# IV. Environmental Impact Analysis

# H. Noise

## 1. Introduction

This section evaluates the noise and vibration impacts resulting from the construction and operation of the Project. Specifically, the analysis describes the existing noise environment in the vicinity of the Project Site, estimates future noise and vibration levels at surrounding sensitive land uses resulting from construction and operation of the Project, identifies the potential for significant impacts, and provides mitigation measures to address significant impacts. In addition, this section of the Draft EIR evaluates the potential cumulative noise and vibration impacts resulting from the Project together with related projects and other future growth. Noise monitoring data and calculations are included as **Appendix I** of this Draft EIR.

## 2. Environmental Setting

### a) Noise and Vibration Fundamentals

#### (1) Noise

##### *(a) Fundamentals of Sound and Environmental Noise*

Sound is described in terms of amplitude (i.e., loudness) and frequency (i.e., pitch). The standard unit of sound amplitude measurement is the decibel (dB). The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted dB scale (dBA) provides this compensation by emphasizing frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound audible at such a level that the sound becomes an undesirable by-product of society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, causes actual physical harm, or results in adverse health effects. 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).

The definition of noise as unwanted sound implies that it has an adverse effect, or causes a substantial annoyance, to people and their environment. However, not every unwanted audible sound interferes with normal activities, causes harm, or has adverse health effects. For unwanted audible sound (i.e., noise) to be considered adverse, it must occur with sufficient frequency and at such a level that these adverse impacts are reasonably likely to occur.

Thresholds of significance, discussed below, differentiate between benign unwanted audible sound and significant adverse unwanted audible sound.

A typical noise environment consists of a base of steady ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background, noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise, such as traffic on a major highway. **Table IV.H-1, Representative Environmental Noise Levels**, illustrates representative noise levels in the environment.

**Table IV.H-1**
**Representative Environmental Noise Levels**

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|---|---|---|
| | —110— | Rock Band |
| Jet Fly-over at 100 feet | | |
| | —100— | |
| Gas Lawnmower at 3 feet | | |
| | —90— | |
| | | Food Blender at 3 feet |
| Diesel Truck going 50 mph at 50 feet | —80— | Garbage Disposal at 3 feet |
| Noisy Urban Area during Daytime | | |
| Gas Lawnmower at 100 feet | —70— | Vacuum Cleaner at 10 feet |
| Commercial Area | | Normal Speech at 3 feet |
| Heavy Traffic at 300 feet | —60— | |
| | | Large Business Office |
| Quiet Urban Area during Daytime | —50— | Dishwasher in Next Room |
| | | |
| Quiet Urban Area during Nighttime | —40— | Theater, Large Conference Room (background) |
| Quiet Suburban Area during Nighttime | | |
| | —30— | Library |

**Table IV.H-1**
**Representative Environmental Noise Levels**

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|---|---|---|
| Quiet Rural Area during Nighttime | | Bedroom at Night, Concert Hall (background) |
| | —20— | |
| | | Broadcast/Recording Studio |
| | —10— | |
| | | |
| Lowest Threshold of Human Hearing | —0— | Lowest Threshold of Human Hearing |

*Note: Colors are for illustrative purposes only.*
*Source: Caltrans, Technical Noise Supplement, Page 2-20, September 2013.*

Several rating scales have been developed to analyze the adverse effects of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. Those that are applicable to this analysis are:[1]

- $L_{eq}$ – An $L_{eq}$, or equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the $L_{eq}$ of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- **$L_{max}$** – 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.
- **CNEL** – The Community Noise Equivalent Level (CNEL) is a 24-hour average $L_{eq}$ with a 5 dBA "weighting" during the hours of 7:00 P.M. to 10:00 P.M. and a 10 dBA "weighting" added to noise during the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a constant 60 dBA 24-hour $L_{eq}$ would result in a CNEL of 66.7 dBA.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. For residences, environmental noise levels are generally considered to be low when the CNEL is below

[1] *Caltrans, Technical Noise Supplement to the Traffic Noise Analysis Protocol (TeNS), September 2013, Section 2.2.2.2.*

60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Frequent exposure to noise levels greater than 85 dBA over time can cause temporary or permanent hearing loss.[2] Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet suburban residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or mixed residential/commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA).

Small changes in noise exposure of 1 to 2 dBA are usually imperceptible to the average person and are insignificant regardless of the absolute level. Changes of 3 to 4 dBA are usually noticeable but may not be significant depending upon the absolute level.[3] A 5 dBA CNEL increase is readily noticeable to most people, while the human ear perceives a 10 dBA CNEL increase as a doubling of sound. However, there is no direct correlation between increasing or even doubling noise-generating sources and what is detectable by the human ear as an increase in noise level. The human ear perceives a 10 dB(A) increase in sound level to be a doubling of sound volume, but doubling the sound energy (i.e., the noise-generating activity) only results in a 3 dB(A) increase in sound. This means that a doubling of sound wave energy (e.g., doubling the volume of traffic on a roadway) would result in a barely perceptible change in sound level to the human ear. Thus, relatively sizeable increases in baseline noise generation are not necessarily perceived as substantial noise increases by the human ear.

Noise levels from a particular source generally decline as distance to the receptor increases. Other factors, such as the weather and reflective barriers, also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source (assume a starting point of 50 feet), the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass).[4] Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively.[5] Noise levels are also generally reduced by about 1 dBA for each 1,000 feet of distance due to air absorption. Noise levels may also be reduced by intervening

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[2] *U.S. Department of Health and Human Services, National Institute on Deafness and Other Communication Disorders (NIDCD), Noise-Induces Hearing Loss, February 2017.*

[3] *City of Los Angeles Citywide General Plan Framework EIR, July 27, 1995, page 2.20-2.*

[4] *Caltrans, TeNS, Section 2.1.4.1.*

[5] *Caltrans, TeNS, Section 2.1.4.1.*

structures – generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm can reduce noise levels by 5 to 20 dBA. The normal noise attenuation within residential structures with open windows is about 17 dBA, while the noise attenuation with closed windows is about 25 dBA.[6]

Additionally, 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. Atmospheric temperature inversion (i.e., increasing temperature with elevation) can increase sound levels at long distances (e.g., more than 500 feet). Other factors such as air temperature, humidity, and turbulence can also have significant effects on noise levels.[7]

### (2) Groundborne Vibration

Vibration can result from a source (e.g., train operations, motor vehicles, machinery equipment, etc.) causing the adjacent ground to move and creating vibration waves that propagate through the soil to the foundations of nearby buildings. This effect is referred to as groundborne vibration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration levels. PPV is defined as the maximum instantaneous peak of the vibration level, while RMS is defined as the square root of the average of the squared amplitude of the vibration level. PPV is typically used for evaluating potential building damage, while RMS velocity in decibels (VdB) is typically more suitable for evaluating human response.

The background vibration velocity level in residential areas is usually around 50 VdB[8]. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. According to the Federal Transit Administration (FTA), the range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.[9] The effects of groundborne vibration include movement of the building floors,

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6 *National Cooperative Highway Research Program Report 117, Highway Noise: A Design Guide for Highway Engineers, 1971.*

7 *Caltrans, TeNS, Section 2.1.4.3.*

8 *FTA, Transit Noise and Vibration Impact Assessment Manual, September 2018.*

9 *Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.*

rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration levels exceed the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings.[10]

The general human response to different levels of groundborne vibration velocity levels is described in **Table IV.H-2, Human Response to Different Levels of Groundborne Vibration**. Groundborne vibration becomes unwanted when it interferes with normal activities, causes actual physical harm, or results in adverse health effects including: fatigue from lack of sleep, sleep disturbances, to more serious issues such as cardiovascular disease, and cognitive impairment.

**Table IV.H-2**
**Human Response to Different Levels of Groundborne Vibration**

| Vibration Velocity Level | Human Perception |
|---|---|
| 65 VdB | Approximate threshold of perception for many people. |
| 75 VdB | Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable. |
| 85 VdB | Vibration acceptable only if there are an infrequent number of events per day. |

*Note: Colors are for illustrative purposes only.*
*Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment, September 2018.*

## b) Regulatory Framework

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

[10] *Wood, cement, aggregates, metals, bricks, concrete, clay are the most common type of building material used in construction.*

## (1) Federal Regulations

### *(a) Federal Noise Control Act of 1972*

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the day-night average sound level (Ldn) should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In addition, the Levels of Environmental Noise identified five (5) dBA as an "adequate margin of safety" for a noise level increase relative to a baseline noise exposure level of 55 dBA Ldn (i.e., there would not be a noticeable increase in adverse community reaction with an increase of five dBA or less from this baseline level). The EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no risk to a community from any health or welfare effect of noise.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated federal agencies, allowing more individualized control for specific issues by designated federal, State, and local government agencies.

### *(b) Vibration and Groundborne Noise*

The City currently does not have any adopted standards, guidelines, or thresholds relative to ground-borne vibration. Ground-borne noise refers to the noise generated by ground-borne vibration. Ground-borne noise that accompanies the building vibration is usually perceptible only inside buildings and typically is only an issue at locations with subway or tunnel operations where there is no airborne noise path or for buildings with substantial sound insulation such as a recording studio.[11] As such, available guidelines from the FTA are utilized to assess impacts due to ground-borne vibration. The FTA has adopted vibration standards that are used to evaluate potential building damage impacts related

[11] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2018, pp 108, 112.*

to construction activities. The vibration damage criteria adopted by the FTA are shown in **Table IV.H-3, Construction Vibration Damage Criteria**.

**Table IV.H-3**
**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: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.* | |

The FTA has also adopted standards associated with human annoyance for groundborne vibration impacts for the following three land-use categories:

(1) Vibration Category 1 – High Sensitivity,

(2) Vibration Category 2 – Residential, and

(3) Vibration Category 3 – Institutional.

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 still have the potential for activity interference. The vibration criteria associated with human annoyance for these three land-use categories are shown in **Table IV.H-4, Groundborne Vibration Criteria for General Assessment.** No thresholds have been adopted or recommended for commercial or office uses.

**Table IV.H-4**
**Groundborne Vibration Impact Criteria for General Assessment**

| Land Use Category | Frequent Events | Occasional Events | Infrequent Events |
|---|---|---|---|
| Category 1 | 65 VdB | 65 VdB | 65 VdB |
| Category 2 | 72 VdB | 75 VdB | 80 VdB |
| Category 3 | 75 VdB | 78 VdB | 83 VdB |
| *Per FTA Transit Noise and Vibration Impact Assessment, September 2018, page 8-1, infrequent events are fewer than 30 vibration events of the same kind per day. Occasional events are between 30 and 70 vibration events of the same source per day. Frequent events are more than 70 vibration events of the same source per day.* *Source: FTA, Transit Noise and Vibration Impact Assessment Manual, September 2018.* | | | |

## (1) State Regulations

### *(a) State of California General Plan Guidelines 2017*

Though not adopted by law, the State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provide guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of construction relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., Ldn or CNEL) and in the upper limits for the Normally Acceptable outdoor exposure of noise-sensitive uses. The OPR Guidelines include a Noise and Land Use Compatibility Matrix identifies acceptable and unacceptable community noise exposure limits for various land use categories. These guidelines for land use and noise exposure compatibility are shown in **Table IV.H-5, Community Noise Exposure**. The City of Los Angeles has adopted a version of this matrix. In addition, Section 65302(f) of the California Government Code 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(g) requiring a Noise Element to be included in the General Plan. The Noise Element must (1) identify and appraise noise problems in the community, (2) recognize Office of Noise Control guidelines, and (3) analyze and quantify current and projected noise levels.

**Table IV.H-5**
**Community Noise Exposure (dBA CNEL)**

| | Day-Night Average Exterior Sound Level (CNEL dB) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Land Use Category** | **50** | **55** | **60** | **65** | **70** | **75** | **80** |
| Residential Single Family, Duplex, Mobile Home | A | C | C | C | N | U | U |
| Residential Multi-Family | A | A | C | C | N | U | U |
| Transient Lodging, Motel, Hotel | A | A | C | C | N | U | U |
| School, Library, Church, Hospital, Nursing Home | A | A | C | C | N | N | U |
| Auditorium, Concert Hall, Amphitheater | C | C | C | C/N | U | U | U |
| Sports Arena, Outdoor Spectator Sports | C | C | C | C | C/U | U | U |
| Playground, Neighborhood Park | A | A | A | A/N | N | N/U | U |

**Table IV.H-5**
**Community Noise Exposure (dBA CNEL)**

| Land Use Category | Day-Night Average Exterior Sound Level (CNEL dB) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 50 | 55 | 60 | 65 | 70 | 75 | 80 |
| Golf Course, Riding Stable, Water Recreation, Cemetery | A | A | A | A | N | A/N | U |
| Office Building, Business, Commercial, Professional | A | A | A | A/C | C | C/N | N |
| Agriculture, Industrial, Manufacturing, Utilities | A | A | A | A | A/C | C/N | N |

*A Normally acceptable. Specified land use is satisfactory, based upon assumption buildings involved are conventional construction, without any special noise insulation.*
*C Conditionally acceptable. New construction or development only after a detailed analysis of noise mitigation is made and needed noise insulation features are included in project design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning normally will suffice.*
*N Normally unacceptable. New construction or development generally should be discouraged. A detailed analysis of noise reduction requirements must be made and noise insulation features included in the design of a project.*
*U Clearly unacceptable. New construction or development generally should not be undertaken.*
*Source: Noise Element of the Los Angeles City General Plan, adopted February 1999.*

## (2) City of Los Angeles Regulations and Policies

### *(a) City of Los Angeles General Plan Noise Element*

As discussed previously, California Government Code Section 65302(g) requires that a noise element be included in the general plan of each county and city in the State. The City's General Plan Noise Element identifies sources of noise and provides objectives and policies that ensure that noise from various sources does not create an unacceptable noise environment. The Noise Element describes the noise environment (including noise sources) in the City, addresses noise mitigation, regulations, strategies, and programs as well as delineating Federal, State, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise.

The City's noise standards are correlated with land use zoning classifications in order to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds the ambient noise levels within a specified zone. The City has adopted local guidelines based, in part, on the community noise compatibility guidelines established by the California Department of Health Services (DHS) for use in assessing the compatibility of various land use types with a range of noise levels. These guidelines are set forth in the Noise Element in terms of the CNEL. The noise/land use compatibility guidelines for land uses within the City are presented in **Table IV.H-5**, **Community Noise Exposure**, above.

In accordance with the Noise Element, a noise exposure of 60 dBA CNEL or less is considered to be the most desirable target for the exterior of noise-sensitive land uses, or sensitive receptors, such as homes, schools, churches, libraries, etc. It is also

recognized that such a level may not always be possible in areas with substantial traffic noise. Exposures up to 70 dBA CNEL for noise-sensitive uses are considered conditionally acceptable if all measures to reduce such exposure have been taken. Noise levels above 70 dBA CNEL are normally unacceptable for sensitive receptors except in unusual circumstances.

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan Noise Element. Those applicable to the Proposed Project are presented below:

*(i) Goals, Objectives, and Policies*

The Noise Element of the City of Los Angeles General Plan describes the citywide noise environment (including ambient noise levels and noise sources), projects future noise levels, and recommends noise mitigation and strategies. The City has adopted the following objectives and policies as tools to achieve and maintain the City's goal of having "a city where noise does not reduce the quality of urban life."

- Goal: A city where noise does not reduce the quality of urban life.
- Objective 2**:** 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: Reduce or eliminate noise impacts associated with proposed development of land and changes in land use.
- Policy 3.1: Develop land use policies and programs that will reduce or eliminate potential and existing noise impacts.

For a proposed development project that is deemed to have a potentially significant noise impact on noise sensitive uses, as defined by this chapter, the development would require mitigation measures, as appropriate, in accordance with CEQA and city procedures.

In addition to the above listed objectives and policies, the City of Los Angeles has adopted local guidelines based, in part, on the State Department of Health services noise compatibility guidelines, which are used for planning purposes (i.e., they have no regulatory enforcement). These guidelines, contained in the Los Angeles CEQA Thresholds Guide adopted in 2006, are intended to assist in land use siting decisions in relation to existing and future exterior noise levels.

### *(b) City of Los Angeles Noise Regulations*

The City of Los Angeles has several regulations to control unnecessary, excessive, and annoying noise, as found in Chapter XI, Noise Regulation, of the Los Angeles Municipal Code (LAMC). The City's Noise Regulation establishes acceptable ambient noise levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences in the perceived level of different types of noise and/or noise Exterior noise level limits are based on a presumed ambient noise level and then additional noise level restrictions based on the type of noise source (e.g., construction, HVAC, Radios, etc.) may be applied. In accordance with the LAMC Chapter XI (Noise Regulation) the presumed daytime or nighttime noise levels presented below in **Table IV.H-6, City Minimum Ambient Noise Levels**.

**Table IV.H-6**
**City Minimum Ambient Noise Level**

| Zone | Presumed Ambient Noise Level (dB(A)) | |
|---|---|---|
| | Day | Night |
| 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: City of Los Angeles Municipal Code, Chapter XI, Noise Regulation, Section 111.03, Table 2.* | | |

LAMC Sections 111.01 and 111.03 define the ambient noise as the actual measured ambient noise level or the City's presumed ambient noise level, whichever is greater. The actual ambient noise level is the measured noise level averaged over a period of at least 15 minutes $L_{eq}$.

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 level increase of 5 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. To account for people's increased tolerance for short-duration noise events, the Noise Regulation provides a 5 dBA allowance for noise occurring more than five but less than fifteen minutes in any one-hour period and an additional 5 dBA allowance (total of 10 dBA) for noise occurring five minutes or less in any one-hour period.[12]

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

LAMC Section 112.01 prohibits noise from any radio, musical instrument, phonograph, television receiver, or other machine or device for the producing, reproducing or amplification of the human voice, music, or any other sound, in such a manner, as to disturb the peace, quiet, and comfort of neighbor occupants or any reasonable person residing or working in the area or that exceeds the ambient noise level on the premises of any other occupied property, or if a condominium, apartment house, duplex, or attached business, within any adjoining unit, by more than 5 dBA.

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 dBA.

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 is not required where "technically infeasible."[13]

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 (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 equipment and the Los Angeles Police Department 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.

In addition to the above LAMC regulations, projects are also subject to the following ordinances:

[13] *In accordance with the City's Noise Ordinances, "technically infeasible" means that the established "noise limitations cannot be complied with despite the use of mufflers, shields, sounds barriers, and/or other noise reduction devices or techniques employed during the operation of equipment." In other words, operational noise would still exceed noise limits even when utilizing noise reduction measures.*

- Compliance with the City's Noise Ordinance Nos. 144,331 and 161,574, which prohibit the emission or creation of noise beyond applicable levels (as described above) at adjacent uses unless technically infeasible.

- Compliance with the City's Building Regulations Ordinance No. 178,048, which requires a construction site notice to be provided that includes the following information: job site address, permit number, name and phone number of the contractor and owner or owner's agent, hours of construction allowed by code or any discretionary approval for the site, and City telephone numbers where violations can be reported. The notice shall be posted and maintained at the construction site prior to the start of construction and displayed in a location that is readily visible to the public and approved by the City's Department of Building and Safety.

*(c) Groundborne Vibration*

The City currently does not have any adopted standards, guidelines, or thresholds relative to ground-borne vibration.

## c) Existing Conditions

As discussed in **Chapter II, Project Description**, of this Draft EIR, the Project Site is located in the Arts District area of the City and surrounded by a mix of light industrial, commercial, and residential uses. The predominant source of noise in the general vicinity of the Project Site is vehicular traffic on nearby roadways, particularly along Mateo Street adjacent to the Project Site and 7th Street south of the Project Site, which have high volumes of traffic. Ambient noise sources in the vicinity of the Project Site include traffic; commercial/industrial activities; construction noise from developing properties in the area (haul trucks); and other miscellaneous noise sources associated with typical urban activities (street sweeping).

### (1) Noise Sensitive Receptors

Some land uses are considered more sensitive to intrusive noise than others based on the types of activities typically involved at the receptor location. The *L.A. CEQA Thresholds Guide* states that noise-sensitive land uses (sometimes also called "sensitive receptors") include residences, transient lodgings, schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks. In addition, for purposes of this analysis, vibration-sensitive uses include historical buildings or buildings that are extremely susceptible to vibration damages, and uses that may be sensitive in terms of human annoyance and operational interference resulting from vibration. As shown in **Figure IV.H-1, Noise Monitoring and Sensitive Receptor Location Map**, there are existing sensitive receptors within 500 feet that would have a

direct line-of-sight to the Project Site, including the National Biscuit Company Building, which is designated as a Los Angeles Historic-Cultural Monument.[14] As the National Biscuit Company Building is considered a historic resource (see **Section IV.B, Cultural Resources,** of this DEIR for details), the building would classified as being extremely susceptible to vibration damage. This building is also classified as a sensitive receptor as it contains residential uses. The full list of sensitive receptors includes:

1. Residential uses at the Toy Factory Lofts (1855 Industrial Street) and the National Biscuit Company Building (1850 Industrial Street) located to the west across Mateo Street (55 feet);[15]
2. Residential uses at the Amp Lofts (695 S. Santa Fe Avenue) located to the east across Imperial Street (55 feet);
3. Residential uses at the Brick Lofts (652 Mateo Street) located to the north across Jesse Street (165 feet); and
4. Metropolitan High School (727 Wilson Street) located to the southwest across 7th Street (800 feet).

### (2) Ambient Noise Levels

The Project Site is relatively flat and is developed with developed with 26,740 square feet of light industrial uses and surface parking. To establish baseline noise conditions, existing noise levels were monitored at the two (2) closest sensitive receptor locations (Toy Factory Lofts and National Biscuit Company Building for noise monitoring location #1 and Amp Lofts for noise monitoring location #2) near the Project Site. The locations of the noise measurements are shown in **Figure IV.H-1, Noise Monitoring and Sensitive Receptor Location Map**.

[14] *City of Los Angeles, Historic Places L.A., Los Angeles Historic Resources Inventory.*

[15] *Both the Toy Factory Lofts and the National Biscuit Company Building are located 55 feet from the site in the same westerly direction. The ambient measurement (obtained by Pomeroy) for both the Toy Factory Lofts and National Biscuit Company corresponds to measurement location #1 on Figure IV.H-1.*


Source: Google Earth, August 2020.

EcoTierra consulting

Figure IV.H-1
Noise Monitoring and Sensitive Receptor Location Map

The noise measurements were taken on February, 14, 2017 using the 3M SoundPro SP DL-1 sound level meter, which conforms to industry standards set forth in ANSI S1.4-1983 (R2006) – Specification for Sound Level Meters/Type 1, and is consistent with the requirements specified in LAMC Section 111.01(l) that the instruments be "Type S2A" standard instruments or better. This instrument was calibrated and operated according to the manufacturer's written specifications. At the measurement sites, the microphone was placed at a height of approximately five feet above the ground. The sound level meter was programmed to record the average sound level ($L_{eq}$) over a period of 15 minutes in accordance with LAMC Section 111.01(a).

The results of the measurements are summarized in **Table IV.H-7, Existing Ambient Noise Levels**. The noise monitoring outputs are provided in **Appendix I** of this Draft EIR. As shown in **Table IV.H-7, Existing Ambient Noise Levels,** the ambient recorded noise levels are 66.4 dBA and 69.3 dBA near the Project Site.

**Table IV.H-7**
**Existing Ambient Noise Levels**

| No. | Location | Primary Noise Sources | Noise Levels[a] | | |
|---|---|---|---|---|---|
| | | | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 1 | West of the Project Site across Mateo Street, near Toy Factory Lofts and National Biscuit Company residential sensitive receptors. | Traffic along Mateo Street and 7th Street. | 66.4 | 57.3 | 77.3 |
| 2 | Northeast corner of the Project Site fronting Imperial Street, near Amp Factory Lofts residential sensitive receptors. | Traffic and hauling activity (i.e. increased number of haul trucks traveling around Project Site) along Imperial Street. | 69.3 | 58.8 | 86.7 |

[a] *Noise measurements were taken on July 5, 2017 at each location for a duration of 15 minutes. See **Appendix I** of this Draft EIR for noise data.*
*Source: Pomeroy Environmental Services, 2018.*

### (3) Existing Groundborne Vibration Levels

The main sources of groundborne vibration near the Project Site are heavy-duty vehicle travel (e.g., refuse trucks, delivery trucks, and transit buses) on local roadways. Trucks and buses typically generate groundborne vibration velocity levels of approximately 63 VdB at a distance of 50 feet from the centerline, and these levels could reach up to 75 VdB at a distance of 10 feet from the centerline.[16] Per the FTA, rubbered-tired vehicles rarely create ground-borne vibration problems unless there is a discontinuity or bump in the road that causes the vibration. As noted above, 75 VdB is the dividing line between barely perceptible (with regards to ground vibration) and distinctly perceptible. Therefore, existing ground vibration environment in the vicinity of the Project Site is generally below

[16] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2018, p 137.*

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. In terms of PPV levels, a heavy-duty vehicle traveling at a distance of 50 feet can result in a vibration level of approximately 0.001 inch per second.

# 3. Project Impacts

## a) Thresholds of Significance

In accordance with Appendix G to the State CEQA Guidelines, the Project would have a significant impact on noise if it would cause any of the following conditions to occur:

***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; or***

***b) Generation of excessive groundborne vibration or groundborne noise levels; or***

***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.***

For this analysis, the current version of the Appendix G Thresholds are relied upon. The analysis also utilizes factors and considerations identified in the 2006 L.A. CEQA Thresholds Guide, and the FTA's groundborne vibration and noise criteria for assessing potential impacts relating to building damage and human annoyance will, as appropriate, to assist in answering the Appendix G Threshold questions.

### (1) Construction

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

- *Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA 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 or more at a noise sensitive use; or*

- *Construction activities would exceed the ambient noise level by 5 dBA 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 anytime on Sunday.*[17]

As discussed in **Chapter II, Project Description**, of this Draft EIR, construction of the Project is anticipated to commence as early as 2021 and be completed as early as 2023, for a period of 24 months. Therefore, since construction activities would occur over a period longer than 10 days for all phases, the corresponding criteria used in the construction noise analysis presented in this section of the Draft EIR is an increase in the ambient exterior noise levels of 5 dBA Leq or more at a noise sensitive use.

### (2) Operation

The following criteria are applied to the Project, as set forth in the *2006 L.A. CEQA Thresholds Guide* and the City's Noise Regulations, with the more restrictive provisions applied, to evaluate operational noise. The Project would have a significant impact from operations if:

- The Project causes the ambient noise levels measured at the property line of affected uses to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" categories; or

- The Project causes the ambient noise levels measured at the property line of affected uses to increase by 5 dBA CNEL or more increase in noise level; or

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

In summary, for operational noise, the criterion for on-site operational noise is an increase in the ambient noise level of 5 dBA Leq at an adjacent property line, in accordance with the LAMC. The LAMC does not apply to off-site traffic (i.e., vehicle traveling on public roadways) noise levels. Therefore, the criteria for off-site traffic noise associated with Project operations is based on the 2006 L.A. CEQA Thresholds Guide. In addition, the criteria for composite noise levels (on-site and off-site sources) are also based on the 2006 L.A. CEQA Thresholds Guide as, again, the LAMC does not apply to off-site traffic noise. Therefore, the criteria used for determining impacts related to off-site operational noises and composite operational noise are an increase in the ambient noise level of 5 dBA CNEL or 3 dBA CNEL to or within the "normally unacceptable" or "clearly

[17] *City of Los Angeles L.A. CEQA Thresholds Guide, 2006, page I.1-3.*

unacceptable" categories, respectively, depending on the existing noise conditions at the affected noise-sensitive land use.

### (3) FTA Ground-Borne Vibration Standards and Guidelines

As stated previously, the vibration damage criteria for buildings adopted by the FTA are shown in **Table IV.H-3, Construction Vibration Damage Criteria**. The vibration damage criteria of 0.12 PPV (in/sec) for Category IV, Buildings extremely susceptible to vibration damage, will be used to determine impacts to the most-sensitive, nearby historic resources.

The FTA has also adopted standards associated with human annoyance for groundborne vibration impacts for the following three land-use categories:

(1) Vibration Category 1 – High Sensitivity,

(2) Vibration Category 2 – Residential, and

(3) Vibration Category 3 – Institutional.

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 still have the potential for activity interference. The vibration criteria associated with human annoyance for these three land-use categories are shown above in **Table IV.H-4, Groundborne Vibration Criteria for General Assessment.**

Under conditions where there are an infrequent number of vibration events per day, the FTA has established impact thresholds for human annoyance of 65 VdB for Category 1 buildings, 80 VdB for Category 2 buildings, and 83 VdB for Category 3 buildings. Under conditions where there are an occasional number of vibration events per day, the FTA has established thresholds of 65 VdB for Category 1 buildings, 75 VdB for Category 2 buildings, and 78 VdB for Category 3 buildings. Under conditions where there are a frequent number of vibration events per day, the FTA has established thresholds of 65 VdB for Category 1 buildings, 72 VdB for Category 2 buildings, and 75 VdB for Category

3 buildings.[18] No thresholds have been adopted or recommended for commercial or office uses.

## b) Methodology

The primary sources of noise associated with the Project would be construction activities at the Project Site, Project-related traffic, and new stationary sources such as heating, ventilation, and air conditioning units (HVAC) associated with operation of the Project. The net increase in Project Site noise generated by these activities and other sources has been quantitatively and qualitatively analyzed and compared to applicable noise standards and thresholds of significance.

In addition to noise, groundborne vibration would also be generated during the construction of the Project by various activities and equipment. The groundborne vibration levels generated during construction have also been quantitatively analyzed and compared to the thresholds of significance. Vibration during operation has also been discussed.

### (1) FHWA Roadway Construction Noise Model

Noise levels associated with each phase of construction were modeled utilizing worksheets based on the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RNCM), together with several key construction parameters. Key model inputs include; the distance to the sensitive receiver, equipment usage, percentage usage factor, and baseline parameters for the Project Site. The construction noise calculation output worksheets are located in **Appendix I** to this Draft EIR.

### (2) Federal Highway Administration Traffic Noise Prediction Model

Noise impacts related to vehicular traffic were modeled using a version of the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108), as modified for CNEL and the "Calveno" energy curves. Site-specific information is entered, such as roadway traffic volumes, roadway active width, source-to-receiver distances, travel speed, noise source and receiver heights, and the percentages of automobiles, medium trucks, and heavy trucks that the traffic is made up of throughout the day, amongst other variables.

The FHWA Traffic Noise Prediction Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL).

[18] *Per FTA Transit Noise and Vibration Impact Assessment, September 2018, page 8-1, infrequent events are fewer than 30 vibration events of the same kind per day. Occasional events are between 30 and 70 vibration events of the same source per day. Frequent events are more than 70 vibration events of the same source per day.*

Adjustments are then made to the REMEL to account for: total average daily traffic volumes, roadway classification, width, speed and truck mix, roadway grade and site conditions (hard or soft ground surface). All modeled roadways were assumed to have a "hard site" to predict worst-case, conservative noise levels. A hard site, such as pavement, is highly reflective and does not attenuate noise as quickly as grass or other soft sites. Any reductions in noise levels due to intervening topography and buildings were not accounted for in this analysis.

Existing, Existing Plus Project, Future Without Project and Future With Project average daily traffic (ADT) were calculated from the peak hour traffic volumes and Project trip distribution given in the Project-specific Traffic Impact Analysis (Traffic Study) (Linscott, Law and Greenspan, Engineers, 2020). The ADTs for the scenarios described above were calculated by multiplying the peak hour traffic volumes by 10.

Roadway parameters utilized to model future traffic noise levels to the Project include location, traffic volume, speed and vehicle mix (autos, medium trucks, and heavy trucks).[19] The various scenarios that are described above were modeled to determine project-specific increases in noise levels at an arbitrary distance of 50 feet from roadway centerline. The uniform distance allows for direct comparisons of potential increases or decreases in noise levels based upon various traffic scenarios; however, at this distance, no specific noise standard necessarily applies. Therefore, the change in a noise level between scenarios is the focus of this portion of the analysis, rather than the resulting independent noise level for any one segment. FHWA calculation spreadsheets are included in **Appendix I** to this Draft EIR.

### (3) Other Sources of Operational Noise

The Project's proposed design is a contemporary architectural style. The Project would feature sculptural elements, including a custom-shaped building that emerges from a single-story base, oriented west toward the Industrial Street/Mateo Street T-intersection, connecting to the rest of the Project from the third floor and above. The corner building would consist of metal and glass. The remainder of the Mateo Street facade above ground level would consist of masonry and a regular grid of large windows.

The Project would include approximately 15,320 square feet of useable open space, of which approximately 9,290 square feet would be outdoor common space. The Project's various outdoor amenities would include including a swimming pool and spa, courtyard

[19] *As the City of Los Angeles does not have its own vehicle mix, a typical Southern California vehicle mix was sourced from Riverside County Department of Health, Office of Industrial Hygiene (see **Appendix I** to this Draft EIR for details).*

with planters for cultivating fruits and vegetables, yoga deck, outside dining area, and terraces. In addition, a number of live/work units would include private balconies.

The ground floor would include an outdoor dining area and terrace along Mateo Street, as well as a private terrace which opens to the south frontage of the Project Site. Level 2 would include a terrace near the west area of the Project Site, above the ground floor dining area. Level 8, essentially the Project's roof area, would include a pool and spa at the southwest corner of the Project Site, yoga deck in the south area of the Project Site, urban garden located towards the center of the Project Site, and a private terrace located in the north area of the Project Site.

Vehicle access into the shared parking garage for the commercial and live/work uses would be available from Imperial Street to the three subterranean levels of the parking garage. The Project would provide approximately 287 vehicle parking spaces.

Operational noise sources include the pool, outdoor common space and yoga deck noise, as well as heating, ventilation and air conditioning (HVAC) noise sources. This analysis assumes there will be no outdoor amplified music or amplified speech beyond noise levels permitted by LAMC Section 115.02 (Amplified Sound). Parking lots will be underground and would not contribute substantially to project operational noise.

## c) Project Design Features

No specific Project Design Features related to noise reduction are included in the Project.

## d) Analysis of Project Impacts

As compared to the Project, the Increased Commercial Flexibility Option (Flexibility Option) would change the use of the second floor from residential to commercial, and would not otherwise change the Project's land uses or size. The overall commercial square footage provided would be increased by 22,493 square feet to 45,873 square feet and, in turn, there would be a reduction in the number of live/work units from 185 to 159 units. The overall building parameters would remain unchanged and the design, configuration, and operation of the Flexibility Option would be comparable to the Project. Furthermore, with regard to construction noise and vibration, the construction schedule, equipment, distances to sensitive receptors, and haul truck route and intensity proposed for the Project would remain the same under the Flexibility Option. With regard to operational noise, although the Flexibility Option would result in a slight increase in net daily operational trips (1,991 daily trips under the Flexibility Option versus 1,972 daily trips under the Project), the difference would result in approximately 19 additional daily trips under the Flexibility Option, an increase of less than one percent. The design of the parking levels and outdoor space and the design, function, and locations of outdoor noise

sources would also be similar under the Flexibility Option and the Project and the Project and the Flexibility Option would have essentially the same ground level operational design features and characteristics, such that there would be no material change to the operational analyses under the Flexibility Option as compared to the Project. Therefore, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option. Further, as discussed below, for certain thresholds, the impacts of the Project were addressed in the Initial Study (see **Appendix A.2** of this Draft EIR) and were determined to be less than significant, with no further analysis required. However, since the Flexibility Option was not specifically addressed in the Initial Study, the analysis of the Flexibility Option is presented in this section for those thresholds.

***Threshold a) Would the project generate 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?***

With regard to construction noise, the construction schedule, equipment, distances to sensitive receptors, and haul truck route and intensity proposed for the Project would remain the same under the Flexibility Option. In addition, with regard to operational noise, although the Flexibility Option would result in a slight increase in net daily operational trips (1,991 daily trips under the Flexibility Option compared to 1,972 daily trips under the Project), the difference would result in approximately 19 additional daily trips under the Flexibility Option, an increase of less than one percent. The design of the parking levels and outdoor space and the design, function, and locations of outdoor noise sources would also be similar under the Flexibility Option and the Project. Therefore, the conclusions regarding the impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

### (1) Construction

Construction of the Project would require the use of heavy equipment for demolition, grading/excavation, installation of utilities, building fabrication, and finishing. Construction activities would also involve the use of smaller power tools, generators, and other sources of noise. During each stage of construction, several types of equipment potentially could be operating concurrently and noise levels would vary based on the amount of equipment in operation and the location of the activity. The FHWA Roadway Construction Noise Model has compiled data regarding the noise-generating characteristics of specific types of construction equipment and typical construction activities. The data pertaining to the types of construction equipment and activities that

would occur at the Project Site are presented in **Table IV.H-8, Noise Range of Project Construction Equipment**.

**Table IV.H-8**
**Noise Range of Project Construction Equipment**

| Equipment | Estimated Usage Factor %[a] | Typical Noise Level at 50 Feet (dBA Lmax) |
|---|---|---|
| Air Compressor | 40 | 78 |
| Backhoe | 40 | 78 |
| Concrete Saw | 20 | 90 |
| Crane | 16 | 81 |
| Dozer | 40 | 82 |
| Excavator | 40 | 81 |
| Forklift [b,c] | 50 | 61 |
| Haul/Dump Truck | 40 | 76 |
| Tractor | 40 | 84 |
| Welders | 40 | 74 |

*a Usage factor represents the percentage of time the equipment would be operating at full speed.*
*b Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014.*
*c Data provided $L_{eq}$ as measured at the operator. Sound Level at 50 feet is estimated.*
*Source: FHWA Roadway Construction Noise Model User's Guide, 2006 unless otherwise noted.*

As described in the explanation of noise fundamentals above, according to the California Department of Transportation, noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance (noise from stationary or point sources is reduced by about 6 dBA for every doubling of distance at acoustically hard locations). For example, a noise level of 86 dBA $L_{eq}$ measured at 50 feet from the noise source to the receptor would decline to 80 dBA $L_{eq}$ at 100 feet from the source to the receptor, and fall by another 6 dBA $L_{eq}$ to 74 dBA $L_{eq}$ at 200 feet from the source to the receptor.[20] These noise attenuation rates assume a flat and unobstructed distance between the noise generator and the receptor; intervening structures and vegetation further attenuate (reduce) noise.

Construction noise associated with the Project was calculated utilizing methodology presented in the FTA Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the Project Site. Distances to receptors were based on the acoustical center of the proposed construction activity. Construction noise levels were calculated for each phase. To be conservative, the noise generated by each piece of equipment was added together for each phase of construction; however, it is unlikely (and unrealistic) that every piece of equipment will be used at the same time, at the same distance from the receptor, for each

[20] *Caltrans, TeNS, Section 2.1.4.1.*

phase of construction. Anticipated noise levels during each construction phase are illustrated in **Table IV.H-9, Estimated Exterior Noise at Sensitive Receptors from On-Site Construction**. As shown in **Table IV.H-9**, the construction noise levels forecasted for the proposed construction work would result in noise increases at all of the sensitive receptors. Increases in noise levels at sensitive receptors during construction would be temporary and would not generate continuously high noise levels. However, occasional single-event disturbances from construction are possible. In addition, the construction noise experienced at sensitive receptors during the initial periods of construction (i.e., demolition and excavation work) typically would be reduced in the later construction periods (i.e., interior building construction). As the structure would be built, the noise from interior construction work would be reduced at off-site locations because the proposed structure would break the line-of-sight noise transmission from the interior construction area to the exterior areas of sensitive receptors.

As defined by the Section 41.40 of the LAMC, a project would normally have a significant impact on noise levels from construction if construction activity (including demolition) or repair work, where the use of any power tool, device, or equipment would disturb persons occupying sleeping quarters in any dwelling hotel, apartment, or other place of residence, occurs between the hours of 9:00 PM and 7:00 AM Monday through Friday, or between 6:00 PM and 8:00 AM on Saturday. Per Section 112.05 of the LAMC, a significant impact on noise levels from construction could also occur if equipment is operated in a manner that causes it to exceed 75 dBA at a distance of 50 feet, between the hours of 7:00 AM and 10:00 PM.

The above noise level limitations do not apply where compliance is deemed to be technically infeasible, which means that said noise limitations cannot be met despite the use of mufflers, shields, sound barriers, and/or other noise reduction techniques during the operation of the equipment.

**Table IV.H-9**
**Estimated Exterior Noise at Sensitive Receptors from On-Site Construction Activities**

| Sensitive Receptor Location Number | Sensitive Land Uses[a] | Distance to Project Site (feet)[b] | Existing Monitored Ambient Noise Levels (dBA $L_{eq}$) | Estimated Peak Construction Noise Levels (dBA $L_{eq}$) | Noise Level Increase | Potentially Significant Impact? |
|---|---|---|---|---|---|---|
| 1 | National Biscuit Company Building residential uses | 55 W | 66.4 | 72.9 | 6.5 | Yes |
| | Toy Factory Lofts residential uses | 55 W | 66.4 | 72.9 | 6.5 | Yes |
| 2 | Amp Lofts residential uses | 55 E | 69.3 | 72.9 | 3.6 | No |

**Table IV.H-9**
**Estimated Exterior Noise at Sensitive Receptors from On-Site Construction Activities**

| Sensitive Receptor Location Number | Sensitive Land Uses[a] | Distance to Project Site (feet)[b] | Existing Monitored Ambient Noise Levels (dBA $L_{eq}$) | Estimated Peak Construction Noise Levels (dBA $L_{eq}$) | Noise Level Increase | Potentially Significant Impact? |
|---|---|---|---|---|---|---|
| 3 | Brick Lofts residential uses | 245 N | 66.4 | 70.9 | 4.5 | No |
| 4 | Metropolitan High School | 800 SW | 66.4 | 60.9 | -5.5[c] | No |

*Notes: W = west; E = east; N = north; SW = southwest*
*a See **Figure IV.H-1, Noise Monitoring and Sensitive Receptor Location Map**.*
*b Distance to receptor calculated from center of Site. Construction noise projected from the center of the Project Site to the structural façade of the sensitive use.*
*c Construction noise from the Project would be inaudible at this location.*
*See **Appendix I** for data sheets. Modeling based on Federal Highway Administration, Roadway Construction Noise Model, January 2006.*

As shown in **Table IV.H-9**, without mitigation, peak construction noise levels at all sensitive receptors would be below the 75 dBA construction noise threshold defined by the Section 41.40 of the LAMC. However, per the *L.A. CEQA Thresholds Guide*, a project would normally have a significant impact on noise levels from construction if:

> *Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA or more.*

Since construction activities would last for more than 10 days in a three-month period, the Project would cause a significant noise impact during construction if the ambient exterior noise levels at sensitive receptors increase by 5 dBA or more.

As further shown in **Table IV.H-9**, based on the existing ambient exterior noise levels, the Project's peak construction noise would not increase noise levels by 5 dBA or more at the Amp Lofts (Sensitive Receptor No. 2), the Bricks Lofts (Sensitive Receptor No. 3), or Metropolitan High School (Sensitive Receptor No. 4). However, the Project's peak construction noise would increase the existing ambient exterior noise level of 66.4 dBA $L_{eq}$ at the National Biscuit Company Building and Toy Factory Lofts (Sensitive Receptor No. 1) by approximately 6.5 dBA $L_{eq}$, exceeding the 5 dBA threshold. This peak construction noise would occur during demolition activities.[21] Therefore, on-site

[21] *Construction noise calculation sheets showing the noise levels by construction phase are available in **Appendix I**.*

construction activities under the Project could expose persons to and generate noise levels in excess of City standards.

**As such, the Project's and the Flexibility Option's noise impacts related to on-site construction activities would be potentially significant. Mitigation measure MM NOI-1 is required and is discussed below.**

In addition to on-site construction activities, the Project would also generate off-site construction activities and noise during the excavation phase in the form of haul trips. The Project would export a total of 74,500 cubic yards of material over the grading duration of 66 days, which would generate approximately 142 haul truck trips per day (71 inbound, 71 outbound) travelling to and from the Project Site. The anticipated outbound haul route from the Project Site would be south on Mateo Street and east on E. 7th Street to the Golden State Freeway (I-5), and the anticipated inbound haul route to the Project Site would be exiting the I-10 from Exit 16A toward Santa Fe Avenue and Mateo Street, west onto E. 8th Street, and north onto Mateo Street. Exported materials would likely be disposed at Sunshine Canyon Landfill in Sylmar. Building frontages along the haul route are located approximately 30 feet from the roadway center line. Moreover, multi-family and single-family residential receptors are located along the anticipated haul route. As shown in **Table IV.H-8** above, typical noise from haul trucks driving by can reach up to 76 dBA Lmax at a distance of 50 feet. As shown in **Table IV.H-7**, the existing, daytime maximum noise for Mateo Street is 77.3 dBA; 86 7 dBA Lmax for Imperial Street. Therefore, the noise level of a Project haul truck passing by would be lower than the existing, ambient noise levels at receptor locations along haul route roadway segments.

**As such, Project and Flexibility Option noise impacts from off-site construction activities would be less than significant and no mitigation measures would be required.**

### (2) Operation

#### *(a) Community Noise Impacts Due to Project Generated Trips*

Existing and Existing Plus Project traffic noise levels were modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 at an arbitrary distance of 50 feet from roadway centerline. The uniform distance allows for direct comparisons of potential increases or decreases in noise levels based upon various traffic scenarios; however, at this distance, no specific noise standard necessarily applies. Therefore, the change in a noise level between scenarios is the focus of this portion of the analysis, rather than the resulting independent noise level for any one segment. These worksheets are included as **Appendix I** to this Draft EIR. The modeling is theoretical and does not account for any existing barriers, structures, and/or topographical features that may further reduce

noise levels. Therefore, the levels are shown for comparative purposes only to show the difference in with and without project conditions. Roadway input parameters are based on ADTs, speeds, and vehicle distribution data. The potential off- site noise impacts caused by an increase of traffic volumes from operation of the Project on the nearby roadways were calculated for the following scenarios:

*Existing* refers to existing year 2019 traffic noise conditions. *Existing Plus Project* refers to existing year 2019 traffic noise conditions plus traffic generated by the Project. Both scenarios are demonstrated in **Table IV.H-10, Project Traffic Noise Contributions, North-South Road Segments** and **Table IV. H-11 Project Traffic Noise Contributions, East-West Road Segments.**

**Table IV.H-10**
**Project Traffic Noise Contributions, North-South Road Segments**

| Noise Levels 50 feet from Roadway Centerline* | | | | | | |
|---|---|---|---|---|---|---|
| | Existing | | Existing Plus Project | | | |
| N-S Road Segments | ADT | dB CNEL | ADT | Total | Project-Specific Increase | Is the Increase Significant ? |
| **Mateo Street** | | | | | | |
| n/o Jesse Street | 2,470 | 61.6 | 2,550 | 61.8 | 0.2 | **No** |
| s/o Jesse Street | 4,110 | 63.8 | 4,110 | 63.8 | 0.0 | **No** |
| s/o 7th Street | 4,700 | 64.4 | 4,740 | 64.5 | 0.1 | **No** |
| **Imperial Street** | | | | | | |
| n/o Jesse Street | 240 | 51.5 | 240 | 51.5 | 0.0 | **No** |
| s/o Jesse Street | 420 | 53.9 | 630 | 55.7 | 1.8 | **No** |
| n/o Project Driveway | 200 | 50.7 | 200 | 50.7 | 0.0 | **No** |
| s/o Project Driveway | 320 | 52.8 | 790 | 56.7 | 3.9 | **No** |
| s/o 7th Street | 20 | 40.7 | 20 | 40.7 | 0.0 | **No** |

*Notes: ADT = average daily trips, dB = decibels, CNEL = community noise equivalent level*
* *The uniform distance of 50 feet allows for direct comparisons of potential increases or decreases in noise levels based upon various traffic scenarios; however, at this distance, no specific noise standard necessarily applies.*

**Table IV.H-11**
**Project Traffic Noise Contributions, East-West Road Segments**

| Noise Levels 50 feet from Roadway Centerline* | | | | | | |
|---|---|---|---|---|---|---|
| | Existing | | Existing Plus Project | | | |
| E-W Road Segments | ADT | dB CNEL | ADT | Total | Project-Specific Increase | Is the Increase Significant ? |
| **Jesse Street** | | | | | | |
| w/o Mateo Street | 110 | 48.1 | 110 | 48.1 | 0.0 | **No** |
| e/o Mateo Street | 450 | 54.2 | 660 | 55.9 | 1.7 | **No** |
| e/o Imperial Street | 530 | 54.9 | 530 | 54.9 | 0.0 | **No** |
| **Project Driveway** | | | | | | |
| w/o entrance | 0 | -- | 1,040 | 57.9 | -- | **No** |
| **7th Street** | | | | | | |
| w/o Mateo Street | 6,430 | 65.8 | 6,640 | 65.9 | 0.1 | **No** |
| e/o Mateo Street | 10,510 | 67.9 | 10,890 | 68.1 | 0.2 | **No** |
| e/o Imperial Street | 10,630 | 68.0 | 10,800 | 68.0 | 0.0 | **No** |

*Notes: ADT = average daily trips, dB = decibels, CNEL = community noise equivalent level*
* *The uniform distance of 50 feet allows for direct comparisons of potential increases or decreases in noise levels based upon various traffic scenarios; however, at this distance, no specific noise standard necessarily applies.*

As defined in the *L.A. CEQA Thresholds Guide*, and the *Noise Element of the Los Angeles City General Plan (February 1999)* threshold standards, a project would normally have a significant impact on noise levels from operations if the ambient noise level measured at the property line of affected uses were to increase by 3 dBA in CNEL to within the "normally unacceptable" or clearly unacceptable" category (as shown in **Table IV.H-5**), or any 5 dBA or greater noise increase.

As shown in **Tables IV.H-10** and **IV.H-11**, Project generated vehicular trips from all of the modeled roadways segments would result in increases in ambient noise levels (between 0 and 3.9 dBA CNEL)[22] over the Existing scenario. This is due to the fact that there is a low amount of traffic, 320 ADT, for the existing scenario in the road segment of Imperial Street south of Project Driveway, versus the ADT of 790 for the existing plus Project scenario. However, even with the increase of 3.9 dBA at that road segment, the traffic noise level of 56.7 dBA at a distance of 50 feet would not exceed the ambient noise level of 69.3 dBA at that location, would not cause an increase into the "normally unacceptable" or clearly unacceptable" category, and would not exceed the *City of Los Angeles CEQA Threshold* or the *Noise Element* threshold standards presented above.

[22] *As the increase in noise levels is 3.9 dBA CNEL at 50 feet from the centerline, it would also be an increase of 3.9 dBA CNEL at the property line of affected uses.*

**Therefore, traffic noise impacts to off-site receptors due to Project and Flexibility Option generated trips would be less than significant and no mitigation measures would be required.**

*(b) Noise Impacts Off-Site Receptor due to On-Site Stationary Noise*

As defined in the *L.A. CEQA Thresholds Guide* and the *Noise Element of the Los Angeles City General Plan (February 1999)* threshold standards, a project would normally have a significant impact if operational noise levels cause the ambient noise level measured at the property line of an affected use to increase by 3 dBA CNEL or to the "normally unacceptable" or "clearly unacceptable" category of the noise exposure chart prepared by the California Department of Health Services (DHS) (see **Table IV.H-5**); or any 5 dBA or greater noise increase.

*(i) Parking Noise*

The proposed parking areas have the potential to generate noise due to cars entering and exiting, engines accelerating, braking, car alarms, squealing tires, and other general activities associated with people using the parking areas (i.e., talking, opening/closing doors, etc.). Noise levels within the parking areas would fluctuate with the amount of automobile and human activity. Activity levels would be highest in the early morning and evening when the largest number of people would enter and exit. However, these events would occur at low exiting and entering speeds, which would not generate high noise levels. During these times, the noise levels can range from 44 to 63 dBA $L_{eq}$.[23] As the parking area would be fully enclosed on all sides except the driveway areas and located in the subterranean levels of the Project Site, noise generated from within the parking area would not adversely affect off-site sensitive receptors. Furthermore, operational noise generated by motor vehicles within the Project Site is regulated under the LAMC. Specifically, Section 114.02 of the LAMC prohibits the operation of any motor vehicles upon any property within the City such that the created noise would cause the noise level on the premises of the property to exceed the ambient noise level by more than five decibels. LAMC Section 114.06 prohibits any person to install, operate or use any vehicle theft alarm system that emits or causes the emission of an audible sound, which is not, or does not become, automatically and completely silenced within five minutes. LAMC Section 114.03 prohibits loading or unloading of any vehicle, operating any dollies, carts, forklifts, or other wheeled equipment, which causes any impulsive sound, raucous or unnecessary noise within 200 feet of any residential building between the hours of 10:00 P.M. and 7:00 A.M. of the following day. As noted above, the proposed parking would be

[23] *Source: Gordon Bricken & Associates, 1996. Estimates are based on actual noise measurements taken at various parking lots.*

contained within a fully enclosed subterranean parking structure, which would further serve to reduce any parking related noise levels at off-site locations.

**Therefore, through project design, and compliance with existing LAMC regulations, Project and Flexibility Option noise impacts associated with parking would be less than significant and no mitigation measures would be required.**

*(ii) Stationary Noise Sources*

As part of the Project, new mechanical equipment, pool equipment, HVAC units, and exhaust fans would be installed for the proposed uses. Although the operation of this equipment would generate noise, the design of all mechanical equipment would be required to comply with the regulations under Section 112.02 of the LAMC, which prohibits noise from air conditioning, refrigeration, heating, pumping, and filtering equipment from exceeding the ambient noise level on the premises of other occupied properties by more than 5 decibels.

**Therefore, Project and Flexibility Option impacts related to stationary noise sources would be less than significant with compliance with existing LAMC regulations. No mitigation measures would be required.**

*(iii) Outdoor Spaces*

As stated previously, the Project would include approximately 15,320 square feet of useable open space, of which approximately 9,290 square feet would be outdoor common space. The Project's various outdoor amenities would include including a swimming pool and spa, courtyard with planters for cultivating fruits and vegetables, yoga deck, and outside dining area on the rooftop of the 8$^{th}$ floor; and additional outdoor dining and terraces on the ground and 2$^{nd}$ floors. In addition, a number of live/work units would include private balconies.

The ground floor would include an outdoor dining area and terrace along Mateo Street, as well as a private terrace which opens to the south frontage of the Project Site. Level 2 would include a terrace near the west area of the Project Site, above the ground floor dining area. Level 8, essentially the Project's roof area, would include a pool and spa at the southwest corner of the Project Site, yoga deck in the south area of the Project Site, urban garden located towards the center of the Project Site, and a private terrace located in the north area of the Project Site.

Noise associated with the ground level and Level 2 amenity space would consist primarily of people talking which would be generally consistent with the existing pedestrian-oriented environment along Mateo Street. This would result in noise levels of

approximately 60-65 dBA at three feet,[24] which would be below measured ambient noise levels (i.e., 66.4 dBA measured along Mateo Street and modeled traffic noise levels up to 69.5 dBA CNEL along 7th Street) and noise level increases associated with the dining area and terraces would be imperceptible at off-site locations. Noise associated with Level 8 amenities would consist primarily of people talking and use of amenities such as the pool and spa, yoga deck, urban garden, and private terrace. With respect to potential swimming pool noise, typical noise levels for recreational swimming including children playing range from approximately 64.8 $L_{eq}$ dBA at a distance of 50 feet from the source.[25] As noted previously, existing ambient noise levels in the vicinity of the Project Site were measured at 66.4 dBA fronting Mateo Street and 69.3 dBA fronting Imperial Street. Modeled traffic noise for all scenarios analyzed (with and without the Project) would reach up to 69.5 dBA CNEL along 7th Street. Thus, the Level 8 amenity noise levels would be substantially similar to existing ambient noise levels associated with the heavily urbanized Project Site vicinity.

**Therefore, Project and Flexibility Option impacts relating to noise from the operation of outdoor spaces would be less than significant and no mitigation measures would be required.**

Furthermore, noise levels from Project operation would be regulated by LAMC Section 116.01 (Loud, Unnecessary and Unusual Noise), LAMC Section 115.02 (Amplified Sound), and LAMC Section 112.01 (Radios, Television Sets, and Similar Devices). Specifically, LAMC Section 116.01 prohibits all future users of a project to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. LAMC Section 115.02 regulates amplified sound for commercial purposes in or near residential zones, and prohibits the operation or use of sound amplifying equipment for commercial purposes between the hours of 9:00 P.M. and 8:00 A.M. of the following day in all other zones. LAMC Section 112.01 states, in part, that it shall be unlawful for any person within any zone of the City to use or operate any radio, musical instrument, phonograph, television receiver, or other machine or device for the producing, reproducing or amplification of the human voice, music, or any other sound, in such a manner, as to disturb the peace, quiet, and comfort of neighbor occupants or any reasonable person residing or working in the area. As such, regulatory compliance would further ensure impacts due to the operation of outdoor spaces would remain less than significant.

[24] *Caltrans, Technical Noise Supplement, October 1998. See Table IV.H-1 provided previously.*

[25] *Reference noise data for pool sources is provided in **Appendix I** of this Draft EIR. Reference data collected by PES at Sierra Hills Swim and Racquet Club.*

*(iv) Site Compatibility*

The Project would locate new noise-sensitive uses on the Project Site in an existing urban setting, which may subject future residents of the Project to typical types of urban noise sources, such as traffic noise.

As discussed above, the City of Los Angeles prohibits interior noise levels from all exterior sources to exceed 45 dBA CNEL in any habitable room (LAMC 91.1207.14.2), and exterior noise levels of greater than 65 dBA CNEL for outdoor living areas (excluding balconies) (LAMC 91.1208). As indicated by the ambient noise levels presented in Table IV.H-7, the northeast corner of the Project Site fronting Imperial Street would be exposed to maximum ambient noise levels of up to 69.3 dBA CNEL, which is within the "Conditionally Acceptable" category for multi-family residential uses. In accordance with the City's Building Code, the Project would be required to include noise insulation features for multi-family buildings in the design of the residential buildings, such as insulated windows and doors, in order to achieve the interior noise limits of 45 dBA CNEL.

**The Project and the Flexibility Option would be required to comply with these regulations and, therefore, impacts would be less than significant; no mitigation measures would be required.**

### (3) Mitigation Measures

Under both the Project and the Flexibility Option, construction noise impacts to the residential uses at the National Biscuit Company Building and Toy Factory Lofts from on-site construction activities would require the following mitigation measure:

**MM NOI-1** During all Project Site demolition and excavation/grading, construction contractors shall install a temporary, continuous sound barrier along the western (Mateo Street) boundary of the Project Site. The barrier shall be at least 8 feet in height and constructed of materials achieving a Transmission Loss (TL) value of at least 10 dBA, such as ½ inch plywood.[26] The supporting structure shall be engineered and erected according to applicable codes.

### (4) Level of Significance After Mitigation

With the implementation of MM NOI-1, as shown below in **Table IV.H-12**, the construction noise levels during the noisiest phases of construction (demolition and excavation) under

[26] *Based on the FHWA Noise Barrier Design Handbook (July 14, 2011), see Table 3, Approximate sound transmission loss values for common materials.*

both the Project and the Flexibility Option, would be reduced to less-than ambient noise levels.

**Accordingly, Project-level construction noise impacts from on-site construction activities associated with the Project and the Flexibility Option would be less than significant with mitigation.**

**Table IV.H-12**
**Estimated Exterior Construction Noise at Sensitive Receptors With Mitigation**

| Sensitive Receptor Location Number | Sensitive Land Uses[a] | Distance to Project Site (feet)[b] | Existing Monitored Ambient Noise Levels (dBA $L_{eq}$) | Estimated Peak Construction Noise Levels (dBA $L_{eq}$) | Noise Level Increase Without Mitigation | Noise Levels With Mitigation[c] | Mitigated Construction Noise Level Compared to Ambient | Potentially Significant Impact? |
|---|---|---|---|---|---|---|---|---|
| 1 | National Biscuit Company Building residential uses | 55 W | 66.4 | 72.9 | 6.5 | 62.9 | -3.1 [e] | No |
| | Toy Factory Lofts residential uses | 55 W | 66.4 | 72.9 | 6.5 | 62.9 | -3.1 [e] | No |
| 2 | Amp Lofts residential uses | 55 E | 69.3 | 72.9 | 3.6 | 62.9 | -6.4 [e] | No |
| 3 | Brick Lofts residential uses | 245 N | 66.4 | 70.9 | 4.5 | 60.9 | -5.5 [e] | No |
| 4 | Metropolitan High School | 800 SW | 66.4 | 60.9 | -5.5[d] | 50.9 | -15.5 [e] | No |

*Notes: W = west; E = east; N = north; SW = southwest*
*a See **Figure IV.H-1, Noise Monitoring and Sensitive Receptor Location Map**.*
*b Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to the structural façade of the sensitive use.*
*c Noise level reduction with incorporation of MM NOI-1 which requires at least a 10 dBA noise reduction from mufflers or shielding. Noise levels with mitigation are less than ambient noise levels at receptor locations.*
*d Construction noise from the Project would be inaudible at this location.*
*e Mitigated Noise levels would be below ambient noise at receptor location.*
*See **Appendix I** for data sheets. Modeling based on Federal Highway Administration, Roadway Construction Noise Model, January 2006.*

### *Threshold b) Would the project generate excessive groundborne vibration or groundborne noise levels?*

With regard to groundborne vibration and groundborne noise during construction, the construction schedule, equipment, distances to sensitive receptors, and haul truck route and intensity proposed for the Project would remain the same under the Flexibility Option. In addition, with regard to groundborne vibration and groundborne noise during operation, the Project and the Flexibility Option would have essentially the same ground level operational design features and characteristics, such that there would be no material change to the operational vibration analyses under the Flexibility Option as compared to the Project. Therefore, the conclusions regarding the impact analysis and impact

significance determination presented below for the Project would be the same under the Flexibility Option.

### (1) Construction

#### *(a) Structural Damage*

Construction activities can generate varying degrees of groundborne vibration, depending on the construction procedures and the construction equipment used. The operation of construction equipment generates groundborne 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 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 groundborne vibration levels, to low rumbling sounds and perceptible groundborne vibration at moderate levels, to slight damage at the highest levels. Groundborne vibration from construction activities rarely reaches levels that damage structures.

The PPV and VdB for the construction equipment anticipated to be used during Project construction are listed in **Table IV.H-13, Typical Groundborne Vibration Levels for Potential Project Construction Equipment**.

Construction of the Project would generate groundborne vibration during site clearing, grading, and shoring activities. Based on the information presented in **Table IV.H-13**, groundborne vibration velocities created by operation of construction equipment would reach as high as approximately 0.089 inches per second PPV at 25 feet from the source activity, depending on the type of construction equipment in use.

**Table IV.H-13**
**Vibration Source Levels for Construction Equipment**

| Equipment | Approximate PPV (in/sec) | | | | Approximate RMS (VdB) | | | |
|---|---|---|---|---|---|---|---|---|
| | 25 Feet | 50 Feet | 75 Feet | 100 Feet | 25 Feet | 50 Feet | 75 Feet | 100 Feet |
| Large Bulldozer | 0.089 | 0.031 | 0.017 | 0.011 | 87 | 78 | 73 | 69 |
| Caisson Drilling | 0.089 | 0.031 | 0.017 | 0.011 | 87 | 78 | 73 | 69 |
| Loaded Trucks | 0.076 | 0.027 | 0.015 | 0.010 | 86 | 77 | 72 | 68 |
| Jackhammer | 0.035 | 0.012 | 0.007 | 0.004 | 79 | 70 | 65 | 61 |
| Small Bulldozer | 0.003 | 0.001 | 0.0006 | 0.0004 | 58 | 49 | 44 | 40 |

*Note: in/sec = inches per second.*
*Source: FTA, Transit Noise and Vibration Impact Assessment, 2018. Derived from Equation 12.*

With respect to construction vibration impacts upon existing off-site structures, there are no known structures adjacent to the Project Site that would be considered structurally fragile or susceptible to vibration damages. However, the National Biscuit Company

Building (Located at Receptor 1 on **Figure IV.H-1**) is located 55 feet across from the Project Site along Mateo Street and is designated as a Los Angeles Historic-Cultural Monument. This building would also be considered a sensitive receptor as it contains residential uses. According to the FTA, groundborne vibration from construction activities do not often reach the levels that can damage structures.[27] Nevertheless, per the FTA's four general building categories (see **Table IV.H-3** provided previously), this analysis conservatively considers the National Biscuit Company Building a Category IV building (buildings extremely susceptible to vibration damage). The FTA identifies a 0.12 inches per second PPV construction vibration criteria for Category IV. The other surrounding buildings consist primarily of engineered concrete and masonry buildings (Category II), and reinforced-concrete, steel, or timber buildings (Category I). As such, the potential for construction-related vibration damage to these off-site structures would be considered low.

The nearest sensitive receptors for vibration damage are the residential uses within the National Biscuit Company Building, the Toy Factory Lofts, and the Amp Lofts, all of which are located approximately 55 feet from the Project Site boundary. As shown in **Table IV.H-13** above, worst-case construction vibration levels at the sensitive receptors would be less than 0.031 inches per second PPV for receptors located farther than 50 feet from the source. As such, the construction vibration would not have the potential to exceed the FTA's 0.12 inches per second PPV standard for Category IV buildings, the FTA's 0.30 inches per second PPV standard for Category II buildings, or the FTA's 0.50 inches per second PPV standard for Category I buildings.

In addition, it should be noted that if the Project is approved for subterranean parking and excavation would occur, the Project would be subject to compliance with Section 91.3307 of the LAMC (Protection of Adjoining Property). Specifically, Section 91.3307.1 (Protection Required) states adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. Protection must be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities. For excavations, adjacent property shall be protected as set forth in Section 832 of the Civil Code of California. Prior to the issuance of any permit, which authorizes an excavation where the excavation is to be of a greater depth than are the walls or foundation of any adjoining building or structure and located closer to the property line than the depth of the excavation, the owner of the site shall provide the Department of Building and Safety with evidence that the adjacent property owner or owners have been given a 30-day written notice of the intent to excavate. This notice shall state the depth

[27] *FTA, Transit Noise and Vibration Impact Assessment, 2018.*

to which the excavation is intended to be made and when the excavation will commence. This notice shall be by certified mail, return receipt requested.

**Therefore, impacts with respect to potential building damages resulting from construction-generated vibration under the Project and the Flexibility Option would be less than significant and no mitigation would be required.**

*(b) Human Annoyance*

In terms of human annoyance resulting from vibration generated during construction, the sensitive receptors near the Project Site could be exposed to increased vibration levels. The nearest sensitive receptors for vibration annoyance are the residential uses within the National Biscuit Company Building, the Toy Factory Lofts, and the Amp Lofts, all of which are located approximately 55 feet from the Project Site boundary. Residential uses are considered to be Category 2 with regard to groundborne vibration land categories. As previously presented in **Table IV.H-4**, the groundborne vibration impact thresholds for Category 2 uses ranges from 72 VdB for frequent events (over 70 events per day) to 80 Vdb for infrequent events (fewer than 30 events per day). Because the greatest amount of groundborne vibration would occur during site clearing, grading, and shoring activities and these activities are considered to be constant, this analysis conservatively utilizes the 72 VdB threshold for human annoyance. As presented in **Table IV.H-13** above, the FTA has identified that the highest groundborne vibration levels that would be experienced at 50 feet from the source during construction would be 78 VdB for large bulldozers and caisson drilling, and 77 VdB for loaded trucks. This activity could take place as close as approximately 50 feet from the Toy Factory Lofts, National Biscuit Company Building and Amp Lofts when bulldozers are operated and caisson drilling is taking place at the property line, as these uses are immediately across Mateo Street and Imperial Street from the Project Site, respectively. Similarly, loaded trucks could use Mateo Street and Imperial Street adjacent to these uses for off-site hauling of excavated soil. As such, groundborne vibration resulting from large bulldozers, caisson drilling, and/or loaded trucks during construction could exceed the 72 VdB annoyance threshold for Category 2 land uses at the National Biscuit Company, the Toy Factory Lofts, and the Amp Lofts.

**As such, impacts with respect to human annoyance resulting from construction-generated vibration under the Project and the Flexibility Option would be potentially significant. Potential mitigation is discussed below.**

Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to vibration of floors and walls and is perceptible only inside buildings.[28] For typical buildings, groundborne vibration results in groundborne noise

[28] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, page 117.*

levels approximately 35 to 37 decibels lower than the velocity level as the vibration would need to propagate through the ground and through a building structure before it would be perceptible inside a building as an increased noise level.[29] As such, since the peak construction noise levels at the National Biscuit Company, the Toy Factory Lofts, and the Amp Lofts would be approximately 72.9 dBA as shown in **Table IV.H-6 above,** groundborne noise levels associated with project construction would be less than 40 dBA and imperceptible at these receptors. According the FTA *Transit Noise and Vibration Impact Assessment Manual*, most of the studies of groundborne vibration in this country have focused on urban rail transit and the problems with groundborne vibration and noise that are common when there is less than 50 feet between a subway structure and building foundations. Project construction would not create on-going and continuous groundborne vibration and noise like that of an urban rail transit system. Rather, Project construction would generate intermittent or periodic groundborne vibration and noise, which means groundborne vibration and noise impacts would be less than that of an urban rail transit system. Furthermore, the nearest sensitive receptors are located further that 50 feet from the Project Site boundaries at their closest point.

**As such, impacts related to groundborne noise would be less than significant during construction of the Project and the Flexibility Option and no mitigation measures would be required.**

### (2) Operation

#### *(a) Structural Damage*

The Project's day-to-day operations would include typical commercial-grade stationary mechanical and electrical equipment, such as air handling units, condenser units, and exhaust fans, which would produce vibration at low levels that would not cause damage or annoyance impacts to the Project buildings or onsite occupants and would not cause vibration impacts to the off-site environment. According to the American Society of Heating, Refrigeration, and Air Conditioning Engineering (ASHRAE), pumps or compressors would generate groundborne vibration levels of 0.5 inches per second PPV at a distance of 1-foot from the source.[30] The Project's mechanical equipment, including air handling units, condenser units, and exhaust fans, would be located on the building rooftop and would not be located in direct contact with the ground. As such, it would not generate groundborne vibration at off-site locations, including vibration-sensitive receptors.

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[29] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 6-3, page 126.*

[30] *American Society of Heating, Refrigeration, and Air-Conditioning Engineers, Inc., Heating, Ventilation, and Air-Conditioning Applications, 1999.*

The primary sources of transient vibration from the Site would be from delivery trucks and passenger vehicle circulation within the proposed parking area. According to the FTA, delivery trucks rarely generate vibration that exceeds 70 VdB,[31] which is equivalent to approximately 0.013 inches per second PPV, which would be less than the significance threshold of 0.2 inches per second PPV for potential residential building damage. As passenger vehicles are much smaller than delivery trucks, the vibration from passenger vehicles would be lower.

**Therefore, impacts with respect to potential building damages resulting from operation-generated vibration under the Project and the Flexibility Option would be less than significant and no mitigation would be required.**

*(b) Human Annoyance*

As discussed above, the Project mechanical equipment, including air handling units, condenser units, and exhaust fans, would be located on Project building rooftops and would, therefore, not generate groundborne vibration at off-site locations, including vibration-sensitive receptors.

With regard to transient vibration from delivery trucks and on-site passenger car circulation, because delivery trucks rarely generate vibration that exceeds 70 VdB,[32] which is below the conservative threshold of 72 VdB for human annoyance, and because passenger vehicles are much smaller than delivery trucks, the vibration from delivery trucks and passenger vehicles would not exceed the human annoyance threshold.

**Therefore, impacts with respect to human annoyance resulting from operation-generated vibration under the Project and the Flexibility Option would be less than significant and no mitigation would be required.**

As discussed above, operation of the Project would result in groundborne vibration levels substantially less than the threshold for groundborne vibration at groundborne vibration-sensitive receptors. For typical buildings, groundborne vibration results in groundborne noise levels approximately 35 to 37 decibels lower than the velocity level.[33] Given that the groundborne vibration level would be much lower than the threshold for groundborne vibration-sensitive uses, and given that the groundborne noise would be approximately 35 to 37 decibels lower than the velocity level, operational groundborne noise would also not exceed the human annoyance threshold.

[31] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, page 113.*
[32] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, page 113.*
[33] *FTA, Transit Noise and Vibration Impact Assessment Manual, 2018, Table 6-3, page 126.*

**As such, impacts related to groundborne noise would be less than significant during operation of the Project and the Flexibility Option and no mitigation measures would be required.**

### (3) Mitigation Measures

Under both the Project and the Flexibility Option, construction vibration impacts with regard to human annoyance to the residential uses at the National Biscuit Company Building, Toy Factory Lofts, and Amp Lofts from on-site construction activities would exceed the applicable threshold. Potential vibration-reducing mitigation measures would include eliminating vibration-producing construction equipment and increasing the distance between the source of vibration and the receptor. However, the Project cannot be constructed without employing equipment that generates the highest vibration levels, including the use of bulldozers, caisson drilling and haul truck movement separately. Moreover, when these activities are occurring at the Project Site boundary, the distance between the Project Site and the sensitive receptors would be approximately 55 feet. This distance cannot be increased because it is not possible to move either the construction activity or the sensitive receptor. An additional measure that could potentially reduce vibration impacts on sensitive receptors would be installation of a wave barrier, which is typically a trench or a thin wall made of sheet piles installed in the ground (essentially a subterranean sound barrier to reduce noise). However, wave barriers must be very long and very deep to be effective.[34] In addition, constructing a wave barrier to reduce the Project's construction related vibration impacts would, in and of itself, generate groundborne vibration from the excavation equipment in close proximity to the sensitive receptors, or be infeasible due to soil conditions. Therefore, no feasible mitigation measures are available to address this impact.

### (4) Level of Significance After Mitigation

**The Project and the Flexibility Option would generate groundborne vibration levels during construction that could exceed the human annoyance threshold. No feasible mitigation measures are available to address this impact. However, this impact would be temporary and limited to times when the construction activities that generate the highest vibration level are taking place in close proximity to sensitive receptors, would be limited to site clearing, grading, and shoring activities, and would only occur during allowable construction hours 7:00 A.M to 9:00 P.M. Monday through Friday, and 8:00 A.M. to 6:00 P.M. on Saturday. Nonetheless, this impact would be significant and unavoidable.**

[34] *Caltrans, Transportation- and Construction Related Vibration Guidance Manual, June 2004.*

**The impacts of the Project and Flexibility Option with respect to groundborne vibration that could result in building damage or groundborne noise levels would be less than significant without mitigation.**

***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 airstrip, would the project expose people residing or working in the project area to excessive noise levels?***

### (1) Project

As discussed in the Initial Study (see **Appendix A.2** of this Draft EIR), the Project Site is not located with any airport's influence area nor within the vicinity of a private airstrip or an airport land use plan, or within two miles of a public use airport or public use airstrip. Therefore, the Project would have no impact with respect to Threshold c).

### (2) Increased Commercial Flexibility Option

As previously discussed, the Flexibility Option would merely change the land use of the second floor from residential to commercial, and would not otherwise change the Project's mix of land uses or size. Overall, the design, configuration, and operation of the Flexibility Option would be comparable to the Project.

The Project Site is not located with any airport's influence area nor within two miles of an existing airport. The Project Site is also not located in the vicinity of a private airstrip. The Flexibility Option would not alter the location of the Project Site. **Therefore, the Flexibility Option would have no impacts related to the potential exposure of persons to airport or airstrip noise and no mitigation measures are required.**

### (3) Mitigation Measures

The Project and the Flexibility Option would have no impacts related to the potential exposure of persons to airport or airstrip noise. Therefore, no mitigation measures are required.

### (4) Level of Significance After Mitigation

The Project and the Flexibility Option would have no impacts related to the potential exposure of persons to airport or airstrip noise and would have no impacts.

# 4. Cumulative Impacts

Because the Flexibility Option would be located on the same Project Site with the same distance to sensitive receptors as the Project, would require the same construction schedule and equipment, and the increase in daily operational traffic as compared to the Project would have a negligible effect on the increase in ambient noise levels at receptor locations, the conclusions regarding the cumulative impact analysis and impact significance determination presented below for the Project would be the same under the Flexibility Option.

This cumulative impact analysis considers development of the Project in combination with ambient growth and other development projects (Related Projects) within the vicinity. As noise is a localized phenomenon and decreases in magnitude as distance from the source increases, only projects and ambient growth within 500 feet and having a direct line-of-sight to the Project Site could combine with the Project to result in cumulatively considerable noise impacts.

## a) Construction Noise

Construction of the Project in combination with the Related Projects would result in an increase in construction noise and vibration in this heavily urbanized area of the City. A list of Related Projects was obtained from the Project-specific Traffic Study. The closest related Project is Related Project No. 1, a mixed use (apartments/retail/restaurant) at 2051 E. 7th Street/695 S. Santa Fe Avenue, located approximately 55 feet east of the Project Site. This Related Project is currently under construction and may become operational prior to the start of Project construction. The next closest Related Project is Related Project No. 15, a mixed-use project (apartments/retail/office) located at 641 S. Imperial St, approximately 170 feet north of the Project boundary. The next closest Related Project is Related Project No. 10, a mixed-use project (office/retail/restaurant) located at 640 S. Santa Fe Avenue, approximately 450 feet northeast of the Project site; however, this Related Project is currently under construction and may become operational prior to the start of Project construction. The rest of the Related Projects listed in the Traffic Study are further than 500 feet from the Project Site boundary.

Construction of these and other unforeseen projects could potentially combine construction noise and vibration levels with the Project construction activities. However, all Related Projects would be required to comply with the City's Noise Ordinance Nos. 144,331 and 161,574. In addition, each of the Related Projects would be subject to Section 41.40 of the LAMC, which limits the hours of allowable construction activities, and Section 112.05 of the LAMC, which prohibits any powered equipment or powered hand tool from producing noise levels that exceed 75 dBA at a distance of 50 feet from the noise source within 500 feet of a residential zone. Noise levels are only allowed to exceed

this noise limitation under conditions where compliance is technically infeasible. As previously discussed, construction noise levels for the Project could exceed existing ambient noise levels by more than 5 dBA for 10 days in a three-month period. However, as shown in **Table IV.H-12** on-site construction noise levels for the Project would be reduced to less than significant levels after mitigation.

Therefore, with the Related Projects also complying with City requirements regarding construction noise impacts, cumulative construction noise levels will not exceed the City's applicable standard of 75 dBA at the nearby sensitive receptors and would not contribute to a 5dBA or greater increase in ambient noise level at receptor locations in the Project vicinity. **Therefore, cumulative construction noise impacts under the Project and the Flexibility Option would be less than significant.** Implementation of mitigation measure MM NOI-1, required to reduce Project-related construction noise levels, would further reduce potential cumulative construction noise impacts.

## b) Construction Vibration

Regarding cumulative construction-related vibration, due to the rapid attenuation characteristics of groundborne vibration, only those Related Projects located within close proximity to the National Biscuit Company Building, the Toy Factory Lofts, and the Amp Lofts would have the potential to result in cumulative vibration from on-site construction activities. The closest Related Projects to these residential uses include Related Project No. 1, located on the future Amp Lofts site, Related Project No. 7, located 300 feet southwest of the Biscuit Company Building, Related Project No. 15, located 250 northeast of the Toy Factory Lofts, and Related Project No. 17, located 430 feet northeast of the Amp Lofts. Because Related Project No. 1 is the currently-under-construction Amp Lofts, it would not have the potential to contribute to a cumulative vibration impact with the Project as no sensitive receptors could be present at the site prior to the completion of its construction. In addition, based on the distances of Related Project Nos. 7, 15, and 17 to their nearest receptors and the worst-case construction vibration levels at various distances presented in **Table IV.H-13**, there would be no potential for cumulative construction-period impacts with respect to groundborne vibration. However, as the related projects would be anticipated to use similar trucks as the Project, it is expected that construction trucks from the related projects would generate similar vibration levels along the anticipated haul routes. The timing and location of haul trucks used by the Related Projects would be speculative at best. It is likely that large rubber-tired vehicles (trucks, buses, haul trucks etc.) already occasionally pass-by each other along these routes; therefore, the vibrational activity generated by this type of infrequent event would be considered part of the existing environment. **As such, cumulative impacts with respect to groundborne vibration during construction of the Project and the Flexibility Option would be less than significant.**

## c) Cumulative Operational Noise

Cumulative mobile source noise impacts would occur primarily as a result of increased traffic on local roadways due to the Project, ambient growth, and Related Projects. As shown in **Table IV.H-14, Project Traffic Cumulative Noise Contributions, North-South Road Segments** and **Table IV.H-15, Project Traffic Cumulative Noise Contributions, North-South Road Segments**, there would be a marginal increase in cumulative roadway noise levels with the Project and Future Projects, as community noise levels would only increase by a maximum of 2.0 dBA CNEL at the roadway segment of Imperial Street south of the Project Driveway.

**Table IV.H-14**
**Project Traffic Cumulative Noise Contributions,**
**North-South Road Segments**

| 50 Feet From Centerline* | | | | | | |
|---|---|---|---|---|---|---|
| | Future without Project | | Future with Project | | | |
| N-S Road Segments | ADT | dB CNEL | ADT | Total | Project-Specific Increase | Is the Increase Significant? |
| **Mateo Street** | | | | | | |
| n/o Jesse Street | 6,970 | 66.1 | 7,050 | 66.2 | 0.1 | **No** |
| s/o Jesse Street | 5,860 | 65.4 | 5,860 | 65.4 | 0.0 | **No** |
| s/o 7th Street | 7,480 | 66.4 | 7,570 | 66.5 | 0.1 | **No** |
| **Imperial Street** | | | | | | |
| n/o Jesse Street | 900 | 57.2 | 900 | 57.2 | 0.0 | **No** |
| s/o Jesse Street | 960 | 57.5 | 1,170 | 58.4 | 0.9 | **No** |
| n/o Project Driveway | 740 | 56.4 | 820 | 56.8 | 0.4 | **No** |
| s/o Project Driveway | 840 | 56.9 | 1,310 | 58.9 | 2.0 | **No** |
| s/o 7th Street | 20 | 40.7 | 20 | 40.7 | 0.0 | **No** |

* *The uniform distance of 50 feet allows for direct comparisons of potential increases or decreases in noise levels based upon various traffic scenarios; however, at this distance, no specific noise standard necessarily applies.*

**Table IV.H-15**
**Project Traffic Cumulative Noise Contributions,**
**East-West Road Segments**

| 50 Feet From Centerline* | | | | | | |
|---|---|---|---|---|---|---|
| | Future without Project | | Future with Project | | | |
| E-W Road Segments | ADT | dB CNEL | ADT | Total | Project-Specific Increase | Is the Increase Significant? |
| **Jesse Street** | | | | | | |
| w/o Mateo Street | 110 | 48.1 | 110 | 48.1 | 0.0 | **No** |
| e/o Mateo Street | 1,280 | 58.8 | 1,490 | 59.4 | 0.6 | **No** |
| e/o Imperial Street | 1,230 | 58.6 | 1,230 | 58.6 | 0.0 | **No** |
| **Project Driveway** | | | | | | |
| w/o entrance | 0 | -- | 1,040 | 57.9 | **--** | **No** |
| **7th Street** | | | | | | |
| w/o Mateo Street | 13,240 | 68.9 | 13,450 | 69.0 | 0.1 | **No** |
| e/o Mateo Street | 14,900 | 69.4 | 15,280 | 69.5 | 0.1 | **No** |
| e/o Imperial Street | 14,680 | 69.4 | 14,850 | 69.4 | 0.0 | **No** |

* *The uniform distance of 50 feet allows for direct comparisons of potential increases or decreases in noise levels based upon various traffic scenarios; however, at this distance, no specific noise standard necessarily applies.*

This increase would not exceed 3 dBA at any receptor location.[35] **Therefore, cumulative traffic noise impacts to off-Site receptors due to Project- and Flexibility Option-generated trips would be less than significant and no mitigation measures are required.**

Operational noise associated with the Proposed Project will be consistent with the other land uses in the Project area. As is true for the Project, compliance with the LAMC-required provisions that limit stationary source noise from items such as rooftop mechanical equipment would ensure that noise levels would be less than significant at the property line for each related project. In addition, onsite noise generated by each related project would be sufficiently low and sufficiently distant from the Project Site that it would not result in an additive increase to Project-related noise levels.

Further, noise from other on-site sources, including parking structures, open space activity, and loading docks (as applicable) would be limited to areas in the immediate vicinity of each related project. Although each related project could potentially impact an

[35] *As mentioned above, traffic conditions under the Flexibility Option would result in a small increase of vehicle trips compared to the Project. Specifically, as shown in the Traffic Stud (available in **Appendix L.1** of the DEIR), the Flexibility Option would generate a net increase of 1,991 daily trips versus the Project's net increase of 1,972 daily trips. Therefore, the Flexibility Option would generate approximately 19 more daily trips compared to the Project, which is less than a one percent increase in daily trips. This negligible increase in vehicles for the Flexibility Option would not exceed ambient noise levels by 3 dBA at any receptor location either.*

adjacent sensitive use, that potential impact would be localized to that specific area and would not contribute to cumulative noise conditions at or adjacent to the Project Site. **Therefore, cumulative stationary noise source impacts under the Project and the Flexibility Option would be less than cumulatively significant.**

## d) Cumulative Operational Vibration Impacts

Due to the rapid attenuation characteristics of groundborne vibration and distance from each of the related projects to the Project Site, there is no potential for cumulative operational-period impacts with respect to groundborne vibration. **Therefore, cumulative groundborne vibration impacts under the Project and the Flexibility Option would be less than significant.**

## e) Mitigation Measures

Under both the Project and the Flexibility Option, cumulative impacts to noise and vibration would be less than significant; no additional mitigation would be required.

## f) Level of Significance After Mitigation

Under both the Project and the Flexibility Option, cumulative impacts to noise and vibration would be less than significant without mitigation.

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