



11.9 Noise Study



Acoustical Assessment

3800 Via Oro Project

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Appendix A: Noise Data

LIST OF ABBREVIATED TERMS

APN	Assessor's Parcel Number
ADT	Average daily traffic
dBA	A-weighted sound level
CEQA	California Environmental Quality Act
CNEL	Community equivalent noise level
L _{dn}	Day-night noise level
dB	Decibel
L _{eq}	Equivalent noise level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	Heating ventilation and air conditioning
Hz	Hertz
in/sec	Inches per second
L _{max}	Maximum noise level
μPa	Micropascals
L _{min}	Minimum noise level
PPV	Peak particle velocity
RMS	Root mean square
VdB	Vibration velocity level

1.0 INTRODUCTION

This report documents the results of an Acoustical Assessment completed for the 3800 Via Oro Avenue Project (“Project” or “proposed Project”). The purpose of this Acoustical Assessment is to evaluate the potential noise and vibration levels associated with the construction and operation of the Project and to determine the level of impact the Project would have on the environment.

1.1 Project Location

The proposed Project Site is located at 3800 Via Oro Avenue in the City of Long Beach (City) and is identified as Assessor Parcel Number (APN) 7310-016-086. The Project Site is located in the northwestern portion of the City at the intersection of Via Oro Avenue and Hughes Way. The City lies within southeast Los Angeles County and is approximately 16 miles south of downtown Los Angeles. The City borders the Pacific Ocean to the south; the cities of Carson and Los Angeles to the west; the cities of Compton, Paramount, and Bellflower to the north; the cities of Lakewood, Hawaiian Gardens, and unincorporated Orange County to the east. The Los Angeles river is approximately 1,062 feet (0.01 miles) east of the Project Site. **Exhibit 1: Regional Location Map** depicts the proposed Project Site in a regional context.

The proposed Project Site is currently developed with a 36,697 square-foot (sf) television broadcast facility with 18 satellite dishes and a surface parking lot to the north of the building. The northeast corner of the site is vacant and undeveloped with disturbed non-native vegetation, and the southeast corner of the site is undeveloped and graded (solar panels covering this area were recently removed in June 2025). The Project Site is bounded by Interstate 710 (I-710) to the east, Hughes Way to the south, and Via Oro Avenue to the west. Existing industrial, manufacturing, commercial, and office uses are located to the north of the Project Site, commercial and office uses are located to the south of the Project Site, and commercial and office uses are located to the east of the Project Site.

Exhibit 2: Local Vicinity Map, depicts the proposed Project Site in a local setting. The I-710, located immediately east of the Project Site, and Interstate 405 (I-405), located approximately 0.15 miles south of the site, provide regional access to the Project Site.

1.2 Project Description

The Project applicant proposes to demolish the existing structures, at-grade parking, landscaping, and satellites on the Project Site and redevelop the site with one to two speculative industrial buildings. Because the future tenants are currently unknown, and because a variety of industrial uses would be permitted, the analysis includes potential future land-use options. The proposed land uses are depicted on **Exhibit 3: Conceptual Site Plan**.

Manufacturing, Warehousing, and Office

The Project would include a 332,090 SF concrete tilt-up speculative industrial building, primarily used for manufacturing (152,433 SF), warehousing (155,657 SF), and ancillary office space (24,000 SF), consistent with the existing PD-26 Subarea III zoning for the Project Site. The building would include a mezzanine and be 36 feet tall. The building would have a street setback of 25 feet and an interior and rear setback of 20 feet along Hughes Way.

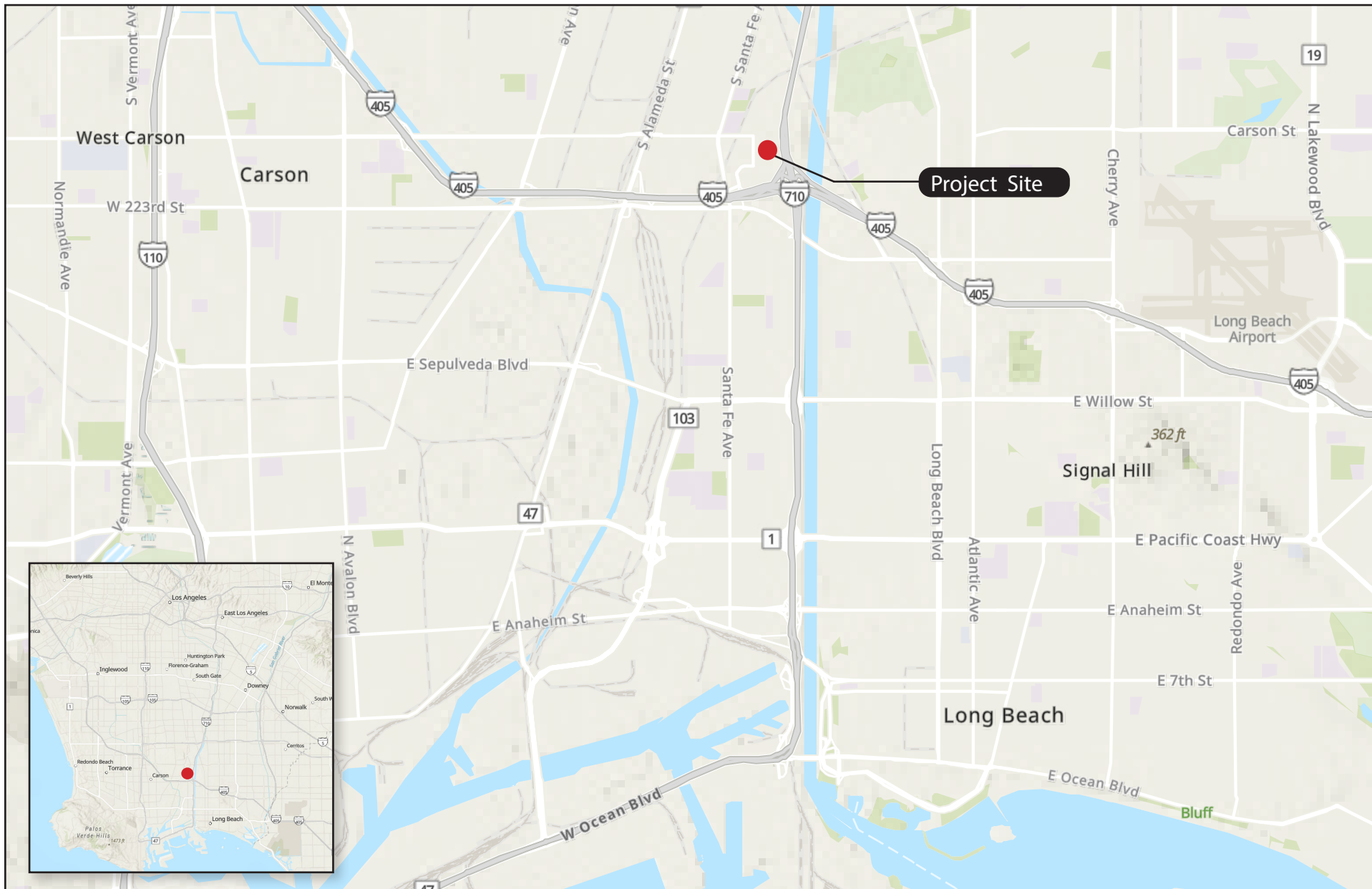
The Project would include approximately 333 parking stalls, of which 256 would be standard stalls, 2 carpool and van accessible stalls, 6 standard accessible stalls, and 67 Electric Vehicle (EV)

capable stalls. The Project would provide approximately 34 bicycle parking spaces. The building would feature 38 truck high-dock doors along the northern side of the building.

Construction Activities

Construction of the Project would include the demolition of the existing structures, at-grade parking, landscaping, and satellite dishes. Construction is estimated to last for approximately 19 months. The Project could therefore be fully operational as early as June of 2028. The buildings are expected to be poured in place, tilt-up style concrete.

Because of the developed nature of the site, grading would likely be minimal, and soils would generally be balanced on site. The proposed haul route for demolition removal or delivery of supplies would be via Hughes Way which offers direct access to and from northbound I-405. Trucks would utilize Warnock Way and Santa Fe Avenue if coming from or to southbound I-405, which offers connections to the northbound and southbound lanes of the I-710. See **Exhibit 4: Truck Route Map**. These routes minimize exposure of truck traffic to nearby sensitive land uses, diverting trucks away from residential neighborhoods and schools. There would be approximately 9,900 tons of demolition and no anticipated import or export of soil.



SOURCE: ArcGIS Pro, 2025



EXHIBIT 1: Regional Location Map

3800 VIA ORO AVENUE PROJECT



SOURCE: Nearmap, 2025



EXHIBIT 2: Local Vicinity Map

3800 VIA ORO AVENUE PROJECT

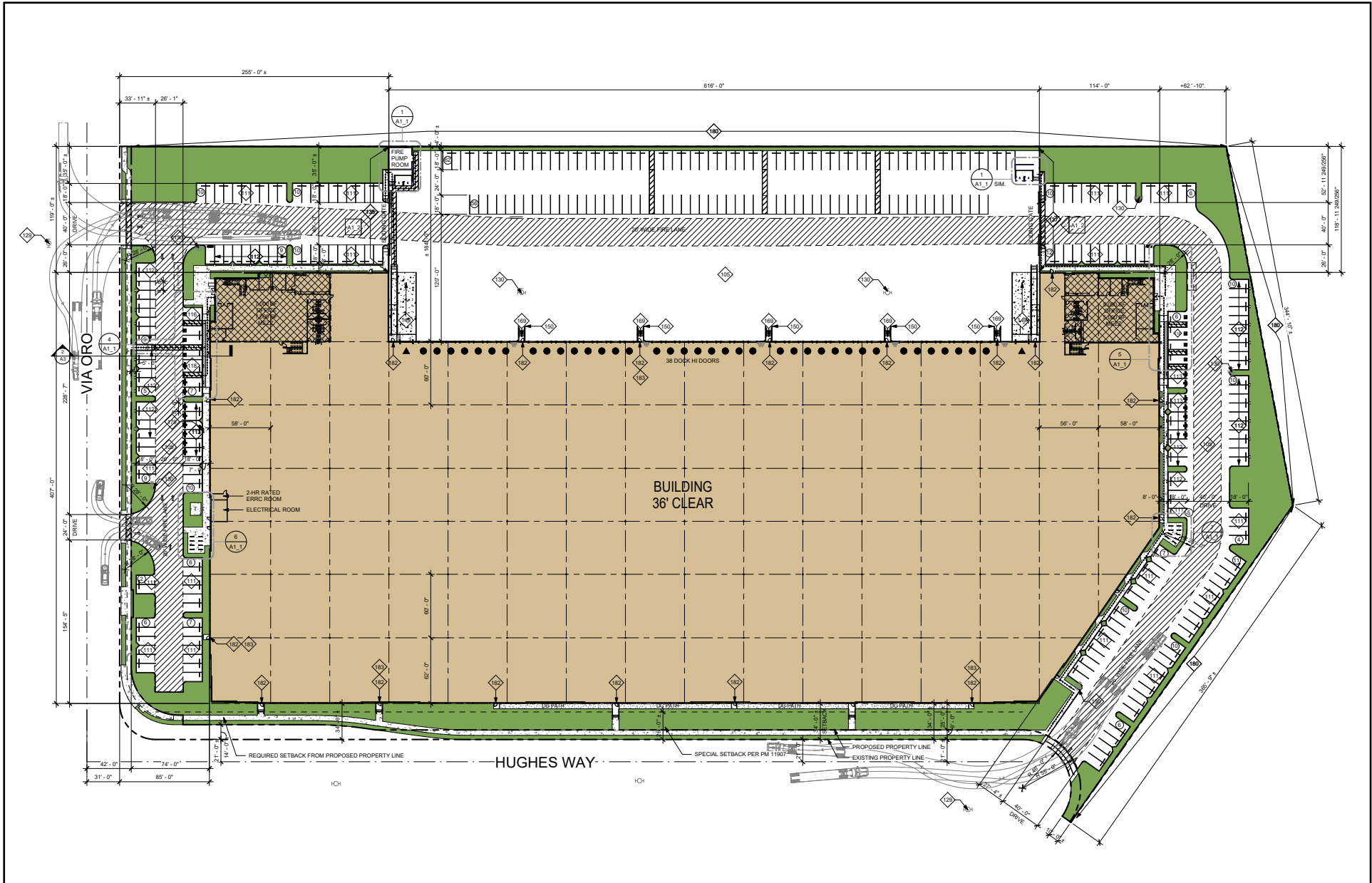


EXHIBIT 3: Conceptual Site Plan

3800 VIA ORO AVENUE PROJECT

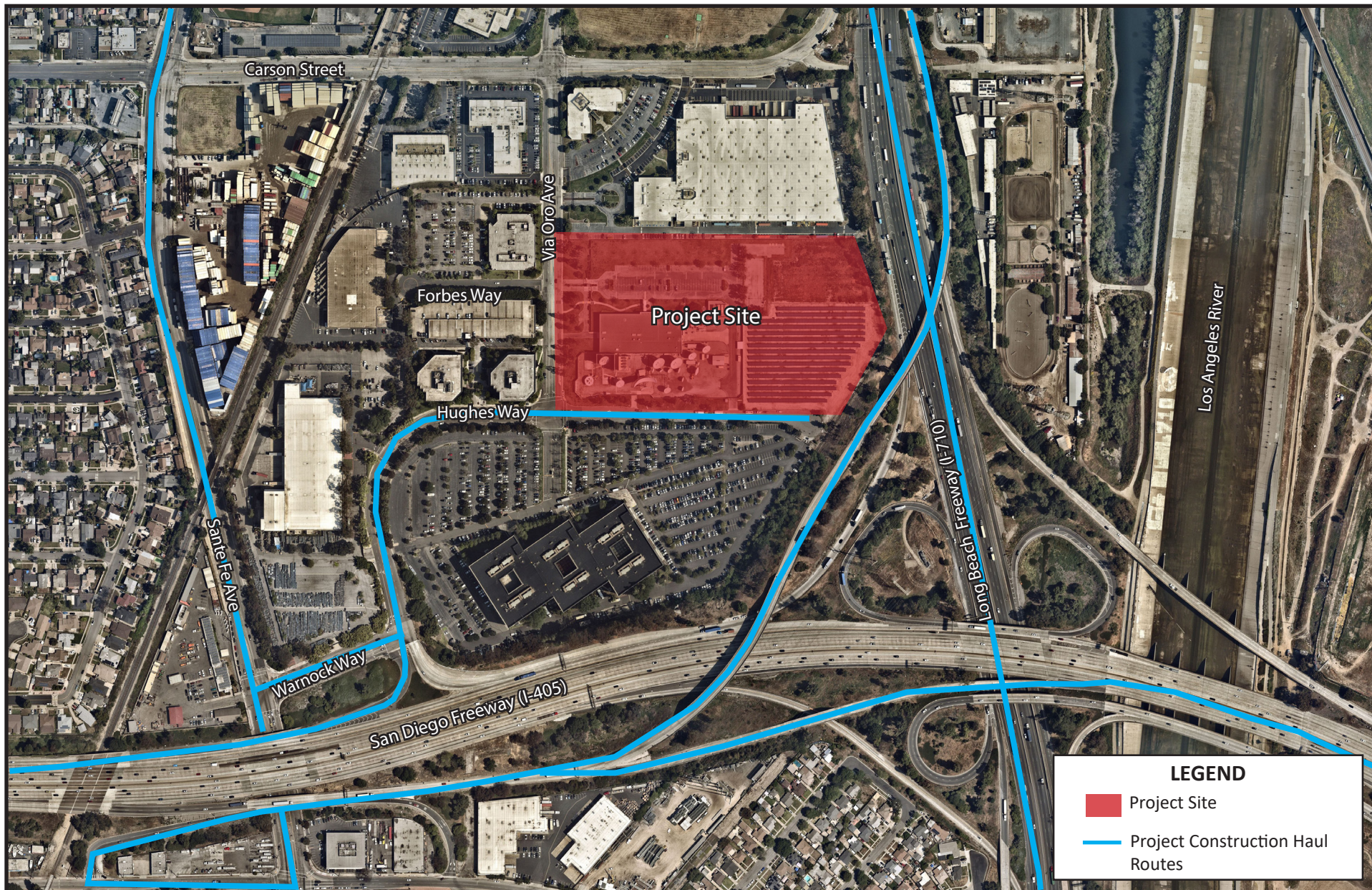


EXHIBIT 4 : Truck Route Map

3800 VIA ORO AVENUE PROJECT

2.0 ACOUSTIC FUNDAMENTALS

2.1 Sound and Environmental Noise

Acoustics is the science of sound. Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a medium (e.g., air) to human (or animal) ear. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or hertz (Hz).

Noise is defined as loud, unexpected, or annoying sound. The fundamental model consists of a noise source, a receptor, and the propagation path between the two. Perceptions of sound and noise are highly subjective from person to person. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path, determine the perceived sound level and noise characteristics at the receptor. A typical noise environment consists of ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this ambient noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway.

Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micro-pascals (μPa) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels correspond closely to human perception of relative loudness. [Table 1: Typical Noise Levels](#) provides typical noise levels.

Table 1: Typical Noise Levels		
Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	- 110 -	Rock Band
Jet fly-over at 1,000 feet		
	- 100 -	
Gas lawnmower at 3 feet		
	- 90 -	
Diesel truck at 50 feet at 50 miles per hour		Food blender at 3 feet
	- 80 -	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	- 70 -	Vacuum cleaner at 10 feet
Commercial area		Normal Speech at 3 feet
Heavy traffic at 300 feet	- 60 -	
		Large business office
Quiet urban daytime	- 50 -	Dishwasher in next room
Quiet urban nighttime	- 40 -	Theater, large conference room (background)
Quiet suburban nighttime		
	- 30 -	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	- 20 -	
		Broadcast/recording studio
	- 10 -	
Lowest threshold of human hearing	- 0 -	Lowest threshold of human hearing

Source: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

Noise Descriptors

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level (L_{eq}) represents the equivalent continuous sound pressure level over the measurement period, while the day-night noise level (L_{dn}) and Community Equivalent Noise Level (CNEL) are measures of sound energy during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. Most commonly, environmental sounds are described in terms of L_{eq} that has the same acoustical energy as the summation of all the time-varying events. Each is applicable to this analysis and defined in [Table 2: Definitions of Acoustical Terms](#).

Table 2: Definitions of Acoustical Terms	
Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in μPa (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in dB as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g. 20 μPa). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in dB as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	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.
Maximum Noise Level (L_{max}) Minimum Noise Level (L_{min})	The maximum and minimum dBA during the measurement period.
Exceeded Noise Levels (L_{01} , L_{10} , L_{50} , L_{90})	The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Noise Level (L_{dn})	A 24-hour average L_{eq} with 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 at nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn} .
Community Noise Equivalent Level (CNEL)	A 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 a.m. to 10:00 a.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 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

Table 2: Definitions of Acoustical Terms

Term	Definitions
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

The A-weighted decibel (dBA) sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source.

A-Weighted Decibels

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of dBA, but are expressed as dB, unless otherwise noted.

Addition of Decibels

The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound.¹ When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions.² Under the dB scale, three sources of equal loudness together would produce an increase of approximately 5 dBA.

Sound Propagation and Attenuation

Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern.

¹FHWA, *Noise Fundamentals*, 2017. Available at:
https://www.fhwa.dot.gov/enviroMent/noise/regulations_and_guidance/polguide/polguide02.cfm
² Ibid.

Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics.³ No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed.

Noise levels may also be reduced by intervening 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 reduces noise levels by 5 to 10 dBA.⁴ The way older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. 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.⁵ 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 residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted⁶:

- Except in carefully controlled laboratory experiments, a 1-dBA change cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A minimum 5-dBA change is required before any noticeable change in community response would be expected. A 5-dBA increase is typically considered substantial.

³ California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, Page 2-29, September 2013.

⁴James P. Cowan, *Handbook of Environmental Acoustics*, 1994.

⁵ Compiled from James P. Cowan, *Handbook of Environmental Acoustics*, 1994 and Cyril M. Harris, *Handbook of Noise Control*, 1979.

⁶ Compiled from California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013, and FHWA, *Noise Fundamentals*, 2017.

- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on People

Hearing Loss. While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational Safety and Health Administration has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Annoyance. Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. A noise level of about 55 dBA L_{dn} is the threshold at which a substantial percentage of people begin to report annoyance⁷.

2.2 Ground-Borne Vibration

Sources of ground-borne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions or heavy equipment use during construction). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is vibration decibels (VdB) (the vibration velocity level in decibel scale). Other methods are the peak particle velocity (PPV) and the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

The Federal Transit Administration (FTA) has published the *Transit Noise and Vibration Impact Assessment Manual* (FTA Transit Noise and Vibration Manual) to provide guidance on procedures for assessing impacts at different stages of transit project development. In general, the primary concern regarding vibration relates to potential damage from construction. The guidance document establishes criteria for evaluating the potential for damage for various structural categories from vibration. Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in Table 3 should be interpreted with care

⁷ Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where ground-borne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for ground-borne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations			
Maximum PPV (in/sec)	Vibration Annoyance Potential Criteria	Vibration Damage Potential Threshold Criteria	FTA Vibration Damage Criteria
0.008	--	Extremely fragile historic buildings, ruins, ancient monuments	--
0.01	Barely Perceptible	--	--
0.04	Distinctly Perceptible	--	--
0.1	Strongly Perceptible	Fragile buildings	--
0.12	--	--	Buildings extremely susceptible to vibration damage
0.2	--	--	Non-engineered timber and masonry buildings
0.25	--	Historic and some old buildings	--
0.3	--	Older residential structures	Engineered concrete and masonry (no plaster)
0.4	Severe	--	--
0.5	--	New residential structures, Modern industrial/commercial buildings	Reinforced-concrete, steel or timber (no plaster)
PPV = peak particle velocity; in/sec = inches per second; FTA = Federal Transit Administration			
Source: California Department of Transportation, <i>Transportation and Construction Vibration Guidance Manual</i> , 2020 and Federal Transit administration, <i>Transit Noise and Vibration Assessment Manual</i> , 2018.			

3.0 REGULATORY SETTING

To limit population exposure to physically or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise.

3.1 Federal

Federal Transit Administration Noise and Vibration Guidance

The Federal Transit Administration (FTA) has published the *Transit Noise and Vibration Impact Assessment Manual* (FTA Transit Noise and Vibration Manual) to provide guidance on procedures for assessing impacts at different stages of transit project development. The report covers both construction and operational noise impacts and describes a range of measures for controlling excessive noise and vibration. In general, the primary concern regarding vibration relates to potential damage from construction. The guidance document establishes criteria for evaluating the potential for damage for various structural categories from vibration.

3.2 State of California

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of “normally acceptable”, “conditionally acceptable”, “normally unacceptable”, and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 CNEL and “conditionally acceptable” up to 70 CNEL. Multiple-family residential uses are “normally acceptable” up to 65 CNEL and “conditionally acceptable” up to 70 CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 – Building Code

The State’s noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.3 Local

City of Long Beach General Plan

On June 6, 2023, the City of Long Beach adopted a revised Noise Element (2023 Noise Element) replacing the previous Noise Element from the 1975 General Plan (1975 Noise Element). The *City of Long Beach General Plan* Noise Element strives for a more equitable distribution of noise, limiting the exposure of the community to excessive noise levels in noise-sensitive areas and at noise-sensitive times of day, and creating allowances for Long Beach to thrive as a dynamic, growing city. The 2023 Noise Element identifies several policies to minimize the impacts of excessive noise levels throughout the community and establishes allowable noise exposure levels from transportation sources for all land uses.

The 2023 Noise Element includes strategies and policies to reduce construction noise impacts. Policies N 12-1 through N 12-7 include measures to reduce construction noise at the source, reduce noise conflicts, limit the allowable hours for construction activities near sensitive uses, establish noise level standards based on PlaceType as part of the City's Municipal Code, and encourage construction best practices that reduce noise.

The following objectives and policies from the Long Beach Noise Element are potentially applicable to the Project:

- Strategy No. 1:** Apply site planning and other design strategies to reduce noise impacts, especially within the Founding and Contemporary Neighborhoods, Multifamily Residential-Low and Moderate, and Neighborhood-Serving Centers and Corridors – Low and Moderate PlaceTypes.
- Policy N 1-2:** Require noise attenuation measures to be incorporated into all development and redevelopment of sensitive receptor uses, including residential, health care facilities, schools, libraries, senior facilities, and churches in close proximity to existing or known planned rail lines.
- Policy N 1-3:** Ensure development and redevelopment is considerate of the natural shape and contours of a site in order to reduce noise impacts.
- Policy N 1-4:** Encourage developers or landowners to incorporate noise reduction features in the site planning process.
- Policy N 1-6:** Ensure that project site design and function minimize the potential adverse impacts of noise.
- Policy N 1-8:** Require new development to provide facilities which support the use of multimodal transportation, including walking, bicycling, carpooling, and transit.
- Policy N 1-9:** Utilize noise barriers after all practical design-related noise measures have been integrated into the project. In instances, where sound walls are necessary, they should be incorporated into the architectural and site character of the development and pedestrian access should be integrated.

- Strategy No. 3:** Capitalize on urban design techniques and business operation strategies within business and employment center PlaceTypes (Community Commercial, Industrial, Neo-Industrial, Regional-Serving Facility, Port of Long Beach) to minimize noise impacts on surrounding adjacent uses.
- Policy N 3-1:** Provide sufficient spatial separation between industrial uses and sensitive receptors. Utilize mitigation measures where feasible to reduce the noise source, such as noise attenuation methods, interrupting the noise path, or insulating the receptor to minimize the exposure of noise-sensitive uses to excessive industrial-related noise.
- Policy N 3-2:** Ensure new industrial uses are in compliance with the City's Noise Ordinance.
- Policy N 3-3:** Encourage industrial and commercial activities to restrict their receiving operations to daytime periods.
- Strategy No. 4:** Protect and buffer noise sensitive areas and use through effective building design and material selection.
- Policy N 4-1:** Encourage developers to utilize noise absorbing building materials
- Strategy No. 5:** Implement best practices to reduce impacts of noise from industrial sources
- Policy N 5-1:** In observance of requirements imposed by the California Air Resources Board (CARB), limit the idling of heavy trucks during nighttime hours to less than five minutes.
- Policy N 5-2:** Where feasible, require equipment enclosures for pumps and compressors that exceed Municipal Code noise standards.
- Policy N 5-3:** Encourage conduction of high-noise or high-vibration activities in a set window of time during the day.
- Policy N 5-4:** Industrial facility owners and/or operators should use equipment that generates lower noise and vibration levels, such as rubber-tired equipment rather than metal-tracked equipment.
- Policy N 5-5:** Commercial delivery truck traffic should avoid residential areas whenever feasible.
- Policy N 5-6:** Site design should consider sensitive receptor locations and place noise sources away from these when feasible.
- Policy N 5-7:** Encourage industrial operations to utilize on-site electrical sources to power equipment rather than diesel generators where feasible.
- Strategy No.12:** Minimize construction noise and vibration levels in residential areas and in other locations near noise-sensitive uses where possible.
- Policy N 12-1:** Reduce construction, maintenance, and nuisance noise at the source, when possible, to reduce noise conflicts.

Policy N 12-2: Limit the allowable hours construction activities and maintenance operations near sensitive uses.

Policy N 12-3: As part of the City’s Municipal Code, establish noise level standards based on PlaceType and time of day, to which construction noise shall conform.

Policy N 12-4: Encourage off-site fabrication to reduce needed onsite construction activities and corresponding noise levels and duration.

Policy N 12-5: Encourage the following construction best practices:

- Schedule high-noise and vibration-producing activities to a shorter window of time during the day outside early morning hours to minimize disruption to sensitive uses.
- Grading and construction contractors should use equipment that generates lower noise and vibration levels, such as rubber-tired equipment rather than metal-tracked equipment.
- Construction haul truck and materials delivery traffic should avoid residential areas whenever feasible.
- The construction contractor should place noise- and vibration-generating construction equipment and locate construction staging areas away from sensitive uses whenever feasible.
- The construction contractor should use on-site electrical sources to power equipment rather than diesel generators where feasible.
- All residential units located within 500 ft of a construction site should be sent a notice regarding the construction schedule. A sign legible at a distance of 50 ft should also be posted at the construction site. All notices and the signs should indicate the dates and durations of construction activities, as well as provide a telephone number for a “noise disturbance coordinator.”
- A “noise disturbance coordinator” should be established by the project developer. The disturbance coordinator should be responsible for responding to any local complaints about construction noise. The disturbance coordinator should determine the cause of the noise complaint (e.g., starting too early, bad muffler) and should be required to implement reasonable measures to reduce noise levels.

City of Long Beach Municipal Code

Long Beach Municipal Code (LBMC) Section 8.80, Noise, establishes exterior and interior noise limits for the generation of sound within the City. Maximum noise levels vary based on the receiving land use type and the cumulative duration of noise.

LBMC Section 8.80.150 – Exterior noise limits – Sound levels by receiving land use district. LBMC section 8.80.150(C) establishes if the measured ambient level exceeds the permissible noise limit categories, the allowable noise exposure standard shall be increased in five decibels increments in each category as appropriate to encompass or reflect the ambient noise level.

LBMC Section 8.80.160, Exterior noise limits – Correction for character of sounds. LBMC Section 8.80.160 establishes exterior noise limits for the following receiving land use districts. The proposed

Project would be located in District 4 along with receiving sensitive land uses, with the following noise limits as shown below in [Table 4: Exterior Noise Limits](#). Refer to **Exhibit 5** , *Noise District Map*, for the receiving land use districts surrounding the Project site.

Table 4: Exterior Noise Limits		
Receiving Land Use District	Time Period	Noise Level¹ (dBA)
District One	Night: 10:00 p.m.-7:00 a.m.	45
	Day: 7:00 a.m. – 10:00 p.m.	50
District Two	Night: 10:00 p.m. – 7:00 a.m.	55
	Day: 7:00 a.m. – 10:00 p.m.	60
District Three	Any time	65
District Four	Any time	70
District Five	Regulated by other agencies and laws	
District One:	Predominantly residential with other land use types also present	
District Two:	Mixed-use or predominantly commercial with other land use types also present	
District Three and Four:	Predominantly industrial with other land types use also present	
District Five:	Airport, freeways and waterways regulated by other agencies	
1. Districts Three and Four limits are intended primarily for use at their boundaries rather than for noise control within those districts.		

LBMC Section 8.80.200 – Noise disturbances – Acts specified. LBMC Section 8.80.200 requires that air conditioning equipment generate noise levels of no more than 55 dBA at any point on a neighboring property line. This standard would apply to all air conditioning and refrigerating equipment.

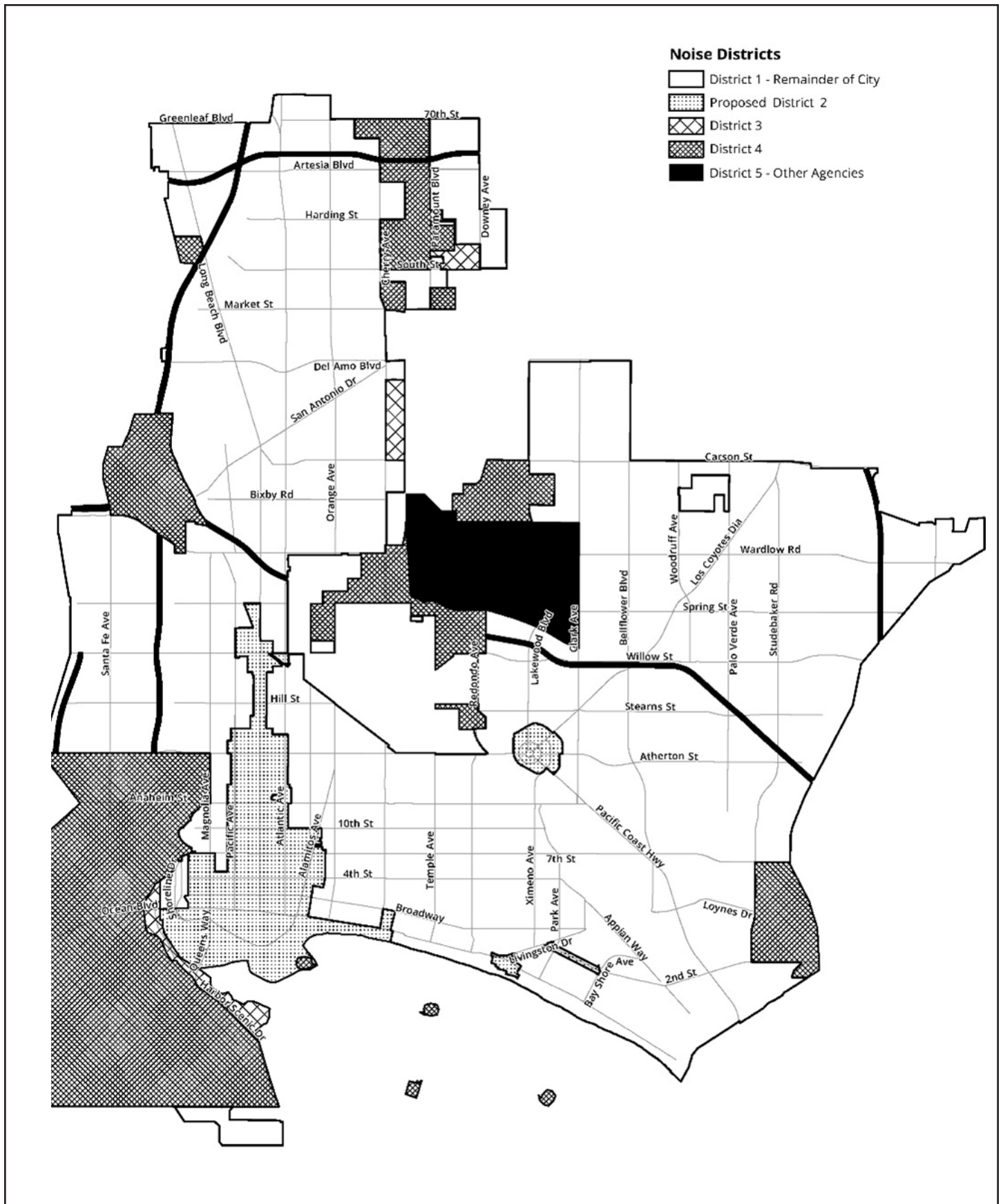
LBMC Section 8.80.202, Construction activity – Noise regulations. LBMC Section 8.80.202 establishes the following noise regulations for construction activities.

- Weekdays and federal holidays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 p.m. and 7:00 am. the following day on weekdays, except for emergency work authorized by the Building Official. For purposes of this Section, a federal holiday shall be considered a weekday.
- Saturdays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of seven p.m. on Friday and nine a.m. on Saturday and after six p.m. on Saturday, except for emergency work authorized by the Building Official.

- Sundays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity at any time on Sunday, except for emergency work authorized by the Building Official or except for work authorized by permit issued by the Noise Control Officer.
- Owner's/employer's responsibility. It is unlawful for the landowner, construction company owner, contractor, subcontractor or employer of persons working, laboring, building, or assisting in construction to permit construction activities in violation of provisions in this Section.
- Sunday work permits. Any person who wants to do construction work on a Sunday must apply for a work permit from the Noise Control Officer. The Noise Control Officer may issue a Sunday work permit if there is good cause shown; and in issuing such a permit, consideration will be given to the nature of the work and its proximity to residential areas. The permit may allow work on Sundays, only between 9:00 a.m. and 6:00 p.m., and it shall designate the specific dates when it is allowed.

Los Angeles Unified School District

The Los Angeles Unified School District (LAUSD) has established a maximum construction exterior noise standard of 67 dBA L_{eq} to protect students and staff from noise impacts. Additionally, the LAUSD has established that a construction noise level increase of 3 dBA or more over ambient noise levels is considered significant for existing schools.



Source: Long Beach Development Services



EXHIBIT 5: Noise District Map

3800 VIA ORO AVENUE PROJECT

4.0 EXISTING CONDITIONS

4.1 Existing Noise Sources

The City is impacted by various noise sources. Mobile sources of noise, especially cars, trucks, and trains are the most common and significant sources of noise. Other noise sources are the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) throughout the City that generate stationary-source noise.

Mobile Sources

The predominant mobile noise source near the Project Site is the traffic noise along I-710 and I-405. Via Oro Avenue and Hughes Way, located to the west and south of the Project Site, are also contributors to mobile traffic noise in the vicinity of the site.

Stationary Sources

The primary sources of stationary noise in the vicinity of the Project Site are those associated with the operations of adjacent commercial and industrial uses surrounding the site. The noise associated with these sources may represent a single-event noise occurrence or short-term noise, such as mechanical equipment (e.g., heating ventilation and air conditioning [HVAC] equipment), dogs barking, idling vehicles (including trucks), and employee/patron talking.

4.2 Noise Measurements

To quantify existing ambient noise levels in the Project area, Kimley-Horn conducted seven short-term noise measurements on March 20, 2025; see [Appendix A: Noise Data](#). The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project Site. The 10-minute measurements were taken between 9:40 a.m. and 12:05 p.m. near potential and existing sensitive receptors (see **Exhibit 6: Noise Measurement Locations**) surrounding the Project Site. Short-term L_{eq} measurements are considered representative of the noise levels throughout the day. The noise levels and sources of noise measured at each location are listed in [Table 5: Existing Noise Measurements](#).

Site	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Start Time
ST-1	Along Hughes Way, on the south side of the Project Site	59.3	54.8	69.3	9:42 a.m.
ST-2	Along Hughes Way, between Via Oro Avenue and Warnock Way	64.8	53.1	81.2	10:08 a.m.
ST-3	Along Via Oro Avenue, between Hughes Way and Carson Street	64.0	49.8	80.5	10:30 a.m.
ST-4	Along Carson Street, between Via Oro Avenue and Santa Fe Avenue	65.9	49.6	80.2	10:55 a.m.
ST-5	Along Santa Fe Avenue, south of Carson Street	68.6	52.6	79.6	11:10 a.m.
ST-6	Along Wardlow Road, between Santa Fe Avenue and Seabright Avenue	68.1	60.7	78.8	11:38 a.m.
ST-7	Intersection of Salmon Avenue and 223 rd Street	66.4	57.5	75.8	11:55 a.m.

Source: Noise measurements taken by Kimley-Horn, March 20, 2025. See [Appendix A](#) for noise measurement results.

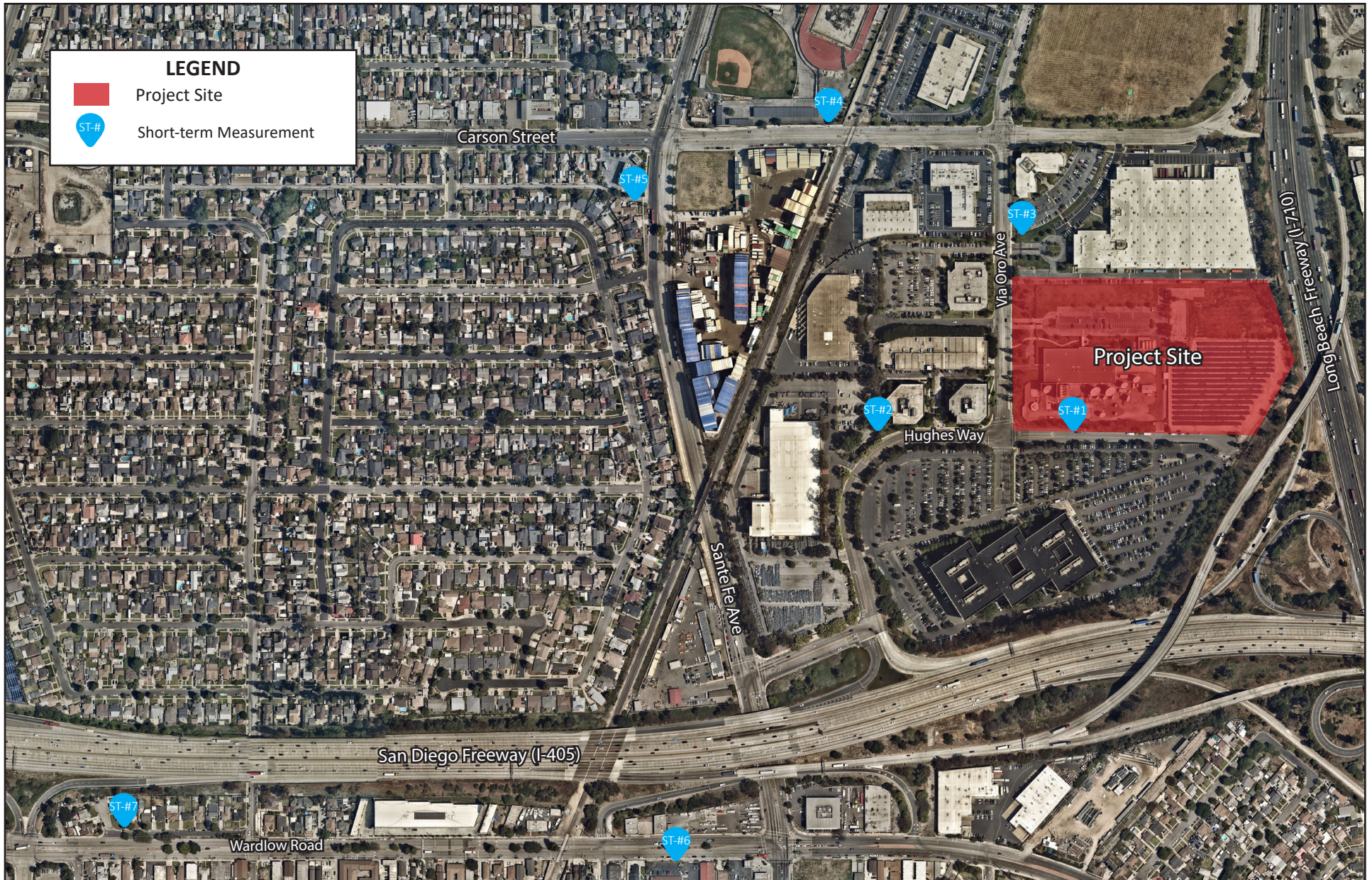


EXHIBIT 6: Noise Measurement Locations

3800 VIA ORO AVENUE PROJECT

4.3 Nearby Noise-Sensitive Land Uses

Noise-sensitive land uses are those in which people are more susceptible to the effects of noise pollution than is the general population. Sensitive land uses that are in proximity to stationary sources of noise and vibration are of particular concern. Noise sensitive uses typically include residences, hospitals, schools, childcare facilities, and places of assembly. The nearest noise-sensitive land use is the Rancho Dominguez Preparatory School, located 920 feet to the northwest of the Project Site when measured from property line to property line. However, the nearest classroom buildings are located approximately 1,390 feet from the Project site boundary line. Other noise-sensitive land uses nearest to the Project Site are shown in [Table 6: Noise and Vibration Sensitive Receptors](#). The industrial and commercial land uses surrounding the Project Site are not considered noise sensitive. **Exhibit 7: Noise and Vibration Sensitive Receptors** shows nearby land uses.

Table 6: Noise and Vibration Sensitive Receptors	
Receptor Description	Distance ¹ and Direction from the Project
Rancho Dominguez Preparatory School	920 feet to the northwest ³
Single-Family Residences ²	1,080 feet to the south
Single-Family Residences ²	1,300 feet to the west
- Distance measured from the Project Site boundary to the nearest sensitive receptor property line. - Receptors are located within the City of Long Beach. - The distance from property line to property line is 920 feet, with school parking lots being closest to the Project Site. School sports fields are slightly farther, at 1,050 feet from the Project Site, followed by classroom buildings, at 1,390 feet from the Project Site.	
Source: Google Earth, 2025.	

Vibration sensitive receivers are generally similar to noise sensitive receivers but may also include businesses, such as research facilities and laboratories that use vibration-sensitive equipment. The industrial and commercial land uses surrounding the Project Site are not considered vibration sensitive, and there are no historic buildings in the vicinity. Therefore, the vibration-sensitive receptors are the same as the noise-sensitive receptors discussed above.



EXHIBIT 7: Noise and Vibration Sensitive Receptors

3800 VIA ORO AVENUE PROJECT

5.0 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA Thresholds

California Environmental Quality Act (CEQA) Guidelines Appendix G contains analysis guidelines related to noise impacts. These guidelines have been used by the City to develop thresholds of significance for this analysis. A project would create a significant environmental impact if it would:

- NOI-1** 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;
- NOI-1** Generate excessive ground-borne vibration or ground-borne noise levels; and
- NOI-3** For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.

5.2 Thresholds of Significance

Construction

The City's Noise Element relies on the FTA Transit Noise and Vibration Impact Assessment Manual (2018) (FTA Noise and Vibration Manual), which identifies a maximum 8-hour noise level standard of 80 dBA L_{eq} at residential uses and 90 dBA L_{eq} at industrial uses for short-term construction activities. Noise generated by short-term construction activities below the FTA's maximum 8-hour noise level standard would have a less than significant impact. Construction noise was also evaluated using the LAUSD exterior noise standard of 67 dBA L_{eq} and 3 dBA or more increase over ambient standard.

Operations

Operational noise is evaluated based on the standards within the City's noise standards and General Plan. As mentioned previously, the closest sensitive receptor is approximately 920 feet northwest of the Project Site. The Project Site is also located adjacent to industrial uses within the City of Long Beach. Per the City of Long Beach Municipal Code, the exterior noise level threshold for District 4 land uses is 70 dBA. Therefore, 70 dBA was used as the operational exterior noise standard in this analysis. Noise levels exceeding these thresholds anytime at the property boundary of a school, residence, or industrial use would be considered a significant impact.

Vibration

Per FTA guidance, a vibration limit of 12.7 millimeters per second (mm/sec; 0.5 inch/sec) PPV is used for buildings that are structurally sound and designed to modern engineering standards. A conservative vibration limit of 5 mm/sec (0.2 inches/sec) PPV has been used for buildings that are found to be structurally sound but where structural damage is a major concern. For historic buildings or buildings that are documented to be structurally weakened, a limit of 2 mm/sec (0.08 inches/sec) PPV is used to provide the highest level of protection. Long Beach Municipal Code Section 8.80.200 contains a "vibration perception threshold"; however, this threshold is applicable to the operation

of any device, whereas construction vibration would be a temporary source of groundborne vibration that would not expose surrounding properties to daily vibration beyond completion of Project construction.

5.3 Methodology

Construction

Construction noise levels were based on typical noise levels generated by construction equipment published by the Federal Transit Administration (FTA) and Federal Highway Administration (FHWA). Construction noise is assessed in dBA L_{eq} . This unit is appropriate because L_{eq} can be used to describe noise level from operation of each piece of equipment separately, and levels can be combined to represent the noise level from all equipment operating during a given period.

Reference noise levels are used to estimate operational noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

Operations

The analysis of the Project's noise environment is based on noise prediction modeling and empirical observations. Reference noise level data are used to estimate the Project's operational noise impacts from stationary sources. Noise levels were collected from published sources from similar types of activities and used to estimate noise levels expected with the Project's stationary sources. The reference noise levels are used to represent a worst-case noise environment as noise level from stationary sources can vary throughout the day.

Vibration

Ground-borne vibration levels associated with construction activities for the Project were evaluated utilizing typical ground-borne vibration levels associated with construction equipment, obtained from FTA published data for construction equipment. Potential ground-borne vibration impacts related to building/structure damage and interference with sensitive existing operations were evaluated, considering the distance from construction activities to nearby land uses and typically applied criteria for structural damage and human annoyance.

6.0 POTENTIAL IMPACTS AND MITIGATION

6.1 Acoustical Impacts

Threshold NOI-1 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?

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., demolition, land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the sensitive receptors located to the northwest and south of the construction site. However, it is acknowledged that construction activities would occur throughout the Project Site and would not be concentrated at a single point near sensitive receptors.

Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Typical operating cycles for the construction equipment used in these phases may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping material or the hydraulic movement of machinery lifts). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in [Table 7: Typical Construction Noise Levels](#).

Equipment	Noise Level (dBA) at 50 feet from Source
Air Compressor	80
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85

Table 7: Typical Construction Noise Levels	
Equipment	Noise Level (dBA) at 50 feet from Source
Pile-driver (Sonic)	95
Pneumatic Tool	85
Pump	77
Roller	85
Saw	76
Scraper	85
Shovel	82
Truck	84
Note: Typical noise levels from representative equipment are based on measured data from railroad construction equipment taken during the 1976 Northeast Corridor Improvement Project, the FHWA Roadway Construction Noise Model, EPA data, and other measured data. Therefore, typical noise levels displayed generally incorporate older Tier 2 and Tier 3 equipment.	
Source: Federal Transit Administration, <i>Transit Noise and Vibration Impact Assessment Manual</i> , September 2018.	

Following the FTA's methodology for quantitative construction noise assessments, the FHWA Roadway Construction Noise Model (RCNM) was used to predict construction noise. The noise levels identified in [Table 8: Project Construction Noise Levels](#), show the exterior construction noise at the nearest residential and industrial receptors, without accounting for attenuation from existing physical barriers.

Construction activities would not take place between the hours of 7:00 p.m. and 7:00 a.m. in compliance with LBMC Section 8.80.202. As discussed above, the City's General Plan Noise Element utilizes the criteria from the FTA Transit Noise and Vibration Manual to establish significance thresholds. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. For residential uses, the daytime noise threshold is 80 dBA L_{eq} averaged over a 8-hour period ($L_{eq(8-hr)}$) and 90 dBA $L_{eq(8-hr)}$ at commercial and industrial uses. In compliance with the City's Municipal Code, it is assumed that construction would not occur during the noise-sensitive nighttime hours. The City's permitted hours of construction are required in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant impact.

Construction-related activities would temporarily increase ambient noise levels in the proposed Project vicinity. Construction-related noise levels at and near the Project Site would fluctuate depending on the level and type of construction activity on a given day. During construction, exterior noise levels could affect the various uses surrounding the site. Construction activities would occur throughout the Project Site and would not be concentrated at a single point near sensitive receptors. Noise impacts for mobile construction equipment are typically assessed as emanating from the main construction activity area.⁸ For the proposed Project, the main construction activity area would be approximately 1,390 feet from the nearest sensitive receptor, Rancho Dominguez Preparatory

⁸ For the purposes of this analysis, the main construction activity area is defined as the center of the Project Site due to the building placement and orientation. Although some construction activities may occur at closer distances from the nearest properties, construction equipment would be dispersed throughout the Project Site during various construction activities. Therefore, main construction activity area represents the most appropriate distance based on the sporadic nature of construction activities.

School to the northwest.⁹ However, the distance from the Project Site boundary to the school property line, 920 feet, was conservatively used to model construction noise.¹⁰ Noise levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources, such as industrial machinery.

The noise levels identified in [Table 8](#), show the estimated exterior construction noise at the nearest sensitive receptors to the northwest and south of the Project Site. Based on calculations using the Roadway Construction Noise Model (RCNM), construction noise levels would range from approximately 47.0 dBA L_{eq} to 62.9 dBA L_{eq} at the nearest sensitive receptors and 79.7 dBA L_{eq} to 88.7 dBA L_{eq} at the nearest industrial receptor. RCNM calculations utilize noise levels associated with different types and number of construction equipment operating simultaneously.

Construction Phase	Receptor Location			Worst Case Modeled Noise Level, dBA L_{eq} (8-hour) ²	Noise Standard, dBA L_{eq} ³	Exceeded?
	Land Use	Distance (feet) ¹	Direction			
Demolition	School	920	Northwest	61.2	80	No
	Residential	1,080	South	59.8	80	No
	Industrial	25 – 280	North	88.7	90	No
Site Preparation	School	920	Northwest	62.3	80	No
	Residential	1,080	South	60.9	80	No
	Industrial	25 – 280	North	88.6	90	No
Grading	School	920	Northwest	62.9	80	No
	Residential	1,080	South	61.5	80	No
	Industrial	25 – 280	North	87.4	90	No
Building Construction	School	920	Northwest	61.6	80	No
	Residential	1,080	South	60.2	80	No
	Industrial	25 – 280	North	83.4	90	No
Paving	School	920	Northwest	61.2	80	No
	Residential	1,080	South	59.8	80	No
	Industrial	25 – 280	North	87.5	90	No
Architectural Coating	School	920	Northwest	48.4	80	No
	Residential	1,080	South	47.0	80	No
	Industrial	25 – 280	North	79.7	90	No

1. For school and residential receptors, distance conservatively measured from the location of the Project Site boundary to the receptor's nearest property line. For industrial receptors, distances are staggered for different pieces of equipment between 25 and up to 280 feet (distance from receptor property line to main construction area or center of Project Site). Staggered distances represents a conservative estimate because equipment would not be stationary and some pieces of equipment would be located farther than 280 feet away.

2. Modeled noise levels conservatively assume the simultaneous operation of all pieces of equipment.

3. The FTA Noise and Vibration Manual establishes construction noise standards of 80 dBA L_{eq} (8-hour) for residential uses and 90 dBA L_{eq} for industrial uses.

⁹ The distance from property line to property line is 920 feet, with school parking lots being closest to the Project Site. School sports fields are slightly farther, at 1,050 feet from the Project Site, followed by classroom buildings at 1,390 from the Project Site.

¹⁰ As detailed in Section 3.0, *Project Description*, the distance from the Rancho Dominguez Preparatory School property line to the Project site's property line is 920 feet, with school parking lots being closer to the Project site. School sports fields are slightly farther, at 1,050 feet from the Project site, followed by occupiable classroom buildings, at 1,390 feet from the Project site.

Table 8: Project Construction Noise Levels

Construction Phase	Receptor Location			Worst Case Modeled Noise Level, dBA Leq (8-hour) ²	Noise Standard, dBA Leq ³	Exceeded?
	Land Use	Distance (feet) ¹	Direction			

Source: Federal Highway Administration, Roadway Construction Noise Model, 2006. Refer to [Appendix A](#) for noise modeling results.

The proposed Project construction noise levels would be consistent with the FTA's construction noise standard and no construction noise impacts would occur. As shown in [Table 8](#), construction noise from the Project would not exceed the LAUSD standard of 67 dBA Leq at the nearest school (Rancho Dominguez Preparatory School) during any construction phase. Furthermore, based on ambient noise measurements shown above in [Table 5](#) (ST-4), construction noise from the Project would not exceed the LAUSD increase over ambient standard of 3 dBA or more.

Operations

Implementation of the Project would create new sources of noise in the vicinity of the Project Site. The major noise sources associated with the Project include the following:

- Mechanical equipment (i.e., trash compactors, air conditioners, backup generators, etc.)
- Loading dock activities (i.e., slow moving trucks on the site, maneuvering and idling trucks, air brakes, backup beepers, equipment noise)
- Parking areas (i.e., car door slamming, car radios, engine start-up, and car pass-by)
- Landscape maintenance
- Emergency backup generator
- Off-site traffic noise.

Mechanical Equipment. Potential stationary noise sources related to long-term operation of the Project Site would include mechanical equipment. Mechanical equipment (e.g., heating ventilation and air conditioning [HVAC] equipment) typically generates noise levels of approximately 55.4 dBA Leq at 50 feet.¹¹

Truck and Loading Dock Noise. During loading and unloading activities, noise would be generated by the trucks' diesel engines as they move toward and from the loading docks, exhaust systems, and brakes during low gear shifting' braking activities; dropping down the dock ramps; and maneuvering away from the docks. Loading dock noise is approximately 64.4 dBA Leq at 50 feet.¹²

Furthermore, loading dock doors would be surrounded with protective aprons, gaskets, or similar improvements that, when a trailer is docked, would serve as a noise barrier between the interior

¹¹ Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

¹² Loading docks reference noise level measurements conducted by Kimley-Horn on December 18, 2018. Loading dock activities included trucks arriving at the docks, backing up, and loading/unloading using pallet jack.

warehouse activities and the exterior loading area. This would attenuate noise emanating from interior activities, and as such, interior loading and associated activities would be permissible during all hours of the day. Additionally, truck idling would be limited to no more than five minutes based on guidelines established by the South Coast Air Quality Management District. Therefore, the Project would result in a less than significant impact related to stationary noise levels.

Parking Lot Noise. The Project would provide a total of 333 parking stalls for passenger vehicles including 67 electronic vehicle (EV) capable spaces. Parking stalls would be located on the west, north, and east sides of the Project Site. Nominal parking noise would occur within the on-site parking facilities. Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA L_{eq} ¹³ at 50 feet and may be an annoyance to adjacent noise-sensitive receptors. Conversations in parking areas may also be an annoyance to nearby sensitive receptors. Sound levels of speech typically range from 33 dBA at 50 feet for normal speech to 50 dBA L_{eq} at 50 feet for very loud speech.¹⁴ It should be noted that parking lot noises are instantaneous noise levels compared to noise standards in the hourly L_{eq} metric, which are averaged over the entire duration of a time period.

Furthermore, parking lot noise also currently occurs at the adjacent properties under existing conditions and would be consistent with the existing noise in the vicinity and would be partially masked by background noise from traffic along area roadways. Noise associated with parking lot activities is not anticipated to exceed the City's noise standards during operation. Therefore, noise impacts from parking lots would be less than significant.

Landscape Maintenance Activities. Development and operation of the Project includes new landscaping that would require periodic maintenance. Noise generated by a gasoline-powered lawnmower is estimated to be approximately 50 dBA at a distance of 50 feet. Further, maintenance activities would operate during daytime hours for brief periods of time as allowed by the LBMC and would not permanently increase ambient noise levels in the Project vicinity and would be consistent with activities that currently occur at the surrounding uses. Therefore, with adherence to the LBMC, impacts associated with landscape maintenance would be less than significant.

Emergency Backup Generator. Implementation of the Project would also include the installation of a backup generator. It was conservatively assumed that the emergency backup generator would be located at the northwest portion of the site, closest to the nearest sensitive receptor. However, the installed emergency backup generator may be located even further away from nearby sensitive receptors. Diesel generators typically generate noise levels of approximately 68.3 dBA at 50 feet including a sound enclosure up to 10 dBA. The Project would include one emergency backup generator.

Combined Noise Levels. Project operations could potentially result in simultaneous noise generating activities associated with the mechanical equipment, truck loading area, parking lot area,

¹³ Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

¹⁴ Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, 2015.

landscape maintenance, backup alarms, and backup generator. The combined noise level associated with the simultaneous operation of all on-site noise sources at the nearest industrial and sensitive receptor in the City of Long Beach are shown in Table 9: Project Operational Noise Levels.

Table 9: Project Operational Noise Levels

Nearest Land Use	Distance (feet)	Reference Level at 50 ft (dBA)	Project Contribution to Noise Level at Receiver (dBA) ⁵	Exterior Noise Standard (dBA) ⁶	Exceed Standard	Ambient Noise Level (Leq) ⁷	Combined Noise at Receiver	Incremental Increase (dBA)	Exceed Threshold
Mechanical Equipment (HVAC) ¹									
Industrial	140	55.4	46.5	70	NO	64.0	64.1	0.1	NO
School	1,040		29.0	70	NO	65.9	65.9	0.0	NO
Residences	1,100		28.6	70	NO	68.6	68.6	0.0	NO
Truck Loading Area ²									
Industrial	70	64.4	61.5	70	NO	64.0	65.9	1.9	NO
School	965		38.7	70	NO	65.9	65.9	0.0	NO
Residences	1,455		35.1	70	NO	68.6	68.6	0.0	NO
Parking Area ³									
Industrial	35	48.9	52.0	70	NO	64.0	64.3	0.3	NO
School	965		23.1	70	NO	65.9	65.9	0.0	NO
Residences	1,080		22.2	70	NO	68.6	68.6	0.0	NO
Landscape Maintenance ⁴									
Industrial	15	50.0	60.5	70	NO	64.0	65.6	1.6	NO
School	920		24.7	70	NO	65.9	65.9	0.0	NO
Residences	1,010		23.9	70	NO	68.6	68.6	0.0	NO
Backup Generator									
Industrial	140	68.3	59.3	70	NO	64.0	65.3	1.3	NO
School	1,030		42.0	70	NO	65.9	65.9	0.0	NO
Residences	1,100		41.4	70	NO	68.6	68.6	0.0	NO
Combined Noise									
Industrial	290	70.0	54.7	70	NO	64.0	64.5	0.5	NO
School	1,490		40.5	70	NO	65.9	65.9	0.0	NO
Residences	1,415		41.0	70	NO	68.6	68.6	0.0	NO
1. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, <i>Noise Navigator Sound Level Database with Over 1700 Measurement Values</i> , July 6, 2010.									
2. Loading dock reference noise level measurements conducted by Kimley-Horn on December 18, 2018. While trucks using the site may be newer and therefore have lower reference noise levels, a conservative reference level was used for analysis purposes.									
3. Kariel, H. G., <i>Noise in Rural Recreational Environments</i> , Canadian Acoustics 19(5), 3-10, 1991.									
4. U.S. EPA, <i>Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances</i> , 1971.									
5. Calculated using the inverse square law formula for sound attenuation: dBA2 = dBA1+20Log(d1/d2), where dBA2 = estimated noise level at receptor; dBA1 = reference noise level; d1 = reference distance; d2 = receptor location distance.									
6. District 4 thresholds are 70 dBA; this was used as the exterior noise standard.									
7. Ambient noise levels are based on measured noise levels from Table 5.									

At the closest sensitive receptor in the City of Long Beach (Rancho Dominguez Preparatory School) the combined noise level would approximately 65.9 dBA L_{eq} and would not exceed the City of Long Beach's allowable noise levels of 70 dBA L_{eq} . Furthermore, the combined noise levels at the nearest industrial receptor would be 64.5 dBA L_{eq} and would not exceed the 70 dBA L_{eq} standard for industrial uses. Therefore, noise impacts associated with the simultaneous operation of all on-site noise sources would be less than significant and would not be perceptible.

Off-Site Traffic Noise. Implementation of the Project would generate increased traffic volumes along nearby roadway segments. Traffic data provided by *Trip Generation Traffic Memorandum* (Kimley-Horn, Inc., 2025) shows that the proposed Project would generate 1,250 daily trips, which would result in noise increases on Project area roadways. In general, a traffic noise increase of less than 3 dBA is barely perceptible to people, while a 5-dBA increase is readily noticeable.¹⁵ Generally, traffic volumes on Project area roadways would have to approximately double for the resulting traffic noise levels to increase by 3 dBA. Therefore, permanent increases in ambient noise levels of less than 3 dBA are considered to be less than significant.

Traffic noise levels for roadways primarily affected by the Project were calculated using the FHWA's Highway Noise Prediction Model (FHWA-RD-77-108). Traffic noise modeling was conducted for conditions with and without the Project, based on traffic volumes (Kimley Horn, 2025).

Table 10: Opening Year and Opening Year Plus Project Traffic Noise shows the opening year conditions and opening year plus Project traffic.

Roadway Segment	Opening Year Conditions (dBA CNEL)	Opening Year With Project (dBA CNEL)	Change from No Project Conditions	Applicable Standard	Significant?
Hughes Way Between Santa Fe Avenue and Via Oro Avenue	59.3	60.1	0.8	3 dBA	No
Hughes Way East of Via Oro Avenue	56.9	58.4	1.5	3 dBA	No
Via Oro Avenue Between Carson Street and Hughes Way	56.9	57.4	0.5	3 dBA	No
Warnock Way Between Santa Fe Avenue and Hughes Way	62.2	62.5	0.3	3 dBA	No
Carson Street Between Santa Fe Avenue and Via Oro Avenue	58.6	58.7	0.1	3 dBA	No
Santa Fe Avenue South of Wardlow Road	64.0	64.0	0.0	3 dBA	No
Santa Fe Avenue Between Wardlow Road and Warnock Way	64.8	64.9	0.1	3 dBA	No
Santa Fe Avenue Between Warnock Way and Carson Street	63.8	63.8	0.0	3 dBA	No
Santa Fe Avenue North of Carson Street	64.5	64.5	0.0	3 dBA	No

¹⁵ Federal Highway Administration, *Highway Traffic Noise Analysis and Abatement Policy and Guidance, Noise Fundamentals*, https://www.fhwa.dot.gov/Environment/noise/regulations_and_guidance/polguide/polguide02.cfm, accessed January 3, 2024.

Wardlow Road Between I-405 Ramps and Seabright Avenue	61.7	61.8	0.1	3 dBA	No
Wardlow Road Between Seabright Avenue and Santa Fe Avenue	63.4	63.5	0.1	3 dBA	No
Wardlow Road East of Santa Fe Avenue	62.4	62.4	0.1	3 dBA	No
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.					
1. Traffic noise levels are at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.					
2. These are the 12 roadway segments considered for the Project. Other nearby roadways are not expected to add a measurable number of vehicle trips and therefore are not needed in the intersection operational analysis.					
Source: Based on data from the <i>Transportation Analysis</i> (Kimley Horn, 2025). Refer to Appendix A for traffic noise modeling assumptions and results.					

As previously described, CNEL is a 24-hour average L_{eq} with a 5 dBA weighting during the hours of 7:00 a.m. to 10:00 a.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. Project noise levels 100 feet from the centerline would range from 57.4 dBA CNEL to 64.9 dBA CNEL. The Project would have the highest increase of 1.5 dBA CNEL on Hughes Way East of Via Oro Avenue. Therefore, the Project roadway noise would not result in a traffic noise increase of 3 dBA or more and would not expose people to severe noise levels. Impacts would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold NOI-2 Would the Project generate excessive ground-borne vibration or ground-borne noise levels?

Increases in ground-borne vibration levels attributable to the proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project Site would have the potential to result in varying degrees of temporary ground-borne vibration, depending on the specific construction equipment used and the operations involved.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations in their 2018 *Transit Noise and Vibration Impact Assessment Manual*. The types of construction vibration impacts include human annoyance and building damage. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 in/sec) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time (0.20 in/sec annoyance threshold).¹⁶ Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, for a building that is constructed with reinforced

¹⁶ California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, Table 5, April 2020.

concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.20 in/sec is considered safe and would not result in any construction vibration damage.

The nearest structure to the Project Site is the industrial use building located 40 feet to the north of the Project Site. **Table 11: Typical Construction Equipment Vibration Levels**, lists vibration levels at 25 feet and 40 feet for typical construction equipment. Ground-borne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in **Table 11**, based on FTA data, vibration velocities from typical heavy construction equipment operations that could be used during Project construction range from 0.002 to 0.104 in/sec PPV at 40 feet from the source of activity (the distance from active construction zone to the nearest structure to the north), which is below the FTA's 0.20 PPV threshold for structural damage and Caltrans threshold for annoyance. Therefore, vibration impacts associated with the Project construction would be less than significant.

Table 11: Typical Construction Equipment Vibration Levels		
Equipment	Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 40 Feet (in/sec)¹
Vibratory Roller	0.210	0.104
Large Bulldozer	0.089	0.044
Loaded Trucks	0.076	0.038
Small Bulldozer/ Tractors	0.003	0.002
1. Calculated using the following formula: $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, <i>Transit Noise and Vibration Impact Assessment Manual</i> , 2018; D = the distance from the equipment to the receiver.		
Source: Federal Transit Administration, <i>Transit Noise and Vibration Impact Assessment Manual</i> , 2018.		

Once operational, the Project would not be a significant source of ground-borne vibration. Ground-borne vibration surrounding the Project currently results from heavy-duty vehicular travel (e.g., refuse trucks, heavy duty trucks, delivery trucks, and transit buses) on the nearby local roadways. Operations of the Project would include periodic truck activities. Due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity. According to the FTA's *Transit Noise and Vibration Impact Assessment*, trucks rarely create vibration levels that exceed 70 VdB (equivalent to 0.012 inches per second PPV) when they are on roadways. Therefore, trucks operating at the Project Site or along surrounding roadways would not exceed FTA thresholds for building damage or annoyance. Impacts would be less than significant in this regard.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold NOI-3 **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?**

The nearest airport to the Project Site is the Long Beach Airport, a public use strip, located approximately two and half miles to the east. The Project Site is not within 2 miles of a public airport or private airfield or identified within an airport land use plan. Further, there are not any specific flight corridors that overfly the City. Therefore, the Project would not expose people residing or working in the Project area to excessive airport- or airstrip-related noise levels and no mitigation is required.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6.2 Cumulative Noise Impacts

Cumulative Construction Noise

The Project's construction activities would not result in a substantial temporary increase in ambient noise levels. Construction noise would be periodic and temporary noise impacts that would cease upon completion of construction activities. The Project would contribute to other proximate construction Project noise impacts if construction activities were conducted concurrently. However, based on the noise analysis above, the Project's construction-related noise impacts would be less than significant by implementing the City of Long Beach Municipal Code.

Construction activities at other planned and approved projects near the Project Site would be required to comply with applicable City rules related to noise and would take place during daytime hours on the days permitted by the applicable Municipal Code, and projects requiring discretionary City approvals would be required to evaluate construction noise impacts, comply with the City's standard conditions of approval, and implement mitigation, if necessary, to minimize noise impacts. Construction noise impacts are by nature localized. Since noise dissipates as it travels away from its source, noise impacts would be limited to the Project Site and vicinity. Therefore, Project construction would not result in a cumulatively considerable contribution to significant cumulative impacts, assuming such a cumulative impact existed, and impacts in this regard are not cumulatively considerable.

Cumulative Operational Noise

Cumulative Off-Site Traffic Noise. Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the proposed Project and other foreseeable projects. Cumulative noise impacts generally occur as a result of increased traffic on local roadways due to buildout of the Project and other projects in the vicinity. However, the Project is projected to result in 1,250 new daily vehicular and would result in a minimal traffic noise increase (less than 3.0 dBA) along local roadways as shown in [Table 10](#). Therefore, the Project's contribution would not be cumulatively considerable.

Cumulative Stationary Noise. Stationary noise sources of the Project would not result in an incremental increase in non-transportation noise sources in the vicinity of the site. Therefore, operational noise caused by the proposed Project would be less than significant. Similar to the Project, other planned and approved projects would be required to mitigate for stationary noise impacts at nearby sensitive receptors, if necessary. As stationary noise sources are generally localized, there is a limited potential for other projects to contribute to cumulative noise impacts.

No known present or reasonably foreseeable projects would combine with the operational noise levels generated by the Project to increase noise levels above acceptable standards because each project must comply with applicable City regulations that limit operational noise. Therefore, the Project, together with other projects, would not create a significant cumulative impact, and even if there was such a significant cumulative impact, the Project would not make a cumulatively considerable contribution to significant cumulative operational noises.

Given that noise dissipates as it travels away from its source, operational noise impacts from on-site activities and other stationary sources would be limited to the Project Site and immediate vicinity. Thus, cumulative operational noise impacts from related projects, in conjunction with project-specific noise impacts, would not be cumulatively significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

7.0 REFERENCES

1. California Department of Transportation, *Traffic Noise Analysis Protocol*, 2020.
2. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.
3. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020.
4. City of Long Beach, *General Plan Noise Element*, 2023.
5. City of Long Beach *Municipal Code*, 2025.
6. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.
7. Federal Highway Administration, *Noise Fundamentals*, 2017.
8. Federal Highway Administration, *Roadway Construction Noise Model*, 2006.
9. Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, 1992.
10. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.
11. James P. Cowan, *Handbook of Environmental Acoustics*, 1994.
12. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

Appendix A

Noise Data

Noise Measurement Field Data

Project:	Via Oro	Job Number:	194717001
Site No.:	1	Date:	3/20/2025
Analyst:	Daniel Karz and Kennedy Caudle	Time:	9:42am
Location:	Via Oro Avenue and Hughes Way		

Noise Sources: Birds chirping, nearby traffic from street and freeway

Comments:

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
59.3	54.8	69.3	87.7

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	60
Wind (mph):	2
Sky:	Clear
Bar. Pressure:	30.14
Humidity:	44%

Photo:



Measurement Report

Report Summary

Meter's File Name	LxT_Data.041.s	Computer's File Name	LxTse_0005586-20250320 084231-LxT_Data.041.ldbin
Meter	LxT SE 0005586	Firmware	2.404
User		Location	
Job Description			
Note			

Measurement

Start Time	2025-03-20 08:42:31	Duration	0:10:00.0		
End Time	2025-03-20 08:52:31	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-03-17 14:38:58	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics					
LA _{eq}	59.3 dB				
LAE	87.1 dB	SEA	---	dB	
EA	56.7 µPa²h				
LA _{peak}	87.7 dB		2025-03-20 08:44:06		
LAS _{max}	69.3 dB		2025-03-20 08:42:31		
LAS _{min}	54.8 dB		2025-03-20 08:43:41		
LA _{eq}	59.3 dB				
LC _{eq}	73.2 dB	LC _{eq} - LA _{eq}	13.9 dB		
LAL _{eq}	62.4 dB	LAL _{eq} - LA _{eq}	3.1 dB		
Exceedances		Count	Duration		
LAS > 85.0 dB		0	0:00:00.0		
LAS > 115.0 dB		0	0:00:00.0		
LApk > 135.0 dB		0	0:00:00.0		
LApk > 137.0 dB		0	0:00:00.0		
LApk > 140.0 dB		0	0:00:00.0		
Community Noise		LDN	LDay	LNight	
		59.3 dB	59.3 dB	---	dB
		LDEN	LDay	LEve	LNight
		59.3 dB	59.3 dB	---	dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L _{eq}	59.3 dB		73.2 dB		--- dB	
L _{S(max)}	69.3 dB	2025-03-20 08:42:31	--- dB	None	--- dB	None
L _{S(min)}	54.8 dB	2025-03-20 08:43:41	--- dB	None	--- dB	None
L _{Peak(max)}	87.7 dB	2025-03-20 08:44:06	--- dB	None	--- dB	None

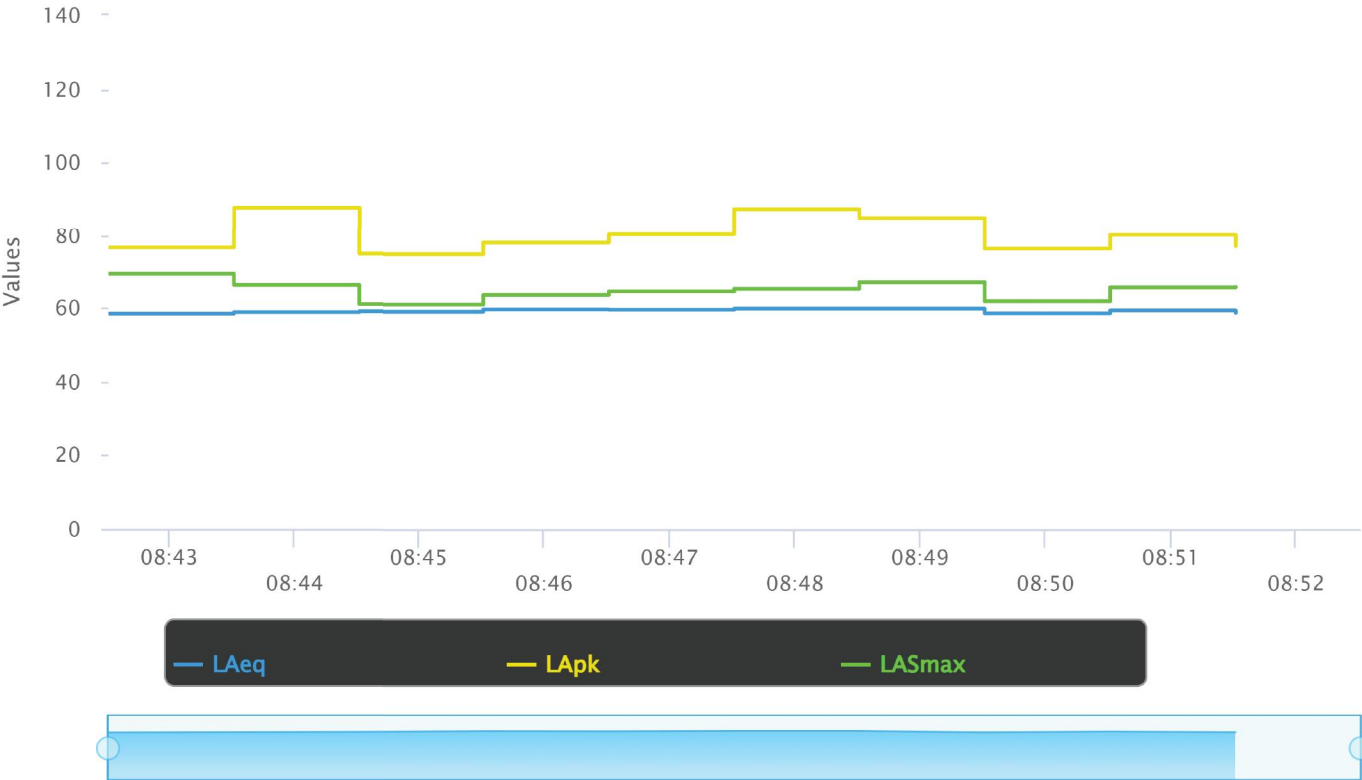
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	62.7 dB
LAS 10.0	61.2 dB
LAS 33.3	59.3 dB
LAS 50.0	58.7 dB
LAS 66.6	58.1 dB
LAS 90.0	56.8 dB

Time History



Dark
Mode

Noise Measurement Field Data

Project:	Via Oro	Job Number:	194717001
Site No.:	ST-2	Date:	3/20/2025
Analyst:	Daniel Karz and Kennedy Caudle	Time:	10:08am

Location: Hughes Way

Noise Sources: Traffic on road, birds chirping, plane and helicopter flying above

Comments:

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
64.8	53.1	81.2	103.0

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	62
Wind (mph):	3
Sky:	Clear
Bar. Pressure:	30.14
Humidity:	44%

Photo:



Measurement Report

Report Summary

Meter's File Name	LxT_Data.042.s	Computer's File Name	LxTse_0005586-20250320 090823-LxT_Data.042.ldbin
Meter	LxT SE 0005586	Firmware	2.404
User		Location	
Job Description			
Note			

Measurement

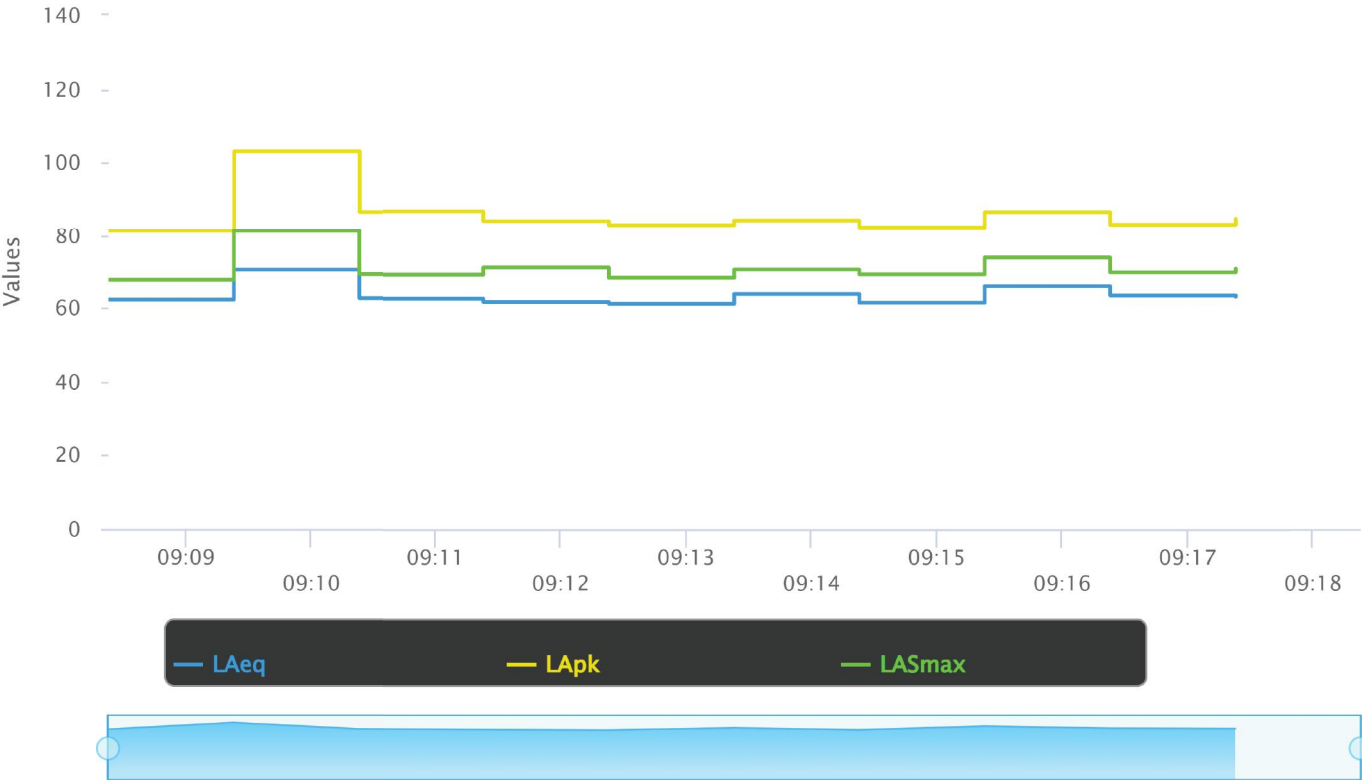
Start Time	2025-03-20 09:08:23	Duration	0:10:00.0		
End Time	2025-03-20 09:18:23	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-03-17 14:38:58	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics					
LA _{eq}	64.8 dB				
LAE	92.6 dB	SEA	---	dB	
EA	201.3 µPa²h				
LA _{peak}	103.0 dB		2025-03-20 09:09:58		
LAS _{max}	81.2 dB		2025-03-20 09:09:58		
LAS _{min}	53.1 dB		2025-03-20 09:08:50		
LA _{eq}	64.8 dB				
LC _{eq}	74.7 dB	LC _{eq} - LA _{eq}	9.9 dB		
LAL _{eq}	67.4 dB	LAL _{eq} - LA _{eq}	2.6 dB		
Exceedances		Count	Duration		
LAS > 85.0 dB		0	0:00:00.0		
LAS > 115.0 dB		0	0:00:00.0		
LApk > 135.0 dB		0	0:00:00.0		
LApk > 137.0 dB		0	0:00:00.0		
LApk > 140.0 dB		0	0:00:00.0		
Community Noise		LDN	LDay	LNight	
		64.8 dB	64.8 dB	---	dB
		LDEN	LDay	LEve	LNight
		64.8 dB	64.8 dB	---	dB

Any Data								
			A			C		
			Level	Time Stamp		Level	Time Stamp	Z
								Time Stamp
L _{eq}			64.8 dB			74.7 dB		--- dB
L _{S(max)}			81.2 dB	2025-03-20 09:09:58		--- dB	None	--- dB
L _{S(min)}			53.1 dB	2025-03-20 09:08:50		--- dB	None	--- dB
L _{Peak(max)}			103.0 dB	2025-03-20 09:09:58		--- dB	None	--- dB
Overloads			Count	Duration		OBA Count	OBA Duration	
			0	0:00:00.0		0	0:00:00.0	
Statistics								
LAS 5.0			69.4 dB					
LAS 10.0			67.3 dB					
LAS 33.3			62.8 dB					
LAS 50.0			60.5 dB					
LAS 66.6			58.2 dB					
LAS 90.0			55.4 dB					

Time History



Dark
Mode

Noise Measurement Field Data

Project:	Via Oro	Job Number:	194717001
Site No.:	3	Date:	3/20/2025
Analyst:	Daniel Karz and Kennedy Caudle	Time:	10:30am
Location:	Via Oro Avenue		

Noise Sources: Traffic from road, plane flying above

Comments:

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
64.0	49.8	80.5	100.1

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	62
Wind (mph):	4
Sky:	Clear
Bar. Pressure:	30.13
Humidity:	44%

Photo:



Measurement Report

Report Summary

Meter's File Name	LxT_Data.043.s	Computer's File Name	LxTse_0005586-20250320 093011-LxT_Data.043.ldbin
Meter	LxT SE 0005586	Firmware	2.404
User		Location	
Job Description			
Note			

Measurement

Start Time	2025-03-20 09:30:11	Duration	0:10:00.0		
End Time	2025-03-20 09:40:11	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-03-17 14:38:58	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics					
LA _{eq}	64.0 dB				
LAE	91.8 dB	SEA	---	dB	
EA	167.5 µPa²h				
LA _{peak}	100.1 dB		2025-03-20 09:37:47		
LAS _{max}	80.5 dB		2025-03-20 09:37:47		
LAS _{min}	49.8 dB		2025-03-20 09:30:11		
LA _{eq}	64.0 dB				
LC _{eq}	73.2 dB	LC _{eq} - LA _{eq}	9.2 dB		
LAL _{eq}	66.3 dB	LAL _{eq} - LA _{eq}	2.3 dB		
Exceedances		Count	Duration		
LAS > 85.0 dB		0	0:00:00.0		
LAS > 115.0 dB		0	0:00:00.0		
LApk > 135.0 dB		0	0:00:00.0		
LApk > 137.0 dB		0	0:00:00.0		
LApk > 140.0 dB		0	0:00:00.0		
Community Noise		LDN	LDay	LNight	
		64.0 dB	64.0 dB	---	dB
		LDEN	LDay	LEve	LNight
		64.0 dB	64.0 dB	---	dB

Any Data

A

C

Z

	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L _{eq}	64.0 dB		73.2 dB		--- dB	
L _{S(max)}	80.5 dB	2025-03-20 09:37:47	--- dB	None	--- dB	None
L _{S(min)}	49.8 dB	2025-03-20 09:30:11	--- dB	None	--- dB	None
L _{Peak(max)}	100.1 dB	2025-03-20 09:37:47	--- dB	None	--- dB	None

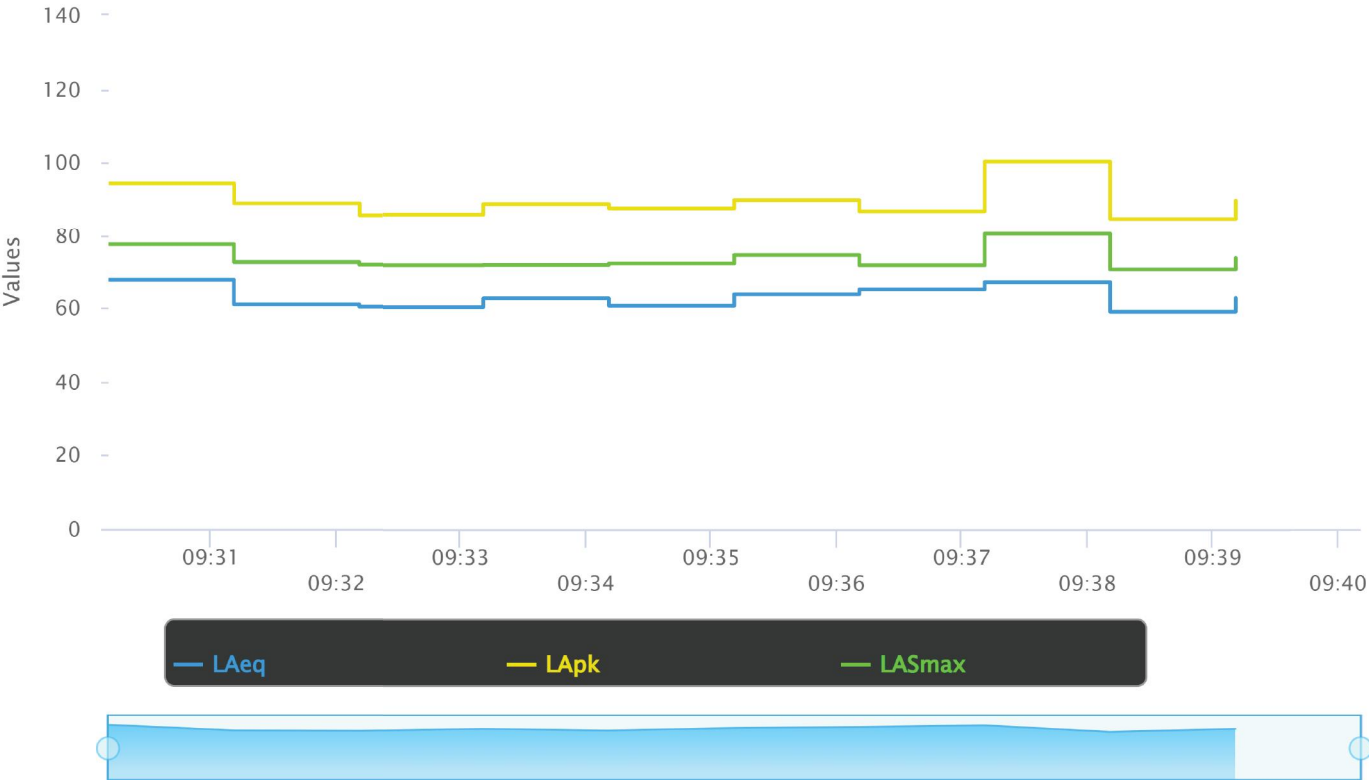
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	70.8 dB
LAS 10.0	68.2 dB
LAS 33.3	59.3 dB
LAS 50.0	56.6 dB
LAS 66.6	55.1 dB
LAS 90.0	53.3 dB

Time History



Dark
Mode

Noise Measurement Field Data

Project:	Via Oro	Job Number:	194717001
Site No.:	4	Date:	3/20/2025
Analyst:	Daniel Karz and Kennedy Caudle	Time:	10:55am

Location: Carson Street

Noise Sources: Traffic along Carson St, birds chirping, trucks passing

Comments:

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
65.9	49.6	80.2	98.6

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	63
Wind (mph):	5
Sky:	Clear
Bar. Pressure:	30.13
Humidity:	44%

Photo:



Measurement Report

Report Summary

Meter's File Name	LxT_Data.045.s	Computer's File Name	LxTse_0005586-20250320 095408-LxT_Data.045.ldbin
Meter	LxT SE 0005586	Firmware	2.404
User		Location	
Job Description			
Note			

Measurement

Start Time	2025-03-20 09:54:08	Duration	0:10:00.0		
End Time	2025-03-20 10:04:08	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-03-17 14:38:58	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics					
LA _{eq}	65.9 dB				
LAE	93.7 dB	SEA	---	dB	
EA	259.4 µPa²h				
LA _{peak}	95.0 dB		2025-03-20 09:55:03		
LAS _{max}	80.2 dB		2025-03-20 10:02:25		
LAS _{min}	49.6 dB		2025-03-20 09:58:51		
LA _{eq}	65.9 dB				
LC _{eq}	74.1 dB	LC _{eq} - LA _{eq}	8.2 dB		
LAL _{eq}	67.9 dB	LAL _{eq} - LA _{eq}	2.0 dB		
Exceedances		Count	Duration		
LAS > 85.0 dB		0	0:00:00.0		
LAS > 115.0 dB		0	0:00:00.0		
LApk > 135.0 dB		0	0:00:00.0		
LApk > 137.0 dB		0	0:00:00.0		
LApk > 140.0 dB		0	0:00:00.0		
Community Noise		LDN	LDay	LNight	
		65.9 dB	65.9 dB	---	dB
		LDEN	LDay	LEve	LNight
		65.9 dB	65.9 dB	---	dB

Any Data

A

C

Z

L_{eq}
L_{S(max)}
L_{S(min)}
L_{Peak(max)}

Level
65.9 dB
80.2 dB
49.6 dB
95.0 dB
Time Stamp
2025-03-20 10:02:25
2025-03-20 09:58:51
2025-03-20 09:55:03

Level
74.1 dB
--- dB
--- dB
--- dB
Time Stamp
None
None
None

Level
--- dB
--- dB
--- dB
Time Stamp
None
None
None

Overloads

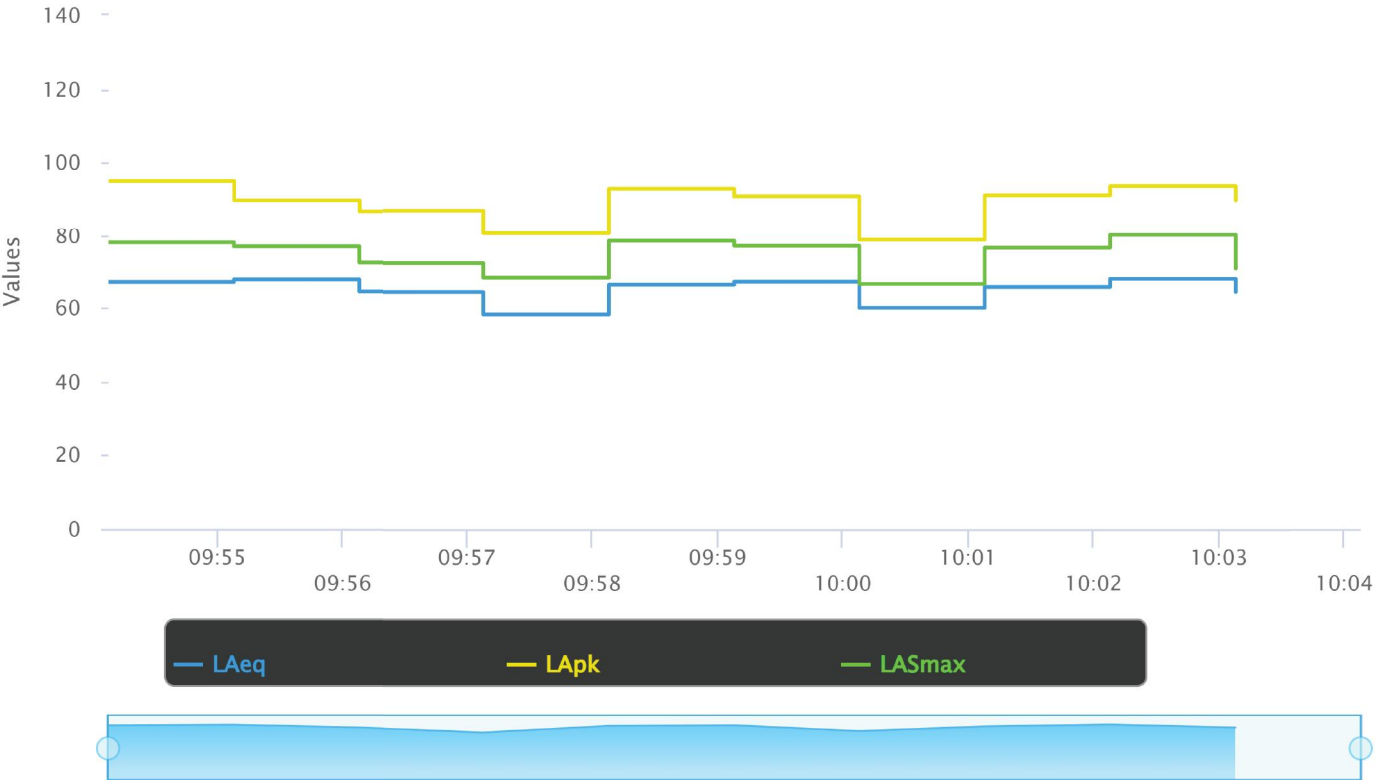
Count
0
Duration
0:00:00.0

OBA Count
0
OBA Duration
0:00:00.0

Statistics

LAS 5.0
LAS 10.0
LAS 33.3
LAS 50.0
LAS 66.6
LAS 90.0
72.5 dB
69.1 dB
63.6 dB
58.6 dB
55.1 dB
51.4 dB

Time History



Noise Measurement Field Data

Project:	Via Oro	Job Number:	194717001
Site No.:	5	Date:	3/20/2025
Analyst:	Daniel Karz and Kennedy Caudle	Time:	11:10am
Location:	Santa Fe Avenue		

Noise Sources: Traffic along street, birds chirping, plane flying above, passing trucks

Comments:

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
68.6	52.6	79.6	97.8

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	64
Wind (mph):	2
Sky:	Clear
Bar. Pressure:	30.13
Humidity:	44%

Photo:



Measurement Report

Report Summary

Meter's File Name	LxT_Data.046.s	Computer's File Name	LxTse_0005586-20250320 101135-LxT_Data.046.ldbin
Meter	LxT SE 0005586	Firmware	2.404
User		Location	
Job Description			
Note			

Measurement

Start Time	2025-03-20 10:11:35	Duration	0:10:00.0		
End Time	2025-03-20 10:21:35	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-03-17 14:38:58	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics					
LA _{eq}	68.6 dB				
LAE	96.4 dB	SEA	---	dB	
EA	483.0 µPa²h				
LA _{peak}	97.8 dB		2025-03-20 10:18:34		
LAS _{max}	79.6 dB		2025-03-20 10:13:48		
LAS _{min}	52.6 dB		2025-03-20 10:16:00		
LA _{eq}	68.6 dB				
LC _{eq}	78.3 dB	LC _{eq} - LA _{eq}	9.7 dB		
LAL _{eq}	70.4 dB	LAL _{eq} - LA _{eq}	1.8 dB		
Exceedances					
		Count	Duration		
LAS > 85.0 dB		0	0:00:00.0		
LAS > 115.0 dB		0	0:00:00.0		
LApk > 135.0 dB		0	0:00:00.0		
LApk > 137.0 dB		0	0:00:00.0		
LApk > 140.0 dB		0	0:00:00.0		
Community Noise					
	LDN		LDay		LNight
	68.6 dB		68.6 dB		--- dB
	LDEN		LDay		LEve
	68.6 dB		68.6 dB		--- dB
					LNight
					--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L _{eq}	68.6 dB		78.3 dB		--- dB	
L _{S(max)}	79.6 dB	2025-03-20 10:13:48	--- dB	None	--- dB	None
L _{S(min)}	52.6 dB	2025-03-20 10:16:00	--- dB	None	--- dB	None
L _{Peak(max)}	97.8 dB	2025-03-20 10:18:34	--- dB	None	--- dB	None

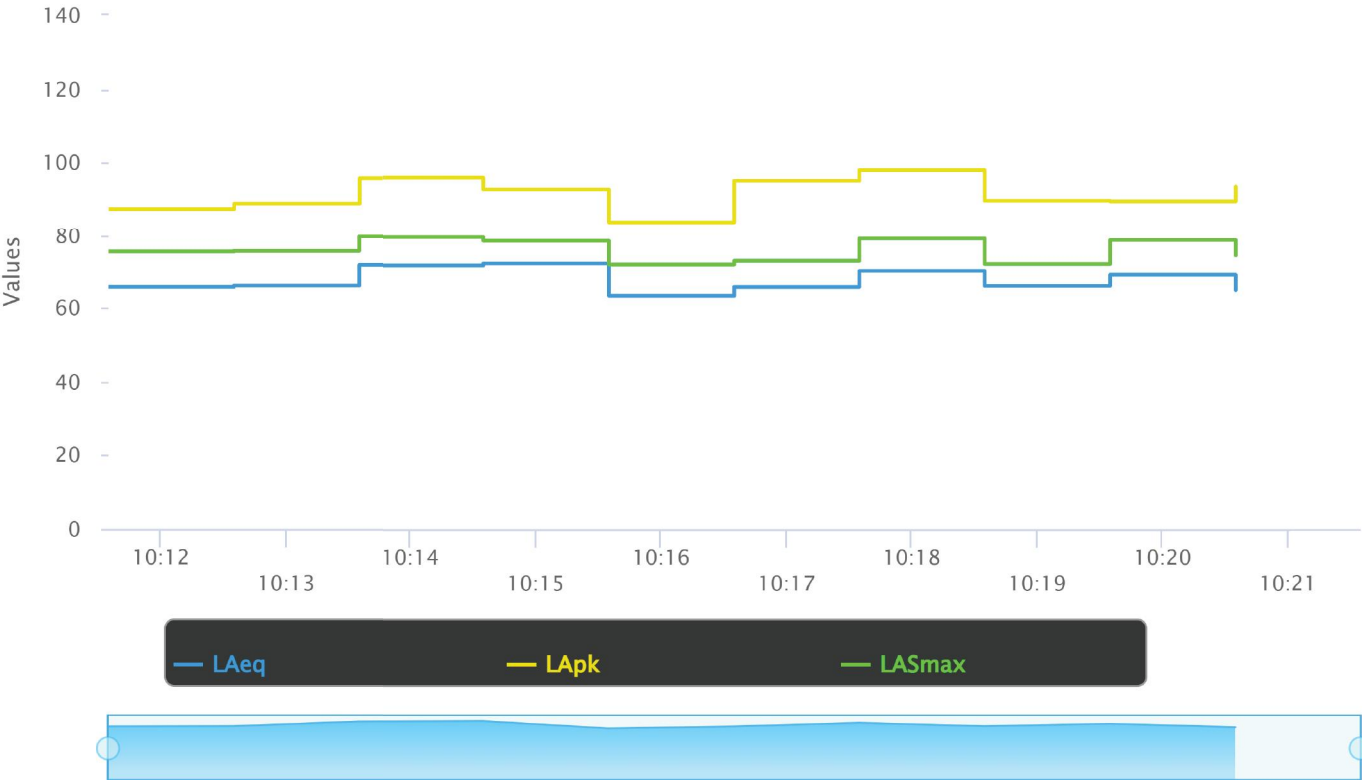
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	74.7 dB
LAS 10.0	73.0 dB
LAS 33.3	67.6 dB
LAS 50.0	65.3 dB
LAS 66.6	62.7 dB
LAS 90.0	57.8 dB

Time History



Dark
Mode

Noise Measurement Field Data

Project:	Via Oro	Job Number:	194717001
Site No.:	6	Date:	3/20/2025
Analyst:	Daniel Karz and Kennedy Caudle	Time:	11:38am
Location:	Wardlow Road near 405 S Onramp		

Noise Sources: Traffic along Wardlow Rd, gardener nearby

Comments:

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
68.1	60.7	78.8	100.0

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	65
Wind (mph):	4
Sky:	Clear
Bar. Pressure:	30.12
Humidity:	44%

Photo:



Measurement Report

Report Summary

Meter's File Name	LxT_Data.047.s	Computer's File Name	LxTse_0005586-20250320 103601-LxT_Data.047.ldbin
Meter	LxT SE 0005586	Firmware	2.404
User		Location	
Job Description			
Note			

Measurement

Start Time	2025-03-20 10:36:01	Duration	0:10:00.0		
End Time	2025-03-20 10:46:01	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-03-17 14:38:58	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics					
LA _{eq}	68.1 dB				
LAE	95.9 dB	SEA	---	dB	
EA	430.4 µPa²h				
LA _{peak}	100.0 dB		2025-03-20 10:36:24		
LAS _{max}	78.8 dB		2025-03-20 10:37:01		
LAS _{min}	60.7 dB		2025-03-20 10:37:45		
LA _{eq}	68.1 dB				
LC _{eq}	76.9 dB	LC _{eq} - LA _{eq}	8.8 dB		
LAL _{eq}	70.5 dB	LAL _{eq} - LA _{eq}	2.4 dB		
Exceedances		Count	Duration		
LAS > 85.0 dB		0	0:00:00.0		
LAS > 115.0 dB		0	0:00:00.0		
LApk > 135.0 dB		0	0:00:00.0		
LApk > 137.0 dB		0	0:00:00.0		
LApk > 140.0 dB		0	0:00:00.0		
Community Noise		LDN	LDay	LNight	
		68.1 dB	68.1 dB	---	dB
		LDEN	LDay	LEve	LNight
		68.1 dB	68.1 dB	---	dB

Any Data

A

C

Z

	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L _{eq}	68.1 dB		76.9 dB		--- dB	
L _{S(max)}	78.8 dB	2025-03-20 10:37:01	--- dB	None	--- dB	None
L _{S(min)}	60.7 dB	2025-03-20 10:37:45	--- dB	None	--- dB	None
L _{Peak(max)}	100.0 dB	2025-03-20 10:36:24	--- dB	None	--- dB	None

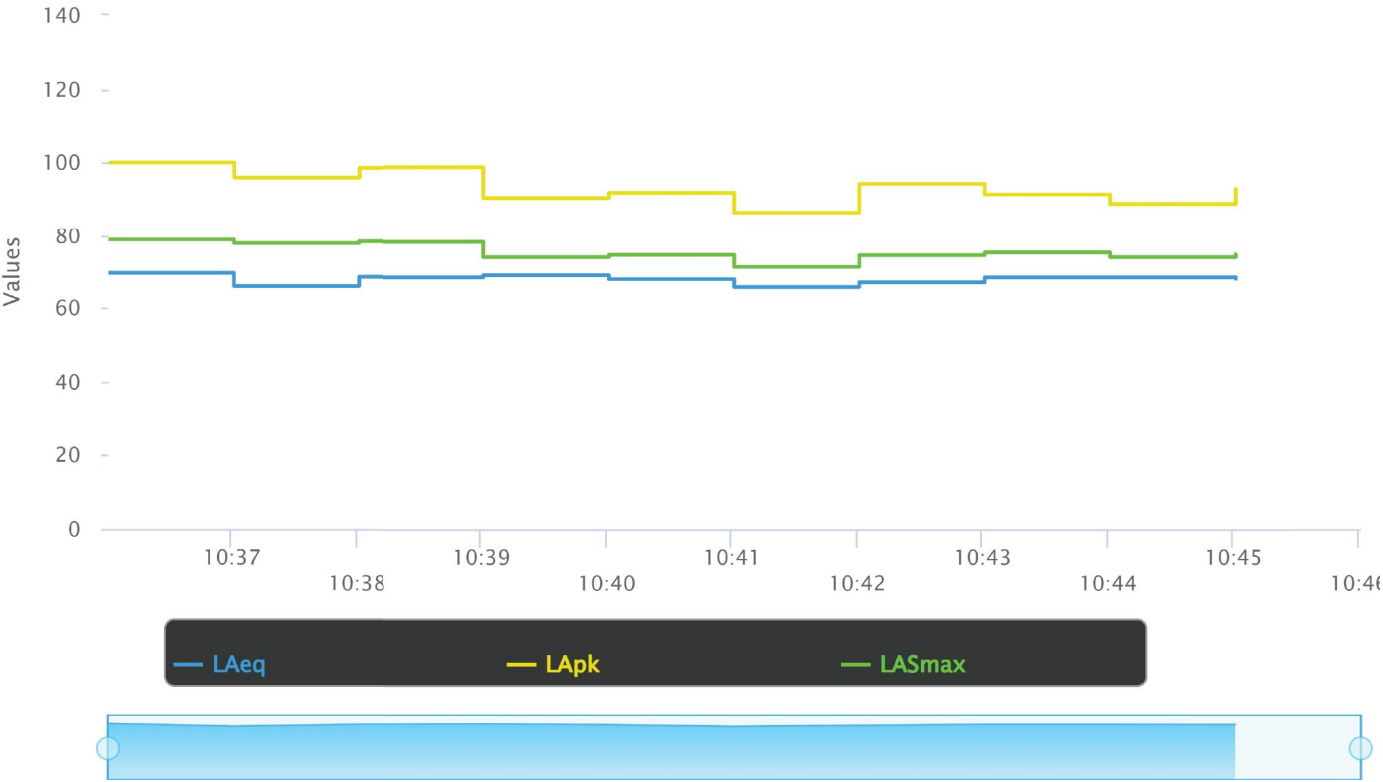
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	72.7 dB
LAS 10.0	71.3 dB
LAS 33.3	67.8 dB
LAS 50.0	66.4 dB
LAS 66.6	65.3 dB
LAS 90.0	63.2 dB

Time History



Dark
Mode

Noise Measurement Field Data

Project:	Via Oro	Job Number:	194717001
Site No.:	7	Date:	3/20/2025
Analyst:	Daniel Karz and Kennedy Caudle	Time:	11:55am
Location:	Salmon Avenue and 223rd St		

Noise Sources: Traffic along 223rd Street

Comments:

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
66.4	57.5	75.8	93.7

Equipment

Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather

Temp. (degrees F):	68
Wind (mph):	3
Sky:	Clear
Bar. Pressure:	30.11
Humidity:	44%

Photo:



Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	LxT_Data.048.s	Computer's File Name	LxTse_0005586-20250320 105341-LxT_Data.048.ldbin
Meter	LxT SE 0005586	Firmware	2.404
User		Location	
Job Description			
Note			

Measurement

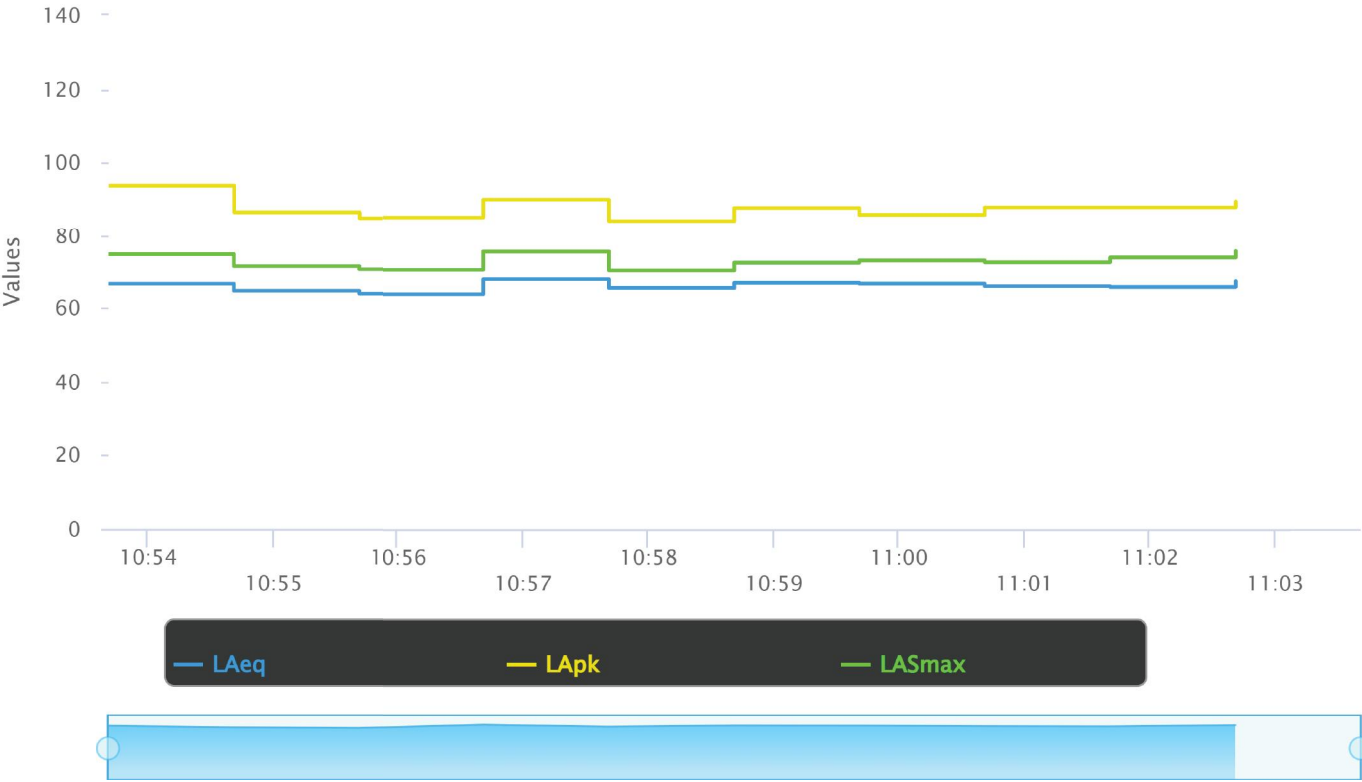
Start Time	2025-03-20 10:53:41	Duration	0:10:00.0		
End Time	2025-03-20 11:03:41	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2025-03-17 14:38:58	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics					
LA _{eq}	66.4 dB				
LAE	94.2 dB	SEA	---	dB	
EA	291.0 µPa²h				
LA _{peak}	93.7 dB		2025-03-20 10:53:53		
LAS _{max}	75.8 dB		2025-03-20 11:03:24		
LAS _{min}	57.5 dB		2025-03-20 10:56:13		
LA _{eq}	66.4 dB				
LC _{eq}	74.9 dB	LC _{eq} - LA _{eq}	8.5 dB		
LAL _{eq}	67.5 dB	LAL _{eq} - LA _{eq}	1.1 dB		
Exceedances		Count	Duration		
LAS > 85.0 dB		0	0:00:00.0		
LAS > 115.0 dB		0	0:00:00.0		
LApk > 135.0 dB		0	0:00:00.0		
LApk > 137.0 dB		0	0:00:00.0		
LApk > 140.0 dB		0	0:00:00.0		
Community Noise		LDN	LDay	LNight	
		66.4 dB	66.4 dB	---	dB
		LDEN	LDay	LEve	LNight
		66.4 dB	66.4 dB	---	dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L _{eq}	66.4 dB		74.9 dB		--- dB	
L _{S(max)}	75.8 dB	2025-03-20 11:03:24	--- dB	None	--- dB	None
L _{S(min)}	57.5 dB	2025-03-20 10:56:13	--- dB	None	--- dB	None
L _{Peak(max)}	93.7 dB	2025-03-20 10:53:53	--- dB	None	--- dB	None
Overloads	Count	Duration	OBA Count	OBA Duration		
	0	0:00:00.0	0	0:00:00.0		
Statistics						
LAS 5.0	71.6 dB					
LAS 10.0	70.1 dB					
LAS 33.3	66.5 dB					
LAS 50.0	64.2 dB					
LAS 66.6	61.6 dB					
LAS 90.0	58.8 dB					

Time History



Dark
Mode

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	Daytime hours (7 am to 7 pm)	8
	Evening hours (7 pm to 10 pm)	0
	Nighttime hours (10 pm to 7 am)	0
	Leq to L10 factor	3

	Receptor (Land Use)	Average Distance (feet)	Distance to Property Line (feet)	Shielding	Direction
1	Rancho Dominguez Preparatory School	1,470	920	0	N
2	Residential	1,440	1,080	0	S
3	Industrial	280	15	0	N

Construction Noise Levels by Phase (Leq)								
Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Construction Phase 7	Construction Phase 8	Maximum Construction
61.2	62.3	62.9	61.6	61.2	48.4	10.8	10.8	65.6
59.8	60.9	61.5	60.2	59.8	47.0	10.8	10.8	64.3
0.0	56.3	58.1	0.0	0.0	0.0	0.0	63.0	0.0

Construction Phase	Equipment Type	No. of Equip.	Reference Acoustical Usage Factor	Noise Level at 50ft per Unit, Lmax
Demolition	Concrete Saw	1	20%	90
	Excavator	3	40%	81
	Dozer	2	40%	82
	Combined LEQ			
Site Preparation	Dozer	3	40%	82
	Tractor	4	40%	84
	Combined LEQ			
Grading	Excavator	2	40%	81
	Grader	1	40%	85
	Dozer	1	40%	82
	Tractor	2	40%	84
	Scraper	2	40%	84
	Combined LEQ			
Building Construction	Crane	1	16%	81
	Front End Loader	3	40%	79
	Generator	1	50%	81
	Tractor	3	40%	84
	Welder/Torch	1	40%	74
	Combined LEQ			
Paving	Paver	2	50%	77
	Pavement Scarafier	2	20%	90
	Roller	2	20%	80
	Combined LEQ			
Architectural Coating	Compressor (air)	1	40%	78
	Combined LEQ			

RECEPTOR 1			RECEPTOR 2			RECEPTOR 3		
Distance (feet)	Noise Level at Receptor 1, Lmax	Noise Level at Receptor 1, Leq	Distance (feet)	Noise Level at Receptor 2, Lmax	Noise Level at Receptor 2, Leq	Distance (feet)	Noise Level at Receptor 3, Lmax	Noise Level at Receptor 3, Leq
920	64.3	57.3	1,080	62.9	55.9	25	95.6	88.6
920	60.2	56.2	1,080	58.8	54.8	150	75.9	71.9
920	59.4	55.4	1,080	58.0	54.0	280	69.7	65.8
		61.2			59.8			88.7
920	61.2	57.2	1,080	59.8	55.8	25	92.5	88.5
920	64.7	60.7	1,080	63.3	59.4	280	75.1	71.1
		62.3			60.9			88.6
920	58.4	54.4	1,080	57.0	53.0	25	89.7	85.8
920	59.7	55.7	1,080	58.3	54.3	50	85.0	81.0
920	56.4	52.4	1,080	55.0	51.0	100	75.7	71.7
920	61.7	57.7	1,080	60.3	56.3	150	77.5	73.5
920	61.3	57.3	1,080	59.9	55.9	280	71.6	67.7
		62.9			61.5			87.4
920	55.3	47.3	1,080	53.9	46.0	25	86.6	78.7
920	58.6	54.6	1,080	57.2	53.2	50	83.9	79.9
920	55.3	52.3	1,080	53.9	50.9	100	74.6	71.6
920	63.5	59.5	1,080	62.1	58.1	150	79.2	75.2
920	48.7	44.7	1,080	47.3	43.3	280	59.0	55.1
		61.6			60.2			83.4
920	54.9	51.9	1,080	53.5	50.5	25	86.2	83.2
920	67.2	60.2	1,080	65.8	58.8	50	92.5	85.5
920	57.7	50.7	1,080	56.3	49.3	280	68.0	61.1
		61.2			59.8			87.5
920	52.4	48.4	1,080	51.0	47.0	25	83.7	79.7
		48.4			47.0			79.7

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Via Oro
Project Number:
Scenario: Opening Year
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	CNEL at 100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Hughes Way btw Santa Fe Avenue & Via Oro Avenue		4	12	7,095	35	0	2.0%	1.0%	59.3	-	-	85	268
2	Hughes Way E/O Via Oro Avenue		2	2	1,880	50	0	2.0%	1.0%	56.9	-	-	49	156
3	Via Oro Avenue Btw Carson St and Hughes Way		4	20	4,050	35	0	2.0%	1.0%	56.9	-	-	-	155
4	Warnock Way Btw Santa Fe and Hughes Way		6	2	13,610	35	0	2.0%	1.0%	62.2	-	-	166	525
5	Carson Street Btw Santa Fe and Via Oro Avenue		4	11	6,100	35	0	2.0%	1.0%	58.6	-	-	73	230
6	Santa Fe Avenue S/O Wardlow Rd		4	15	21,025	35	0	2.0%	1.0%	64.0	-	80	252	797
7	Santa Fe Avenue Btw Wardlow Rd and Warnock Way		5	21	24,190	35	0	2.0%	1.0%	64.8	-	94	299	945
8	Santa Fe Avenue Btw Warnock Way and Carson Street		4	6	14,905	40	0	2.0%	1.0%	63.8	-	75	237	750
9	Santa Fe Avenue N/O Carson St		4	12	17,385	40	0	2.0%	1.0%	64.5	-	88	279	881
10	Wardlow Rd Btw 405 Ramps and Seabright Avenue		4	14	12,480	35	0	2.0%	1.0%	61.7	-	-	149	473
11	Wardlow Rd Btw Seabright Avenue and Santa Fe Avenue		5	14	17,970	35	0	2.0%	1.0%	63.4	-	69	219	693
12	Wardlow Rd E/O Santa Fe Avenue		4	12	14,445	35	0	2.0%	1.0%	62.4	-	55	173	546

¹ Distance is from the centerline of the roadway segment to the receptor location.
 "-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Via Oro
Project Number:
Scenario: Opening Year Plus Project
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	CNEL at 100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Hughes Way btw Santa Fe Avenue & Via Oro Avenue		4	12	8,620	35	0	2.0%	1.0%	60.1	-	-	103	326
2	Hughes Way E/O Via Oro Avenue		2	2	2,645	50	0	2.0%	1.0%	58.4	-	-	69	219
3	Via Oro Avenue Btw Carson St and Hughes Way		4	20	4,510	35	0	2.0%	1.0%	57.4	-	-	54	172
4	Warnock Way Btw Santa Fe and Hughes Way		6	2	14,430	35	0	2.0%	1.0%	62.5	-	-	176	557
5	Carson Street Btw Santa Fe and Via Oro Avenue		4	11	6,245	35	0	2.0%	1.0%	58.7	-	-	74	236
6	Santa Fe Avenue S/O Wardlow Rd		4	15	21,135	35	0	2.0%	1.0%	64.0	-	80	253	801
7	Santa Fe Avenue Btw Wardlow Rd and Warnock Way		5	21	25,010	35	0	2.0%	1.0%	64.9	-	98	309	977
8	Santa Fe Avenue Btw Warnock Way and Carson Street		4	6	14,905	40	0	2.0%	1.0%	63.8	-	75	237	750
9	Santa Fe Avenue N/O Carson St		4	12	17,460	40	0	2.0%	1.0%	64.5	-	89	280	885
10	Wardlow Rd Btw 405 Ramps and Seabright Avenue		4	14	12,625	35	0	2.0%	1.0%	61.8	-	-	151	478
11	Wardlow Rd Btw Seabright Avenue and Santa Fe Avenue		5	14	18,450	35	0	2.0%	1.0%	63.5	-	71	225	712
12	Wardlow Rd E/O Santa Fe Avenue		4	12	14,670	35	0	2.0%	1.0%	62.4	-	55	175	554

¹ Distance is from the centerline of the roadway segment to the receptor location.
 "-" = contour is located within the roadway right-of-way.