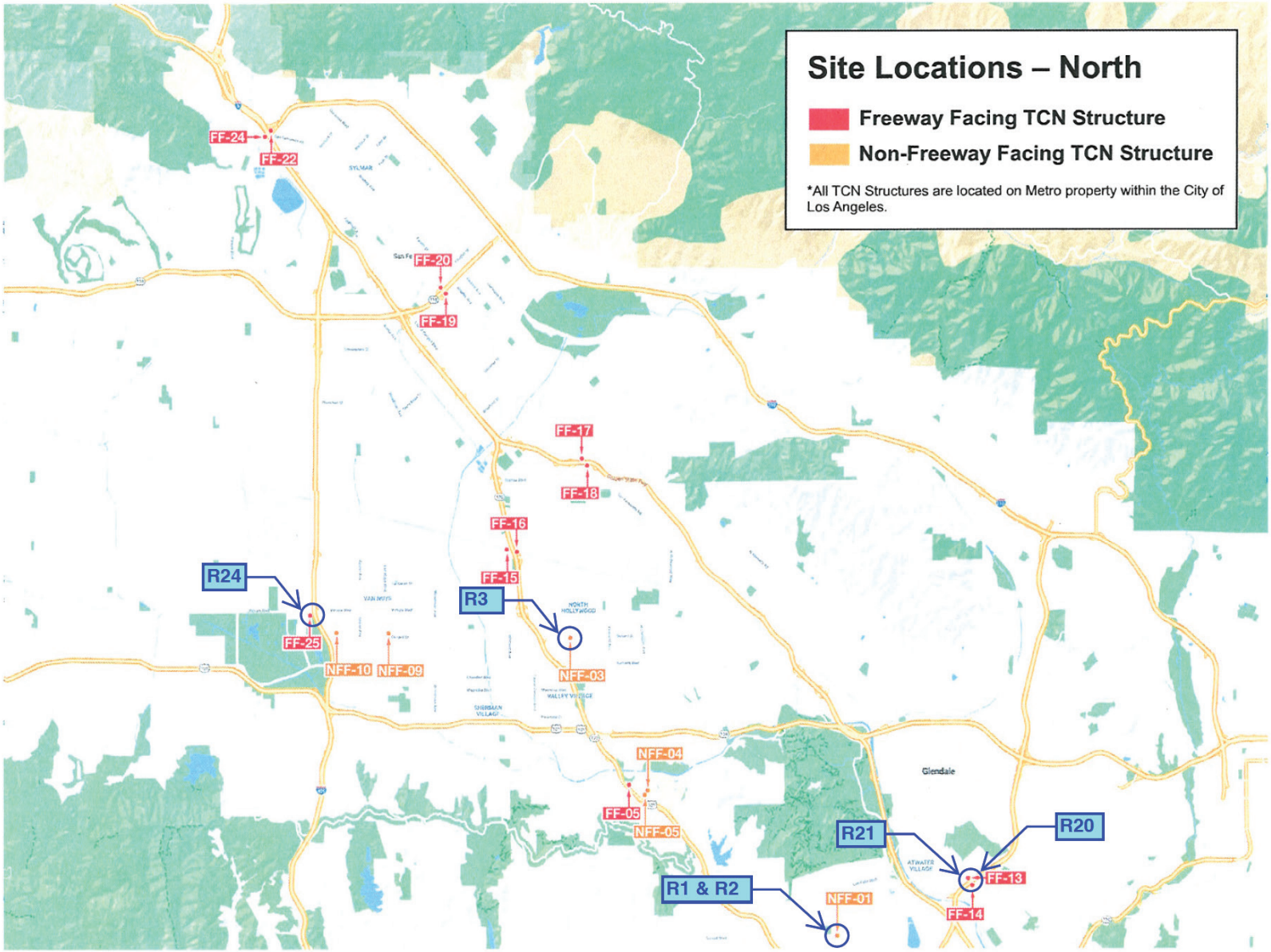

Figure IV.J-3
Noise Receptor Locations - North

Source: AES, 2022.

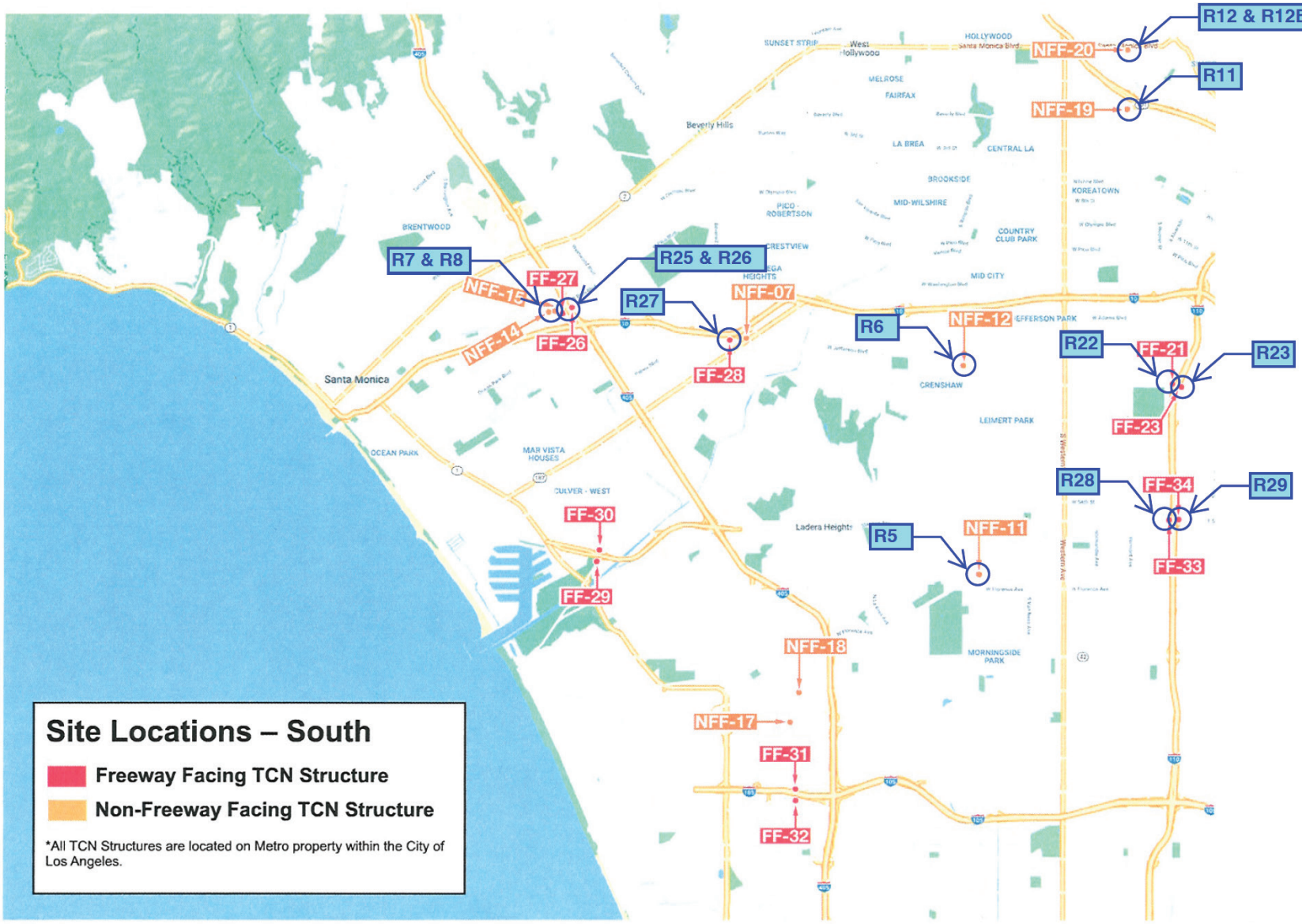

Figure IV.J-4
Noise Receptor Locations - South

Source: AES, 2022.

Figure IV.J-5
Noise Receptor Locations - Downtown

Source: AES, 2022.

Table IV.J-5
Description of Noise Receptor Locations

Receptor Location	Site Location	Description	Approximate Distance from Measurement Location to the Site Location (feet)[a]	Nearest Noise-Sensitive Land Use(s)
R1	NFF-1	Residential use on Maubert Avenue, northeast of NFF-1	250	Residential
R2	NFF-1	Children's Hospital of Los Angeles on Sunset Boulevard, south of NFF-1	245	Hospital
R3	NFF-3	Residential use on Lankershim Boulevard, northwest of NFF-3	300	Residential
R4	NFF-6	Residential use on Hill Street, southwest of NFF-6	220	Residential
R5	NFF-11	Residential use on 67th Street, north of NFF-11	260	Residential
R6	NFF-12	Residential use on Victoria Avenue, west of NFF-12	485	Residential
R7	NFF-14	Residential use on Exposition Boulevard, southeast of NFF-14	300	Residential
R8	NFF-15	Residential use on Exposition Boulevard, south of NFF-15	140	Residential
R9	NFF-16	Residential use at the southeast corner of 1st Street and Alameda Street, east of NFF-16	355	Residential
R10	NFF-19	Residential use on New Hampshire Avenue, west of NFF-19	275	Residential
R11	NFF-19	Hotel use on Vermont Avenue, north of NFF-19	240	Hotel
R12	NFF-20	Residential use on New Hampshire Avenue, northwest of NFF-20	205	Residential
R12B	NFF-20	Future Residential at the southwest corner of Vermont Avenue and Santa Monica Boulevard, west and southwest of NFF-20	55	Residential
R13	NFF-21	Future Residential use on Mateo Street, west of NFF-21	165	Residential
R14	NFF-22	Para Los Ninos Elementary School, west of NFF-22	315	School
R15	NFF-22	Residential use (future) on Alameda Street, northeast of NF-22	150	Residential
R16	FF-4	Residential use on Temple Street, south of FF-4	285	Residential
R17	FF-4	Downtown Magnet School, east of FF-4	280	School
R18	FF-8	Residential use on Pomeroy Avenue, east of FF-8	300	Residential
R19	FF-9	Residential use on Mitchell Place, south of FF-9	395	Residential
R20	FF-13	Residential use on Casitas Avenue, west of FF-13	270	Residential
R21	FF-14	Residential use on Casitas Avenue, west of FF-14	390	Residential

Table IV.J-5 (Continued)
Description of Noise Receptor Locations

Receptor Location	Site Location	Description	Approximate Distance from Measurement Location to the Site Location (feet)[a]	Nearest Noise-Sensitive Land Use(s)
R22	FF-21	Residential use at the northeast corner of Figueroa Street and Exposition Boulevard, west of FF-21	280	Residential
R23	FF-23	Clinton Middle School, east of FF-23	580	School
R24	FF-25	Residential use on Friar Street, east of FF-25	320	Residential
R25	FF-26	Residential use on Sepulveda Boulevard, northeast of FF-26	280	Residential
R26	FF-27	Residential use on Exposition Boulevard, south of FF-27	155	Residential
R27	FF-28	Residential use on south side of Exposition Boulevard, south of FF-28	145	Residential
R28	FF-33	Residential use on north side of Slauson Avenue, north of FF-33	30	Residential
R29	FF-34	Residential use on 58th Street, northeast of FF-34	190	Residential

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

Source: Acoustical Engineering Services (AES), 2022. See Appendix J of this Draft EIR.

levels of 50 dBA (L_{eq}) and 40 dBA (L_{eq}), respectively, for residential and hotel uses, as presented above in Table IV.J-3 on page IV.J-16.

(3) Existing Ground-Borne Vibration Levels

Based on field observations, the primary source of existing ground-borne vibration in the vicinity of the Project Site is vehicular travel (e.g., standard cars, refuse trucks, delivery trucks, construction trucks, school buses, and buses) on local roadways. According to the FTA technical study "Federal Transit Administration: Transit Noise and Vibration Impacts Assessments," typical road traffic-induced vibration levels are unlikely to be perceptible by people. Specifically, the FTA study reports that "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads."[41] Trucks and buses typically generate ground-borne vibration velocity levels of around

[41] *FTA, Transit Noise and Vibration Impact Assessment, September 2018, p. 112.*

Table IV.J-6
Existing Ambient Noise Levels

Receptor Location	Noise-Sensitive Land Use	Measured Noise Levels, L_{eq} (dBA)	
		Daytime Hours (7:00 A.M.–10:00 P.M.)	Nighttime Hours (10:00 P.M.–7:00 A.M.)
R1	Residential	67.8[b]	--[a]
R2	Hospital	72.3[b]	--[a]
R3	Residential	68.3[c]	--[a]
R4	Residential	67.3[d]	--[a]
R5	Residential	60.5	--[a]
R6	Residential	58.0[e]	--[a]
R7	Residential	64.9	59.3
R8	Residential	64.9	59.3
R9	Residential	72.0[f]	--[a]
R10	Residential	62.4	--[a]
R11	Hotel	72.6	--[a]
R12	Residential	60.9	--[a]
R12B	Residential	72.3[b]	--[a]
R13	Residential	62.5[g]	--[a]
R14	School	68.0[f]	--[a]
R15	Residential	72.0[f]	--[a]
R16	Residential	76.4[h]	--[a]
R17	School	69.7[h]	--[a]
R18	Residential	64.2	--[a]
R19	Residential	62.2	--[a]
R20	Residential	64.9	60.1
R21	Residential	64.9	60.1
R22	Residential	65.6	--[a]
R23	School	65.4[i]	--[a]
R24	Residential	61.5	--[a]
R25	Residential	64.9	59.3
R26	Residential	64.9	59.3
R27	Residential	66.9	64.3
R28	Residential	70.7[i]	--[a]
R29	Residential	65.4[i]	--[a]

[a] *No nighttime ambient noise measurements were required, as there would be no nighttime construction activities.*

[b] *Based on the Kaiser Permanente Los Angeles Medical Center Project EIR, July 2021.*

[c] *Based on the District NoHo Project Draft EIR, April 2022.*

[d] *Based on the Angels Landing Project EIR, January 2021.*

Table IV.J-6 (Continued)
Existing Ambient Noise Levels

Receptor Location	Noise-Sensitive Land Use	Measured Noise Levels, L_{eq} (dBA)	
		Daytime Hours (7:00 A.M.–10:00 P.M.)	Nighttime Hours (10:00 P.M.–7:00 A.M.)
[e] *Based on the Mid-City/Exposition LRT Project EIS/EIR, January 2005.*			
[f] *Based on the 688 Alameda Street Project EIR, September 2017.*			
[g] *Based on the 520 Mateo Project EIR, December 2017.*			
[h] *Based on the 1100 Temple Street Lofts Project MND, July 2018.*			
[i] *Based on The Fig Project EIR, October 2017.*			
Source: AES, 2022. See Appendix J of this Draft EIR.			

63 VdB (at 50 feet distance), and these levels could reach 72 VdB when trucks and buses pass over bumps in the road. Per the FTA, 75 VdB is the dividing line between barely perceptible (with regards to ground vibration) and distinctly perceptible.[42] Therefore, existing ground vibration in the vicinity of the Project Site is generally below the perceptible level. However, ground vibration associated with heavy trucks traveling on road surfaces with irregularities, such as speed bumps and potholes, could reach the perceptible threshold.

3. Project Impacts

a. Thresholds of Significance

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

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

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

Threshold (c): For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose

[42] *FTA, Transit Noise and Vibration Impact Assessment, September 2018, Table 5-5.*

people residing or working in the project area to excessive noise levels?

For this analysis, the Appendix G Thresholds listed above are relied upon. The analysis utilizes factors and considerations identified in the City's *2006 L.A. CEQA Thresholds Guide*, as appropriate, to assist in answering the Appendix G Threshold questions.

The 2006 *L.A. CEQA Thresholds Guide* identifies the following criteria to evaluate noise impacts:

(1) Construction Noise

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

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

As discussed in Section II, Project Description, of this Draft EIR, construction of the Project is anticipated to be completed in 2025.[43] Therefore, since construction activities would occur over a period longer than 10 days for all phases, the corresponding significance criteria used in the construction noise analysis presented in this section of the Draft EIR is an increase in the ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use.

[43] *For purposes of conservatively analyzing construction impacts and to ensure that potential overlap of construction phases is accounted for, it was assumed that the Project's construction schedule could be compressed and be completed as early as 2024 with overlapping construction phases. Even under the compressed scheduled, construction activities would occur over a period longer than 10 days for all phases.*

(2) Operational Noise

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

- The Project causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 3 dBA in CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (see Table IV.J-4 on page IV.J-17 for a description of these categories); or
- The Project causes the ambient noise levels measured at the property line of affected noise-sensitive uses to increase by 5 dBA in CNEL or greater; or
- Project-related operational on-site (i.e., non-roadway) noise sources, such as outdoor building mechanical/electrical equipment, outdoor activities, loading, trash compactor, or parking facilities, increase the ambient noise level (hourly L_{eq}) at noise-sensitive uses by 5 dBA.

The significance criterion used in the noise analysis for on-site operations presented below is an increase in the ambient noise level of 5 dBA (hourly L_{eq}) at the noise-sensitive uses, in accordance with the LAMC. The LAMC does not apply to off-site traffic (i.e., vehicles traveling on public roadways). Therefore, based on the *2006 L.A. CEQA Thresholds Guide*, the significance criterion for off-site traffic noise associated with Project operations is an increase in the ambient noise level by 3 dBA or 5 dBA in CNEL (depending on the land use category) at noise-sensitive uses.

(3) Airport Noise

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

- Noise levels at a noise sensitive use attributable to airport operations exceed 65 dB CNEL and the project increases ambient noise levels by 1.5 dB CNEL or greater.

(4) FTA Ground-Borne Vibration Standards and Guidelines

The City currently does not have significance criteria to assess vibration impacts during construction. Thus, FTA guidelines set forth in FTA's *Transit Noise and Vibration Assessment*, dated September 2018, are used to evaluate potential impacts related to construction vibration for both potential building damage and human annoyance. The FTA guidelines regarding construction vibration are the most current guidelines and are commonly used in evaluating vibration impacts.

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

- Project construction activities cause ground-borne vibration levels to exceed 0.5 PPV at the nearest off-site reinforced-concrete, steel, or timber building.
- Project construction activities cause ground-borne vibration levels to exceed 0.3 PPV at the nearest off-site engineered concrete and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.2 PPV at the nearest off-site non-engineered timber and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.12 PPV at buildings extremely susceptible to vibration damage, such as historic buildings.

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

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

b. Methodology

(1) On-Site Construction Activities

Construction noise impacts due to on-site construction activities associated with the Project were evaluated by calculating the construction-related noise levels at representative sensitive receptor locations and comparing these estimated construction-related noise levels associated with construction of the Project to the existing ambient noise levels (i.e., noise levels without construction noise from the Project). Construction noise associated with the Project was analyzed based on the Project's potential construction equipment inventory, construction durations, and construction schedule. The construction noise model for the Project is based on construction equipment noise levels as published by the Federal Highway Administration's (FHWA) "Roadway Construction Noise Model (FHWA 2006)."[44] The ambient noise levels at surrounding sensitive receptor

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

locations were based on field measurement data (see Table IV.J-6 on page IV.J-25). The construction noise levels were then calculated for sensitive receptor locations based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance (as described above in Subsection 2.a(1)(b), Outdoor Sound Propagation). Additional noise attenuation was assigned to receptor locations where the line-of-sight to the Site Locations was interrupted by the presence of intervening structures.

(2) Off-Site Construction Haul Trucks

Off-site construction noise impacts from haul trucks associated with the Project were analyzed using the FHWA's Traffic Noise Model (TNM). The TNM is the current Caltrans standard computer noise model for traffic noise studies. The model allows for the input of roadway, noise receivers, and sound barriers, if applicable. The TNM calculates the hourly L_{eq} noise levels generated by construction-related haul trucks. Noise impacts were determined by comparing the predicted noise level of construction-related haul trucks plus the ambient with that of the existing ambient noise levels along the Project's anticipated haul route(s).

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

The Project is not anticipated to generate any on-site noise levels. Therefore, no detailed noise analysis is required.

(4) Off-Site Roadway Noise (Operation)

Project operations would not generate vehicle trips on a daily basis. Vehicle trips would occur occasionally for maintenance activities on an as-needed basis. Thus, the Project is not anticipated to generate any perceptible increase in off-site noise levels. Therefore, no detailed noise analysis is required.

(5) Construction Vibration

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

(6) Operational Vibration

The Project is not anticipated to generate any operation vibrations. Therefore, no detail vibration analysis is required.

c. Project Design Features

The following project design feature is are proposed with regard to noise and vibration:

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

d. Analysis of Project Impacts

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

(1) Impact Analysis

As set forth in Section II, Project Description, of this Draft EIR, the Project would include the installation of 34 Freeway-Facing (FF) TCN Structures and 22 Non-Freeway Structures at various locations within the City. As part of implementation of the TCN Structures, approximately 200 existing static displays would be removed. The operation of the new TCN Structures would not generate any significant on-site and off-site noise source(a) Construction Noise

Project construction is anticipated to commence in 2023 and be completed in 2025 and, thus, would occur over a period longer than 10 days for all phases. Although the construction of the Project would extend over a period of two years, the construction for each of the TCN Structure would be less than one month. Thus, the corresponding significance criteria used in the construction noise analysis below is when the Project-related construction noise exceeds the ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise sensitive use.

Removal of the existing static displays would range in size from approximately 8-foot by 8-foot to approximately 10-foot by 30-foot in size. Removal of the existing sign structures would take approximately half a day at each location and would consist of removing the static displays with a mobile crane or a bucket truck. Existing static signage that includes a support column would be cut at approximately two feet below grade and filled in with similar material to the surrounding landscape. Removal of the existing static signage would occur concurrently with the installation of the TCN Structures. Construction

equipment associated with removal of the existing signage would be limited to an aerial lift, a mobile crane, a backhoe, and an industrial saw (where required to cut the support structure). As specified by Mitigation Measure NOI-MM-3, below, a temporary construction noise barrier would be provided at the existing static signage locations that are located within 200 feet of noise sensitive uses to reduce this temporary noise. Based on the limited equipment needed for removal activities and with implementation of this mitigation measure, noise levels associated with removal of existing static display would be below the 10 dBA significance threshold (applicable to construction activities less than 10 days). Thus, based on the estimated noise levels associated with the take-down activities and the short-duration of removal of the existing static displays, noise impacts would be less than significant.

The TCN Structures would be constructed with the use of a drill rig that would drill a hole up to 50 feet in depth on an approximately 10-foot by 10-foot area, depending on soil conditions and size of the digital display. A steel column for the digital display would be placed with a crane and cast in place with concrete. Excavation and placement of the steel column is anticipated to take up to seven work days for the TCN Structures requiring the maximum depth of excavation, however, the majority of the TCN Structures would require approximately half this time to complete these activities. The digital display face(s) would then be assembled at grade and would be lifted by a mobile crane and affixed to the column structure over the course of approximately six working days. Further, minor trenching would be required to install electrical conduit to connect to Los Angeles Department of Water and Power (LADWP). It is estimated that approximately five trucks per day would be used during the construction. Construction delivery/haul trucks would travel between the Site Locations and the nearest freeway ramp

(ii) On-Site Construction Noise

As provided in Project Design Feature NOI-PDF-1 above, construction equipment would have proper noise muffling devices per the manufacturer's standards. Individual pieces of construction equipment anticipated to be used during construction of the Project could produce maximum noise levels (L_{max}) of 74 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in Table IV.J-7 on page IV.J-33. These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites often operates under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (hourly L_{eq}) noise level associated with each construction phase is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction

Table IV.J-7
Construction Equipment Noise Levels

Equipment	Estimated Usage Factor[a] (%)	Typical Noise Level at 50 feet from Equipment, dBA (L_{max})
Cement and Mortar Mixer	50	80
Concrete Mixer Truck	40	79
Concrete Saw	20	90
Crane	16	81
Drill Rig	20	84
Aerial Lift	10	75
Generator	50	81
Grader	40	85
Dump/Haul Truck	40	76
Paver	50	77
Pump	50	81
Rubber Tired Loader	40	79
Tractor/Loader/Backhoe	40	80
Delivery Truck	40	74
Welders	40	74

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

phase.[45] These noise levels are typically associated with multiple pieces of equipment operating on part power, simultaneously.

Table IV.J-8 on page IV.J-34 provides the estimated construction noise levels for various construction phases at the 30 off-site noise-sensitive receptor locations. To present a conservative impact analysis, the estimated noise levels were calculated for a scenario in which all pieces of construction equipment were assumed to operate simultaneously and be located at the construction area nearest to the affected receptors. These assumptions represent the worst-case noise scenario because construction activities would typically be spread out throughout the Project Site, and, thus, some equipment would be farther away from the affected receptors. In addition, the noise

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

Table IV.J-8
Construction Noise Impacts—Daytime Construction

Off-Site Receptor Location	Approximate Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))				Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact Without Mitigation?
		Grading	Foundation	Construction	Paving				
R1	250	46.0	55.5	52.3	45.0	67.8	72.8	0.0	No
R2	245	61.2	70.6	67.5	60.2	72.3	77.3	0.0	No
R3	300	59.5	69.0	65.8	58.4	68.3	73.3	0.0	No
R4	220	62.2	71.5	68.3	61.1	67.3	72.3	0.0	No
R5	260	60.7	70.1	67.0	59.7	60.5	65.5	4.6	**Yes**
R6	485	55.3	65.0	61.9	54.3	58.0	63.0	2.0	**Yes**
R7	300	59.5	69.0	65.8	58.4	64.9	69.9	0.0	No
R8	140	51.1	60.1	56.9	50.0	64.9	69.9	0.0	No
R9	355	58.0	67.6	64.5	57.0	72.0	77.0	0.0	No
R10	275	60.2	69.7	66.5	59.2	62.4	67.4	2.3	**Yes**
R11	240	61.4	70.8	67.6	60.4	72.6	77.6	0.0	No
R12	205	62.8	72.1	68.9	61.7	60.9	65.9	6.2	**Yes**
R12B	55	74.2	82.2	79.2	73.2	72.3	77.3	4.9	**Yes**[b]
R13	165	64.7	73.8	70.6	63.6	62.5	67.5	6.3	**Yes**
R14	315	59.0	68.6	65.4	58.0	68.0	73.0	0.0	No
R15	150	65.5	74.6	71.4	64.4	72.0	77.0	0.0	No
R16	285	59.9	69.4	66.3	58.9	76.4	81.4	0.0	No
R17	280	60.1	69.5	66.4	59.0	69.7	74.7	0.0	No
R18	300	59.5	69.0	65.8	58.4	64.2	69.2	0.0	No
R19	395	57.1	66.7	63.6	56.0	62.2	67.2	0.0	No
R20	270	60.4	69.8	66.7	59.3	64.9	69.9	0.0	No
R21	390	52.2	61.8	58.7	51.1	64.9	69.9	0.0	No
R22	280	60.1	69.5	66.4	59.0	65.6	70.6	0.0	No
R23	580	53.7	63.5	60.4	52.7	65.4	70.4	0.0	No
R24	300	43.9	53.4	50.3	42.9	61.5	66.5	0.0	No

Table IV.J-8 (Continued)
Construction Noise Impacts—Daytime Construction

Off-Site Receptor Location	Approximate Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))				Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact Without Mitigation?
		Grading	Foundation	Construction	Paving				
R25	280	60.1	69.5	66.4	59.0	64.9	69.9	0.0	No
R26	155	50.2	59.3	56.1	49.2	64.9	69.9	0.0	No
R27	145	65.8	74.9	71.7	64.7	66.9	71.9	3.0	**Yes**
R28	30	79.5	86.6	83.9	78.4	70.7	75.7	10.9	**Yes**
R29	190	48.4	57.7	54.5	47.4	65.4	70.4	0.0	No

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.J-6 on page IV.J-25) plus 5 dBA, per the 2006 L.A. CEQA Thresholds Guide for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance criteria, a construction-related noise impact is identified.*

[b] *Significant impact if the future residential development at receptor location R12B is built and occupied prior to or during Project construction.*

Source: AES, 2022. See Appendix J of this Draft EIR.

modeling assumes that construction noise is constant, when, in fact, construction activities and associated noise levels are periodic and fluctuate based on the construction activities.

As discussed above, since construction activities would occur over a period longer than 10 days for all phases combined, the corresponding significance criteria used in the construction noise analysis is when the construction-related noise exceeds the ambient L_{eq} noise level of 5 dBA at a noise-sensitive use. As indicated in Table IV.J-8 on page IV.J-34, the estimated noise levels during Project construction combined would exceed the daytime significance criteria at off-site receptor locations R5, R6, R10, R12, R12B, R13, R27 and R28. The estimated construction-related noise would exceed the significance threshold by a range of 2.0 dBA at the uses represented by receptor location R6 to up to 10.9 dBA at the uses represented by receptor location R28, without implementation of mitigation. **Therefore, temporary noise impacts associated with the Project's daytime on-site construction would be significant. However, with implementation of Mitigation Measures NOI-MM-1 through NOI-MM-3 provided below, impacts would be reduced to less than significant levels.**

In addition, the Project would include nighttime construction for the TCN Structures NFF-14, NFF-15, FF-13, FF-14, FF-26, FF-27 and FF-28. Table IV.J-9 on page IV.J-37 provides the estimated construction noise levels at the receptor locations near the TCN Structures with nighttime construction activities. As indicated in Table IV.J-9, the estimated Project construction noise levels would exceed the nighttime significance criteria at off-site receptor locations R7, R20, R25 and R27, by up to 5.6 dBA. **Therefore, temporary noise impacts associated with the Project's nighttime on-site construction would be significant. However, with implementation of Mitigation Measure NOI-MM-1 provided below, impacts would be reduced to less than significant levels.**

(ii) Off-Site Construction Noise

In addition to on-site construction noise sources, other noise sources may include materials delivery, concrete mixing, and haul trucks (construction trucks), as well as construction worker vehicles accessing the Project Site during construction. Typically, construction trucks generate higher noise levels than construction worker vehicles. The major noise sources associated with off-site construction trucks would be from the material delivery/concrete/haul trucks. As described above, construction haul trucks would travel between the Site Locations and the nearest freeway ramps.

The Project construction would generate maximum five trucks per day (total 10 truck trips per day). Based on a typical 8-hour workday, there would be about one truck per hour (two truck trips/hour). Noise level generated by the Project construction truck would be approximately 56.3 dBA L_{eq}, which would be well below the existing ambient noise levels

Table IV.J-9
Construction Noise Impacts—Nighttime Construction

Off-Site Receptor Location	Approximate Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))				Existing Nighttime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Sig. Impact Without Mitigation?
		Grading	Foundation	Construction	Paving				
R7	300	59.5	69.0	65.8	58.4	59.3	64.3	4.7	**Yes**
R8	140	51.1	60.1	56.9	50.0	59.3	64.3	0.0	No
R20	270	60.4	69.8	66.7	59.3	60.1	65.1	4.7	**Yes**
R21	390	52.2	61.8	58.7	51.1	60.1	65.1	0.0	No
R25	280	60.1	69.5	66.4	59.0	59.3	64.3	5.2	**Yes**
R26	155	50.2	59.3	56.1	49.2	59.3	64.3	0.0	No
R27	145	65.8	74.9	71.7	64.7	64.3	69.3	5.6	**Yes**

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.J-6 on page IV.J-25) plus 5 dBA, per the 2006 L.A. CEQA Thresholds Guide for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance criteria, a construction-related noise impact is identified.*

Source: AES, 2022. See Appendix J of this Draft EIR.

along the roadways between the Site Locations and the nearest freeway, which would range from 58 dBA L_{eq} to 76 dBA L_{eq} ramps. **Therefore, temporary noise impacts from off-site construction traffic would be less than significant.**

(iii) Summary of Construction Noise Impacts

As discussed above, temporary noise impacts associated with the Project's off-site construction would be less than significant. However, the Project's on-site construction would be significant. **Therefore, without mitigation measures, Project construction would result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the Site Locations NFF-11, NFF-12, NFF-19, NFF-20, NFF-21, FF-28, and FF-33 during the daytime, and Site Locations NFF-14, FF-13, FF-26, and FF-28 at nighttime, in excess of significance criteria established by the City. However, as set forth below, with implementation of Mitigation Measures NOI-MM-1 through NOI-MM-3, these impacts would be reduced to less than significant levels.**

(b) Operational Noise

Project operations would not generate any on-site noise levels or vehicle trips on a daily basis. Vehicle trips would only occur occasionally for maintenance activities on an as-needed basis. Therefore, the Project is not anticipated to generate any measurable on-site or off-site noise sources. As such, Project operations would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the City's general plan or noise ordinance, or applicable standards of other agencies. **Based on the above, the Project's operational noise impacts from on- and off-site sources would be less than significant.**

(2) Mitigation Measures

(a) On-Site Construction Noise

As analyzed above, construction of the Project would have the potential to result in significant noise impacts at sensitive receptor locations from on-site construction activities. Therefore, the following mitigation measure is provided to reduce construction-related noise impacts:

Mitigation Measure NOI-MM-1: A temporary and impermeable sound barrier shall be erected at the locations listed below. At plan check, building plans shall include documentation prepared by a noise consultant verifying compliance with this measure.

During TCN Structure NFF-11 Construction

- Between the Project construction area and the residential uses on 67th Street north of the Site Location (receptor location R5). The temporary sound barrier shall be designed to provide a minimum 5-dBA noise reduction at the ground level of receptor location R5.

During TCN Structure NFF-12 Construction

- Between the Project construction area and the residential uses on Victoria Avenue west of the Site Location (receptor location R6). The temporary sound barrier shall be designed to provide a minimum 5-dBA noise reduction at the ground level of receptor location R6.

During TCN Structure NFF-14 Construction

- Between the Project construction area and the residential uses on Exposition Boulevard southeast of the Site Location (receptor location R7). The temporary sound barrier shall be designed to provide a minimum 5-dBA noise reduction at the ground level of receptor location R7.

During TCN Structure NFF-19 Construction

- Between the Project construction area and the residential uses on New Hampshire Avenue west of the Site Location (receptor location R10). The temporary sound barrier shall be designed to provide a minimum 5-dBA noise reduction at the ground level of receptor location R10.

During TCN Structure NFF-20 Construction

- Between the Project construction area and the residential uses on New Hampshire Avenue northwest of the Site Location (receptor location R12). The temporary sound barrier shall be designed to provide a minimum 7-dBA noise reduction at the ground level of receptor location R12.

During TCN Structure NFF-21 Construction

- Between the Project construction area and the residential uses on Mateo Street west of the Site Location (receptor location R13). The temporary sound barrier shall be designed to provide a minimum 7-dBA noise reduction at the ground level of receptor location R13.

During TCN Structure FF-13 Construction

- Between the Project construction area and the residential uses on Casitas Avenue Street west of the Site Location (receptor location R20). The temporary sound barrier shall be designed to provide a minimum 5-dBA noise reduction at the ground level of receptor location R20.

During TCN Structure FF-26 Construction

- Between the Project construction area and the residential uses on Sepulveda Boulevard northeast of the Site Location (receptor location R25). The temporary sound barrier shall be designed to provide a minimum 6-dBA noise reduction at the ground level of receptor location R25.

During TCN Structure FF-28 Construction

- Between the Project construction area and the residential uses on Exposition Boulevard south of the Site Location (receptor location R27). The temporary sound barrier shall be designed to provide a minimum 6-dBA noise reduction at the ground level of receptor location R27.

During TCN Structure FF-33 Construction

- Between the Project construction area and the residential uses on Slauson Avenue north of the Site Location (receptor location R28. The temporary sound barrier shall be designed to provide a minimum 11-dBA noise reduction at the ground level of receptor location R28.

Mitigation Measure NOI-MM-2: Construction for TCN Structure NFF-20 shall be completed prior to occupation of the adjacent future residential building (receptor R12B). Alternatively, construction equipment for the installation of the TCN Structure NFF-20 shall be limited to a maximum 75 dBA (L_{eq}) at 50 feet from the equipment.

Mitigation Measure NOI-MM-3: A temporary noise barrier shall be provided during the removal of existing static signage where noise sensitive uses are located within 200 feet of and have direct line-of-sight to the existing static signage to be removed. The temporary noise barrier shall be a minimum six feet tall and break the line-of-site between the construction equipment and the affected noise sensitive receptors.

(b) Off-Site Construction Noise

As analyzed above, noise impacts associated with off-site construction trucks would be less than significant. As such, no mitigation measures are required.

(c) Operational Noise

Noise impacts associated with on-site noise sources and off-site traffic were determined to be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance After Mitigation

(a) On-Site Construction Noise

As shown in Table IV.J-10 and Table IV.J-11 on pages IV.J-42 and IV.J-44, respectively, implementation of Mitigation Measure NOI-MM-1 provided above would reduce the Project's daytime and nighttime construction noise levels to a less than significant level at all affected receptor locations. Specifically, implementation of Mitigation Measure NOI-MM-1 (installation of temporary sound barrier) would reduce the noise generated by on-site construction activities at the off-site sensitive uses by a minimum 5 dBA at receptor locations R5, R6, R7, R10, R20, by 6 dBA at receptor locations R25 and R27, by 7 dBA at receptor locations R12 and R13, and by 11 dBA at the receptor location R28; and implementation of Mitigation Measure NOI-MM-2 would require the construction of the TCN Structure NFF-20 to be completed prior to the occupancy of the adjacent future residential building (receptor R12B) or that the construction equipment be limited as specified in the mitigation measure. Mitigation Measure NOI-MM-3 would also ensure that noise levels associated with the removal of static displays would be less than significant. **Therefore, construction noise impacts associated with on-site noise sources would be reduced to a less than significant level with implementation of the Mitigation Measure NOI-MM-1 through Mitigation Measure NOI-MM-3.**

(b) Off-Site Construction Noise

Noise impacts from off-site construction would be less than significant. **Therefore, no mitigation measures were required or included, and the impacts would be less than significant.**

(c) Operational Noise

Noise impacts associated with on-site noise sources and off-site traffic for operations were determined to be less than significant without mitigation. **Therefore, no mitigation measures were required or included, and the impacts would be less than significant.**

Table IV.J-10
Construction Noise Impacts With Mitigation Measures—Daytime Construction

Off-Site Receptor Location	Noise Reduction Provided by Mitigation Measure, (L_{eq} (dBA))	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))				Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact With Mitigation?
		Grading	Foundation	Construction	Paving				
R1	0	46.0	55.5	52.3	45.0	67.8	72.8	0.0	No
R2	0	61.2	70.6	67.5	60.2	72.3	77.3	0.0	No
R3	0	59.5	69.0	65.8	58.4	68.3	73.3	0.0	No
R4	0	62.2	71.5	68.3	61.1	67.3	72.3	0.0	No
R5	-5	55.7	65.1	62.0	54.7	60.5	65.5	0.0	No
R6	-5	50.3	60.0	56.9	49.3	58.0	63.0	0.0	No
R7	-5	54.5	64.0	60.8	53.4	64.9	69.9	0.0	No
R8	0	51.1	60.1	56.9	50.0	64.9	69.9	0.0	No
R9	0	58.0	67.6	64.5	57.0	72.0	77.0	0.0	No
R10	-5	55.2	64.7	61.5	54.2	62.4	67.4	0.0	No
R11	0	61.4	70.8	67.6	60.4	72.6	77.6	0.0	No
R12	-7	55.8	65.1	61.9	54.7	60.9	65.9	0.0	No
R12B	0	74.2	82.2	79.2	73.2	72.3	--[b]	0.0	No[b]
R13	-7	57.7	66.8	63.6	56.6	62.5	67.5	0.0	No
R14	0	59.0	68.6	65.4	58.0	68.0	73.0	0.0	No
R15	0	65.5	74.6	71.4	64.4	72.0	77.0	0.0	No
R16	0	59.9	69.4	66.3	58.9	76.4	81.4	0.0	No
R17	0	60.1	69.5	66.4	59.0	69.7	74.7	0.0	No
R18	0	59.5	69.0	65.8	58.4	64.2	69.2	0.0	No
R19	0	57.1	66.7	63.6	56.0	62.2	67.2	0.0	No
R20	-5	55.4	64.8	61.7	54.3	64.9	69.9	0.0	No
R21	0	52.2	61.8	58.7	51.1	64.9	69.9	0.0	No
R22	0	60.1	69.5	66.4	59.0	65.6	70.6	0.0	No
R23	0	53.7	63.5	60.4	52.7	65.4	70.4	0.0	No
R24	0	43.9	53.4	50.3	42.9	61.5	66.5	0.0	No

Table IV.J-10 (Continued)
Construction Noise Impacts With Mitigation Measures—Daytime Construction

Off-Site Receptor Location	Noise Reduction Provided by Mitigation Measure, (L_{eq} (dBA))	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))				Existing Daytime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact With Mitigation?
		Grading	Foundation	Construction	Paving				
R25	-6	54.1	63.5	60.4	53.0	64.9	69.9	0.0	No
R26	0	50.2	59.3	56.1	49.2	64.9	69.9	0.0	No
R27	-6	59.8	68.9	65.7	58.7	66.9	71.9	0.0	No
R28	-11	68.5	75.6	72.9	67.4	70.7	75.7	0.0	No
R29	0	48.4	57.7	54.5	47.4	65.4	70.4	0.0	No

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.J-6 on page IV.J-25) plus 5 dBA, per the 2006 L.A. CEQA Thresholds Guide for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance criteria, a construction-related noise impact is identified.*

[b] *Mitigation Measure NOI-MM-2 requires the construction of TCN Structure NFF-20 to be completed prior to the occupancy of the adjacent future residential building (receptor R12B). Therefore, noise impacts would be less than significant.*

Source: AES, 2022. See Appendix J of this Draft EIR.

Table IV.J-11
Construction Noise Impacts With Mitigation Measures—Nighttime Construction

Off-Site Receptor Location	Noise Reduction Provided by Mitigation Measure, (L_{eq} (dBA))	Estimated Construction Noise Levels by Construction Phases (L_{eq} (dBA))				Existing Nighttime Ambient Noise Levels (L_{eq} (dBA))	Significance Criteria (L_{eq} (dBA))[a]	Maximum Noise Exceedance Above the Criteria (L_{eq} (dBA))	Significant Impact With Mitigation?
		Grading	Foundation	Construction	Paving				
R7	-5	54.5	64.0	60.8	53.4	59.3	64.3	0.0	No
R8	0	51.1	60.1	56.9	50.0	59.3	64.3	0.0	No
R20	-5	55.4	64.8	61.7	54.3	60.1	65.1	0.0	No
R21	0	52.2	61.8	58.7	51.1	60.1	65.1	0.0	No
R25	-6	54.1	63.5	60.4	53.0	59.3	64.3	0.0	No
R26	0	50.2	59.3	56.1	49.2	59.3	64.3	0.0	No
R27	-6	59.8	68.9	65.7	58.7	64.3	69.3	0.0	No

[a] *Significance criteria are equivalent to the measured daytime ambient noise levels (see Table IV.J-6 on page IV.J-25) plus 5 dBA, per the 2006 L.A. CEQA Thresholds Guide for construction activities lasting longer than 10 days in a three-month period. If the estimated construction noise levels exceed those significance criteria, a construction-related noise impact is identified.*

Source: AES, 2022. See Appendix J of this Draft EIR.

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

(1) Impact Analysis

(a) Construction

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

(i) Building Damage Impacts from On-Site Construction

With regard to potential building damage, the Project would generate ground-borne construction vibration during drilling for the structure foundation and the trenching and site excavation/grading activities when heavy construction equipment, such as drill rigs and loaded trucks, is used. The FTA has published standard vibration velocities (in terms of inch per second PPV) for various construction equipment operations, as provided in Table IV.J-12 on page IV.J-46. As indicated above, the highest vibration generation would be during the drilling for the structure foundation, which would be up to 0.089 PPV at 25 feet from the construction site. The estimated vibration levels from on-site construction would be well below the most stringent significance threshold of 0.12 PPV (applicable to building extremely susceptible to vibration damage). In addition, the removal of the existing static displays would not require the use of large earthmoving equipment. Therefore, vibration associated with the existing static displays removal (e.g., a mobile crane, container truck and small backhoe) would be well below the building damage significance threshold. **Therefore, the on-site vibration impacts during construction of the Project, pursuant to the significance criteria for building damage, would be less than significant.**

(ii) Human Annoyance Impacts from On-Site Construction

Table IV.J-13 on page IV.J-47 provides the FTA's published standard vibration velocities (in terms of VdB) for various construction equipment operations. As indicated above, the highest vibration generation would be during the drilling for the structure foundation, which would be up to 87 VdB at 25 feet from the construction site. The ground vibration levels associated with the drilling would attenuate to below the 72 VdB significance

Table IV.J-12
Construction Vibration Impacts—Building Damage

Nearest Building Structure[a]	Estimated Vibration Velocity Levels at the Outside of and Adjacent to the Nearest Off-Site Structures from the Project Construction Equipment (inch/second (PPV))					Significance Criteria (PPV)	Sig. Impact?
	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	0.089	0.089	0.076	0.035	0.003	0.12[b]	No

[a] *Data provided at 25 feet, representing nearest structure to the Site Locations.*

[b] *FTA most stringent criteria, applicable to building extremely susceptible to vibration damage.*

Source: FTA, 2018.

threshold at a distance of 80 feet. All vibration sensitive receptors are located minimum 140 feet from the Project Site, with the exception of receptor locations R12B and R28, which are located approximately 55 feet and 30 feet from the TCN Structure NFF-20 and TCN Structure FF-33, respectively. The estimated vibration level at receptor location R12B and receptor location R28 would be up to 76.7 VdB and 84.6 VdB during the drilling for the foundation structure, respectively, which would exceed the 72 VdB significance threshold. In addition, there is recording studio (Zynderia Productions) located approximately 140 feet from the TCN Structure NFF-2. The estimated vibration level at recording studio would be up to 64.6 VdB during the drilling for the structure foundation, which would be below the 65-VdB significance threshold. In addition, the removal of the existing static displays would not require the use of large earthmoving equipment. Therefore, vibration associated with the existing static displays removal (e.g., mobile crane, container truck and small backhoe) would be well below the human annoyance significance threshold. **Therefore, on-site vibration impacts during construction of the Project, pursuant to the significance criteria for human annoyance, would be significant without mitigation measures, at Site Locations (TCN Structures) NFF-20 and FF-33.**

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

Based on FTA data, the vibration generated by a typical heavy-duty truck would be approximately 63 VdB (0.00566 PPV) at a distance of 50 feet from the truck.[46] According to the FTA "[i]t is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads." Therefore, vibration generated by

[46] *FTA, Transit Noise and Vibration Impact Assessment, September 2018. Figure 5-4,.*

Table IV.J-13
Construction Vibration Impacts—Human Annoyance

Off-Site Receptor Location (within 140 feet from the construction area)	Estimated Vibration Velocity Levels at the Off-Site Sensitive Uses Due to On-Site Construction Equipment Operation (VdB)					Significance Criteria (VdB)	Sig. Impact?
	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack-hammer	Small Bulldozer		
FTA Reference Vibration Levels at 25 feet	87	87	86	79	58	—	—
R12B (near NFF-20)	76.7	76.7	75.7	68.7	47.7	72	Yes
R28 (near FF-33)	84.6	84.6	83.6	76.6	55.6	72	Yes
Zynderia Productions (near NFF-2)	64.6	64.6	63.6	56.6	35.6	65	No

Source: FTA, 2018.

construction trucks traveling along the anticipated haul routes would be well below the most stringent building damage criterion of 0.12 PPV for buildings extremely susceptible to vibration and the human annoyance criterion of 80 VdB (applicable to infrequent events, i.e., less than 30 construction trucks per day). **As such, the Project's vibration impact from off-site construction activities (i.e., construction trucks traveling on public roadways) would be less than significant**.

Imp(iv) Summary of Construction Vibration Impacts

As discussed above, the estimated vibration levels from on-site construction equipment would be below the most stringent building damage significance criteria of 0.12 PPV. **Therefore, vibration impacts (pursuant to the significance criteria for building damage) during construction of the Project would be less than significant. However, vibration impacts from on-site construction activities would be significant pursuant to the significance criteria for human annoyance without mitigation. As discussed below, implementation of mitigation measures would reduce these potential impacts to less than significant levels.**

(b) Operation Vibration Impacts

As described above, the Project operation would not generate any significant on-site and off-site vibration sources. **Therefore, operation of the Project would not result in the generation of excessive ground-borne vibration levels that would be perceptible in the vicinity of the Project Site. As such, vibration impacts associated with operation of the Project would be less than significant.**

(2) Mitigation Measures

(a) Construction Vibration

As discussed above, vibration impacts (pursuant to the significance criteria for building damage) associated with on-site construction activities would be less than significant. Therefore, no mitigation measures are required.

As analyzed above, construction of the Project would have the potential to result in significant vibration impacts with respect to potential human annoyance from Project construction at two receptor locations, R12B and R28. Therefore, the following mitigation measures are provided to reduce the vibration impacts.

> **Mitigation Measure NOI-MM-4:** The use of large construction equipment (i.e., large bulldozer, caisson drill rig, and/or loaded trucks) shall be limited to a minimum of 80 feet away from the existing residences near proposed TCN Structure FF-33 (receptor 28) and the future residences near proposed TCN Structure NFF-20 (receptor 12B), if these residences are constructed and occupied at the time Project construction activities occurs.

As specified above, Mitigation Measure NOI-MM-2 would require construction of the TCN Structure NFF-20 to be complete prior to the occupancy of the adjacent future residential building (receptor R12B), which would reduce the potential vibration impacts at receptor R12B. Alternatively, Mitigation Measure NOI-MM-4 would apply to the construction of TCN Structure NFF-20, if construction occurs after the adjacent residential building is constructed and occupied (receptor 12B). As set forth above, this mitigation measure requires that large construction equipment not be located within an 80-foot distance from the sensitive receptor. Eighty feet is a distance at which the vibration level generated by construction equipment would be below the 72 VdB significance threshold. Thus, with implementation of the proposed mitigation measures, vibration (human annoyance) impacts associated with construction of TCN Structures FF-33 and NFF-20 would be less than significant.

(b) Operation Vibration Impacts.

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

(3) Level of Significance After Mitigation

(a) Construction Vibration

Vibration impacts (pursuant to the significance criteria for building damage) associated with on-site construction activities were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

With regard to potential vibration impacts associated with human annoyance, implementation of Mitigation Measure NOI-MM-2 would require construction of TCN Structure NFF-20 to be completed prior to the occupancy of the adjacent future residential building (receptor R12B). Alternatively, if NFF-20 is constructed after occupancy of the adjacent future residential use, Mitigation Measure NOI-MM-4 would limit the use of large construction equipment for the construction of the TCN Structure NFF-20, which would reduce the Project's construction vibration impacts associated with human annoyance to less than significant levels. Mitigation Measure NOI-MM-4 would also apply to TCN Structure FF-33, which would reduce the potential human annoyance vibration impacts at the sensitive receptor R28 to a less than significant level. Therefore, **vibration impacts from on-site site construction with respect to human annoyance would be reduced to less than significant levels.**

(b) Operation Vibration

Vibration impacts associated with Project operation were determined to be less than significant without mitigation. Therefore, no mitigation measures were required or included, and the impact level remains less than significant.

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

Several Site Locations are located within two miles of a public airport including the Los Angeles International Airport. However, there are no people residing or working at the TCN Structures, which would be exposed to aircraft noise. **Therefore, the Project would not expose people to excessive airport noise levels, and noise impacts would be less than significant.**

e. Cumulative Impacts

(1) Impact Analysis

Cumulative impacts occur when impacts that are significant or less than significant from a proposed project combine with similar impacts from other past, present, or reasonably foreseeable projects in a similar geographic area. The Project, together with the related projects and future growth, could contribute to cumulative noise impacts. The potential for cumulative noise impacts to occur is specific to the distance between each related project and their stationary noise sources, as well as the cumulative traffic that these projects would add to the surrounding roadway network.

(a) Construction Noise

(i) On-Site Construction Noise

As indicated in Section III, Environmental Setting, of this Draft EIR, cumulative growth is anticipated in the surrounding area through 2025, the Project's anticipated buildout year. The related projects are comprised of transportation improvements that are included in the 2020–2045 RTP/SCS, Metro's 2020 Long Range Transportation Plan, the NextGen Bus Plan, and the City's Sidewalk and Transit Amenities Program. Noise from construction of development projects is typically localized and has the potential to affect noise-sensitive uses within 500 feet from the construction site, based on the *2006 L.A. CEQA Thresholds Guide* screening criteria. Thus, noise from construction activities for two projects within 1,000 feet of each other can contribute to a cumulative noise impact for receptors located midway between the two construction sites.

Construction-related noise levels from the related projects would be intermittent and temporary and it is anticipated that, as with the Project, the related projects would comply with the construction hours and other relevant provisions set forth in the LAMC. Noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through proposed mitigation measures for each individual related project and compliance with locally adopted and enforced noise ordinances. Based on the above, there would be no potential cumulative noise impacts at the nearby sensitive uses (e.g., residential uses) located in proximity to the Project Site and nearby related projects. **As such, cumulative noise impacts associated with on-site construction would be less than significant.**

(ii) Off-Site Construction Noise

In addition to the cumulative impacts of on-site construction activities, off-site construction haul trucks would have a potential to result in cumulative impacts if the trucks associated with the related projects and the Project were to utilize the same haul routes.

Project construction would generate maximum five trucks per day (total 10 truck trips per day). Based on a typical 8-hour workday, there would be about one truck per hour (two truck trips/hour). Noise level generated by the Project construction truck would be approximately 56.3 dBA L_{eq}, which would be well below the existing ambient noise levels along the roadways between the Site Locations and the nearest freeway ramps. Based on the limited number of Project truck trips, the Project's contribution to potential off-site construction noise impacts would not be cumulatively considerable. **As such, cumulative noise impacts associated with off-site construction would be less than significant.**

(b) Operational Noise

The Project Site and surrounding area have been developed with uses that have previously generated, and will continue to generate, noise from a number of community noise sources, including mechanical equipment (e.g., HVAC systems), outdoor activity areas, and vehicle travel. Project operations would not generate vehicle trips on a daily basis and vehicle trips would only occur occasionally for maintenance activities on an as-needed basis. Therefore, the Project is not anticipated to generate any measurable on-site or off-site noise source. **As such, there would be no potential cumulative operational noise impacts at the nearby sensitive uses (e.g., residential uses) located in proximity to the Project Site and nearby related projects and impacts would be less than significant.**

(c) Construction Vibration

(i) On-Site Construction Vibration

As indicated above, the highest vibration generation would be during the drilling for the structure foundation, would be up to 0.089 PPV at 25 feet from the Project construction area. The estimated vibration levels from on-site construction would be well below the most stringent significance threshold of 0.12 PPV (applicable to building extremely susceptible to vibration damage. **Therefore, the Project would not contribute to a cumulative construction vibration impact with respect to building damage associated with on-site construction, and the cumulative impact would be less than significant.**

As discussed above, potential vibration impacts associated with Project-related on-site construction activities would be less than significant with respect to human annoyance at receptors R12B and R28, with implementation of Mitigation Measure NOI-MM-2 and Mitigation Measure NOI-MM-3. Due to the rapid attenuation characteristics of ground-borne vibration, related projects would not exacerbate the Project's significant construction vibration impact with respect to human annoyance at the uses represented by receptor locations R12B and R28. **Therefore, the cumulative construction vibration**

impact with respect to human annoyance associated with on-site construction would be less than significant.

(ii) Off-Site Construction Vibration

As discussed above, vibration levels generated by off-site construction trucks traveling along the anticipated haul routes would be well below the most stringent building damage criterion of 0.12 PPV for buildings extremely susceptible to vibration and the human annoyance criterion of 80 VdB. **Therefore, the cumulative vibration impact with respect to both building damage and human annoyance from off-site construction activities would be less than significant**.

(d) Operational Vibration

Cumulative vibration impacts associated with operation of the Project and related projects would be less than significant. Therefore, no mitigation measures are required.

(3) Level of Significance after Mitigation

(a) Construction Noise

Cumulative construction noise impacts associated with on-site noise sources would be less than significant. Therefore, no mitigation measures were required, and the impact level remains less than significant.

(b) Operational Noise

Cumulative impacts associated with on and off-site noise source would be less than significant. Therefore, no mitigation measures were required, and the impact level remains less than significant.

(c) Construction Vibration

Cumulative vibration impacts with respect to building damage from on-site and off-site construction activities would be less than significant without mitigation. Cumulative vibration impacts associated with human annoyance from on-site construction would be less than significant with implementation of Mitigation Measure NOI-MM-2 and Mitigation Measure NOI-MM-4.

(d) Operational Vibration

Cumulative impacts related to operational vibration would be less than significant without mitigation. Therefore, no mitigation measures were required, and the impact level remains less than significant.