Appendix I
Noise Technical Report

Acoustical Assessment
956 Seward Street Project
City of Los Angeles, California

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January 2024

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LIST OF ABBREVIATED TERMS

APN	Assessor's Parcel Number
ADT	Average daily traffic
dBA	A-weighted sound level
CEQA	California Environmental Quality Act
CLSP	California Landings Specific Plan
CSMA	California Subdivision Map Act
CNEL	Community equivalent noise level
L_{dn}	Day-night noise level
dB	Decibel
du/ac	Dwelling units per acre
L_{eq}	Equivalent noise level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	Heating ventilation and air conditioning
Hz	Hertz
HOA	Homeowner's association
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 INTRODUCTION

The purpose of this analysis is to assess the potential noise impacts associated with construction and operations of the proposed 956 Seward (Project), located in the City of Los Angeles, California.

1.1 Project Location

The Project Site is located at 936-962 North Seward Street and 949-959 North Hudson Avenue within the Hollywood community of the City of Los Angeles (City); see Exhibit 1: Regional and Vicinity Map.

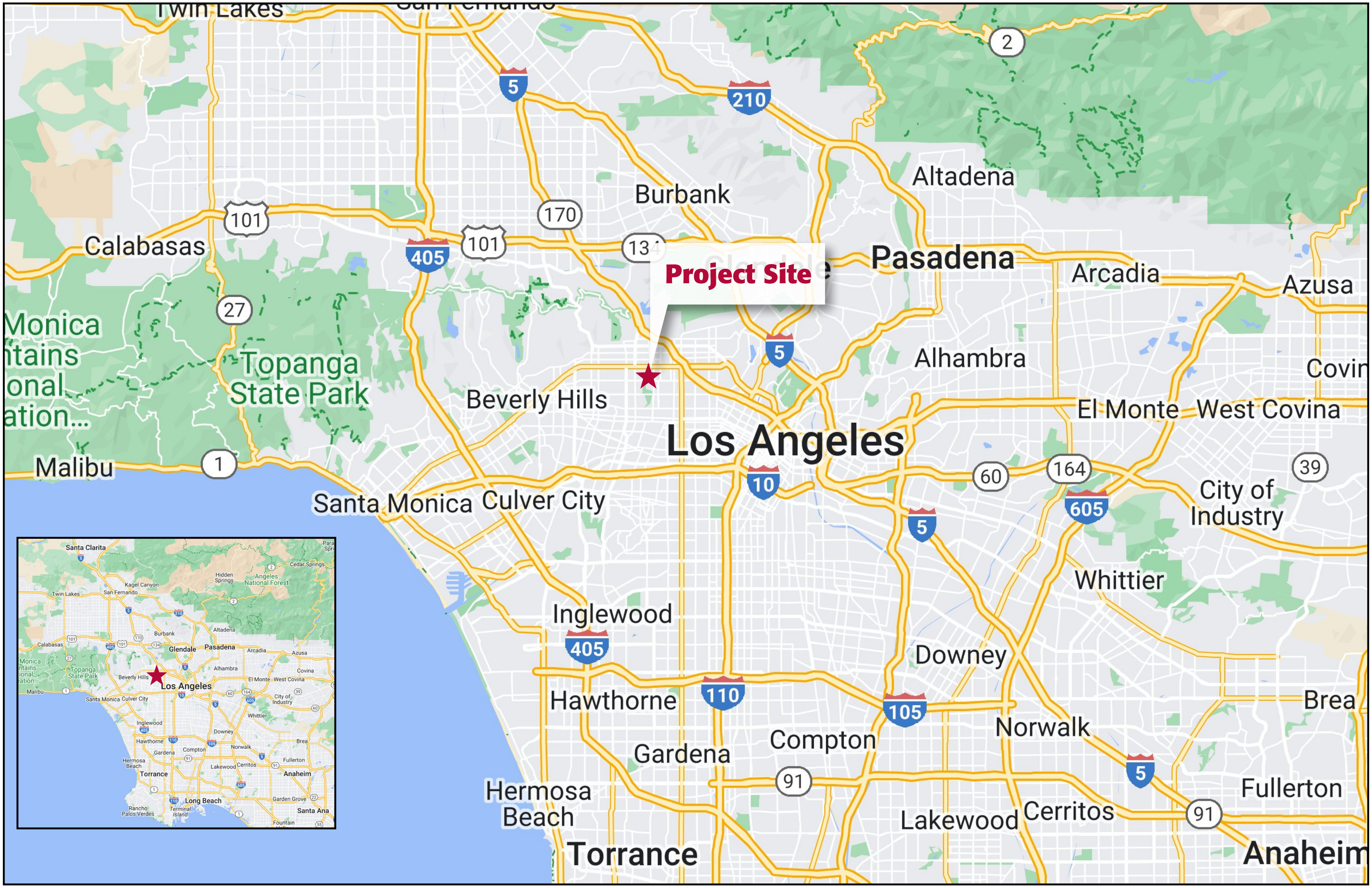
The Project is bounded by West Romaine Street to the north, North Hudson Avenue to the east, and North Seward Street to the west. The Project Site is an irregular-shaped lot that is approximately 1.29 acres or 56,254 square feet (sf). The Project Site consists of eight parcels that are currently improved with a two-story 40,000 sf film climate-controlled storage facility built in 1952 and an associated surface parking lot to the north currently used for a truck rental business surrounded by metal fencing. The Project Site is located within close proximity to several transit options. Numerous Metro transit and LADOT transit bus lines run and stop in the greater vicinity of the Project, including Metro Line 4 and Metro Line 210.

Land uses directly to the north of the Project Site across Romaine Street include a variety of one to five story buildings with commercial, restaurant, studio, and parking uses. To the west across Seward Street are various one to four story film, commercial, and office uses. Land uses adjacent to the south of the Project Site includes 3-story residential and an audio postproduction company. Land use to the east across Hudson Avenue include one to five story single and multifamily residential uses.

1.2 Project Description

The Proposed Project includes construction of a seven -story, up to 168,782 sf storage building, which would consist of up to 167,682 sf of temperature-controlled film and media storage and up to 1,100 sf of leasing uses. The Project would also result in the demolition of an existing 40,000 sf building and its associated parking lot. Construction is expected to take 14 months. Development of the Project would require the export of approximately 5,200 cubic yards of soil. All necessary utility improvements including water, sewer, and storm drain would be constructed within the property limits.

The Project would provide 47 automobile parking spaces and 40 bicycle parking spaces on the ground-level; see Exhibit 2: Site Plan. The Project would provide vehicular access along Romaine Street and Hudson Avenue. Romaine Street would contain one driveway for the entry and exit of vehicles. Hudson Avenue would contain one driveway allowing the exit of vehicles. The Project would include approximately 8,111 sf of landscaped areas throughout the Project Site including an outdoor landscaped walkway and entrance along Romaine Street and landscaping along Hudson Avenue and Seward Street.



SOURCE: Google Maps, 2023

N.T.S.

EXHIBIT 1: Regional and Vicinity Map

956 SEWARD STREET PROJECT

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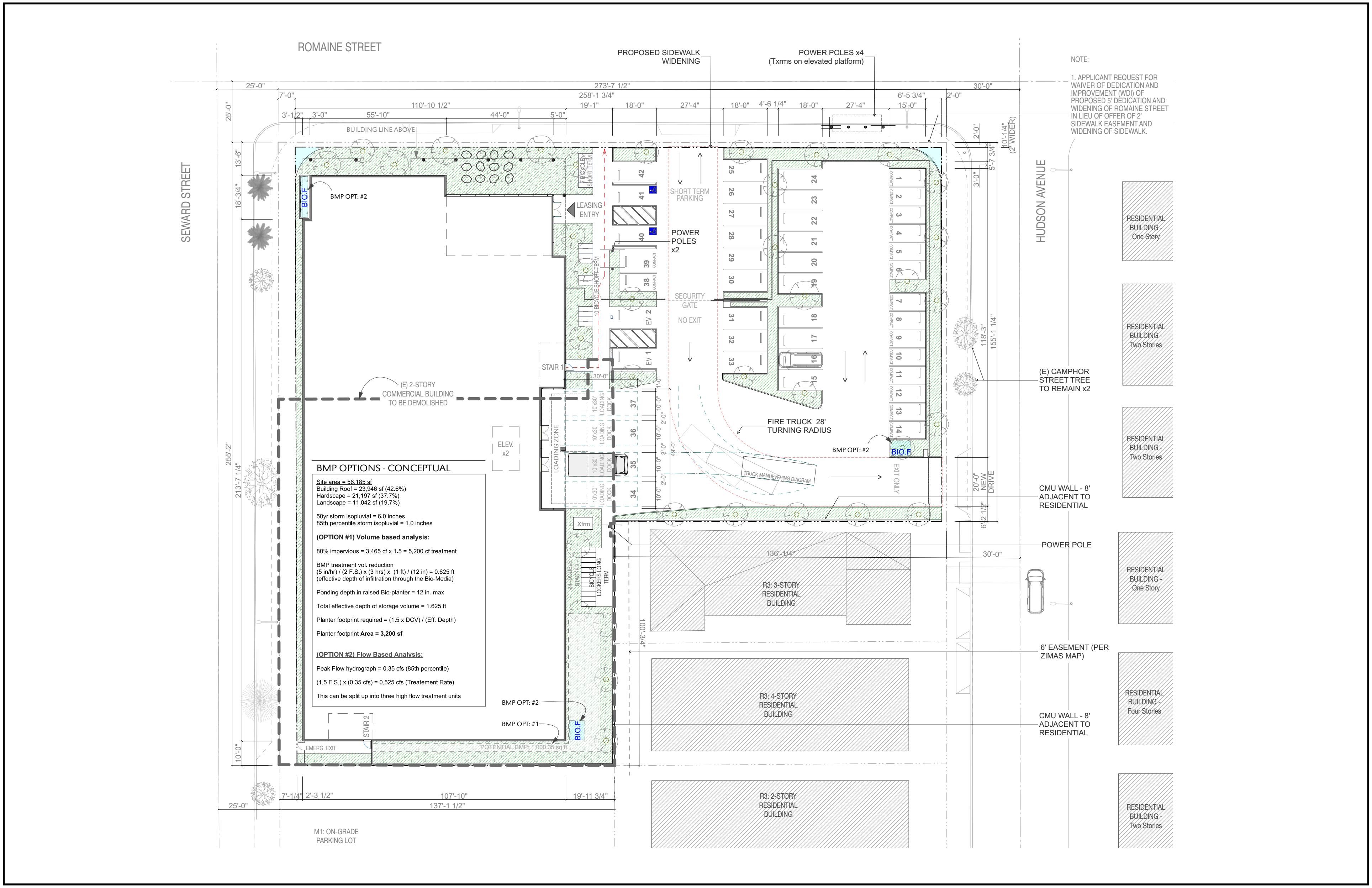

SOURCE: Michael W. Folonis Architects, 2023

N.T.S.

EXHIBIT 2: Site Plan

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2 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. 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. Acoustics deal primarily with the propagation and control of sound. 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. Perceptions of sound and noise are highly subjective from person to person.

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,

Table 2: Definitions of Acoustical Terms	
Term	**Definitions**
	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.
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. Sound

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

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 noted[6]:

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

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

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 annoyance[7].

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 used 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.

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 the table should be interpreted with care 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.

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

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)	Caltrans Vibration Annoyance Potential Criteria	Caltrans Vibration Damage Potential Threshold Criteria	FTA Vibration Damage Criteria
0.008	--	Extremely fragile historic buildings, ruins, ancient monuments	--
0.08	Readily Perceptible	--	--
0.01	--	--	--
0.04	--	--	--
0.1	Begins to Annoy	Fragile buildings	--
0.12	--	--	Buildings extremely susceptible to vibration damage
0.2	Annoying	--	Non-engineered timber and masonry buildings
0.25	--	Historic and some old buildings	--
0.3	--	Older residential structures	Engineered concrete and masonry
0.4	Unpleasant	--	--
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, *Transportation and Construction Vibration Guidance Manual*, 2020 and Federal Transit administration, *Transit Noise and Vibration Assessment Manual*, 2018.

3 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.[8] 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.[9] 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.

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8 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018

9 State of California Governor's Office of Planning and Research, General Plan Guidelines, Appendix D: Noise Element Guidelines, page 374, 2017, https://opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf. Accessed December 2022.

3.3 Local

City of Los Angeles Municipal Code

The City has adopted regulations to control unnecessary, excessive, and annoying noise, as set forth in the City's Noise Ordinance (Chapter XI, Noise Regulation, of the Los Angeles Municipal Code [LAMC]). The City's Noise Ordinance establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences in the perceived level of different types of noise and/or noise sources.

Section 111.02 (Sound Level Measurement Procedure and Criteria) of the LAMC provides procedures and criteria for the measurement of the sound level of "offending" noise sources. According to the LAMC, a noise level increase of 5 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. Section 112.01 (Radios, Television Sets, and Similar Devices) of the LAMC prohibits the production of noise from any radio, musical instrument, phonograph, television receiver, or other machine or device for the producing, reproducing or amplification of the human voice, music, or any other sound, in such a manner, as to disturb the peace, quiet, and comfort of neighbor occupants or any reasonable person residing or working in the area, or that exceeds the ambient noise level on the premises of any other occupied property, or if a condominium, apartment house, duplex, or attached business, within any adjoining unit, by more than 5 dBA.

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

Section 112.05 of the LAMC sets a maximum noise level for construction equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. Compliance with this standard is required where "technically feasible."[10] Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) of the LAMC prohibits construction between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, 6:00 P.M. and 8:00 A.M. on Saturday, and at any time on Sunday (i.e., construction is allowed Monday through Friday between 7:00 A.M. to 9:00 P.M.; and Saturdays and National Holidays between 8:00 A.M. to 6:00 P.M.).

City of Los Angeles General Plan

The Noise Element of the Los Angeles City General Plan (Noise Element) provides guidance for the control of noise to protect residents, workers, and visitors from potentially adverse noise impacts. Its primary goal is to regulate long-term noise impacts to preserve acceptable noise environments for all types of land uses. The Noise Element defers regulation of temporary, point-source noises such as construction

[10] In accordance with Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools), "technically feasible" means that the established noise limitations can be complied with at a project site, with the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques employed during the operation of equipment.

activities to the City's Municipal Code Noise Ordinance. With regard to long-term noise impacts, the Noise Element contains stated goals, objectives, policies, and implementation programs for noise control.

Goal: A city where noise does not reduce the quality of urban life.

Objective 2: Reduce or eliminate nonairport related intrusive noise, especially relative to noise sensitive uses.

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

Objective 3: Reduce or eliminate nonairport related intrusive noise, especially relative to noise sensitive uses.

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

Implementation P5: Continue to enforce, as applicable, city, state and federal regulations intended to abate or eliminate disturbances of the peace and other intrusive noise.

Implementation P11: For a proposed development project that is deemed to have a potentially significant noise impact on noise sensitive uses, as defined by this chapter, require mitigation measures, as appropriate, in accordance with California Environmental Quality Act and city procedures.

Implementation P16: Use, as appropriate, the "Guidelines for Noise Compatible Land Use" (Exhibit I),[1] or other measures that are acceptable to the city, to guide land use and zoning reclassification, subdivision, conditional use and use variance determinations and environmental assessment considerations, especially relative to sensitive uses, as defined by this chapter, within a CNEL of 65 dB airport noise exposure areas and within a line-of-sight of freeways, major highways, railroads or truck haul routes.

4 EXISTING CONDITIONS

4.1 Existing Noise Sources

The Project Site is impacted by various noise sources. Mobile sources of noise, including traffic along Seward Street, Romaine Street, and North Hudson Avenue are the most common and prominent sources of noise in the Project Site area. Other noticeable sources of noise on and near the Project Site include parking lot noise and mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] units) operating at the Project Site and existing nearby commercial and residential uses, and other urban-related activities (e.g., idling cars/trucks, pedestrians, car radios and music playing, dogs barking, etc.).

4.2 Noise Measurements

To quantify existing ambient noise levels in the Project Site area, Kimley-Horn conducted four short-term (15-minute) measurements on June 6, 2023; see Appendix A: Noise Measurement Data for additional details regarding how the ambient noise measurements were taken.[11] The noise measurement sites were selected to be representative of the existing ambient noise levels at the noise-sensitive uses immediately adjacent to the Project Site. The 15-minute daytime measurements were taken between 9:08 a.m. and 10:20 a.m. Measurements of L_{eq} are considered representative of the noise levels throughout the day. The average noise levels measured at each location are listed in Table 4: Existing Noise Measurement Locations and Measurements and shown on Exhibit 3: Noise Measurement Locations.

Table 4: Existing Noise Measurement Locations and Measurements

Site	Location	Measurement Period	Duration	Daytime Average L_{eq} (dBA) [1]
ST-1	Corner of Seward Street and Barton Street	9:08 A.M.	15 min	58.6
ST-2	Hudson Avenue near Romaine Street	9:28 A.M.	15 min	53.6
ST-3	North of Romaine Street on Hudson	9:51 A.M.	15 min	55.0
ST-4	Romaine Street, west of Hudson	10:08 A.M.	15 min	58.0

Source: Noise measurements taken by Kimley-Horn and Associates, June 6, 2023. See Appendix A for noise measurement results.

11 The ambient noise measurements were taken in accordance with the City's standards, which require ambient noise to be measured over a period of at least 15 minutes; See Section 111.01 of the LAMC.

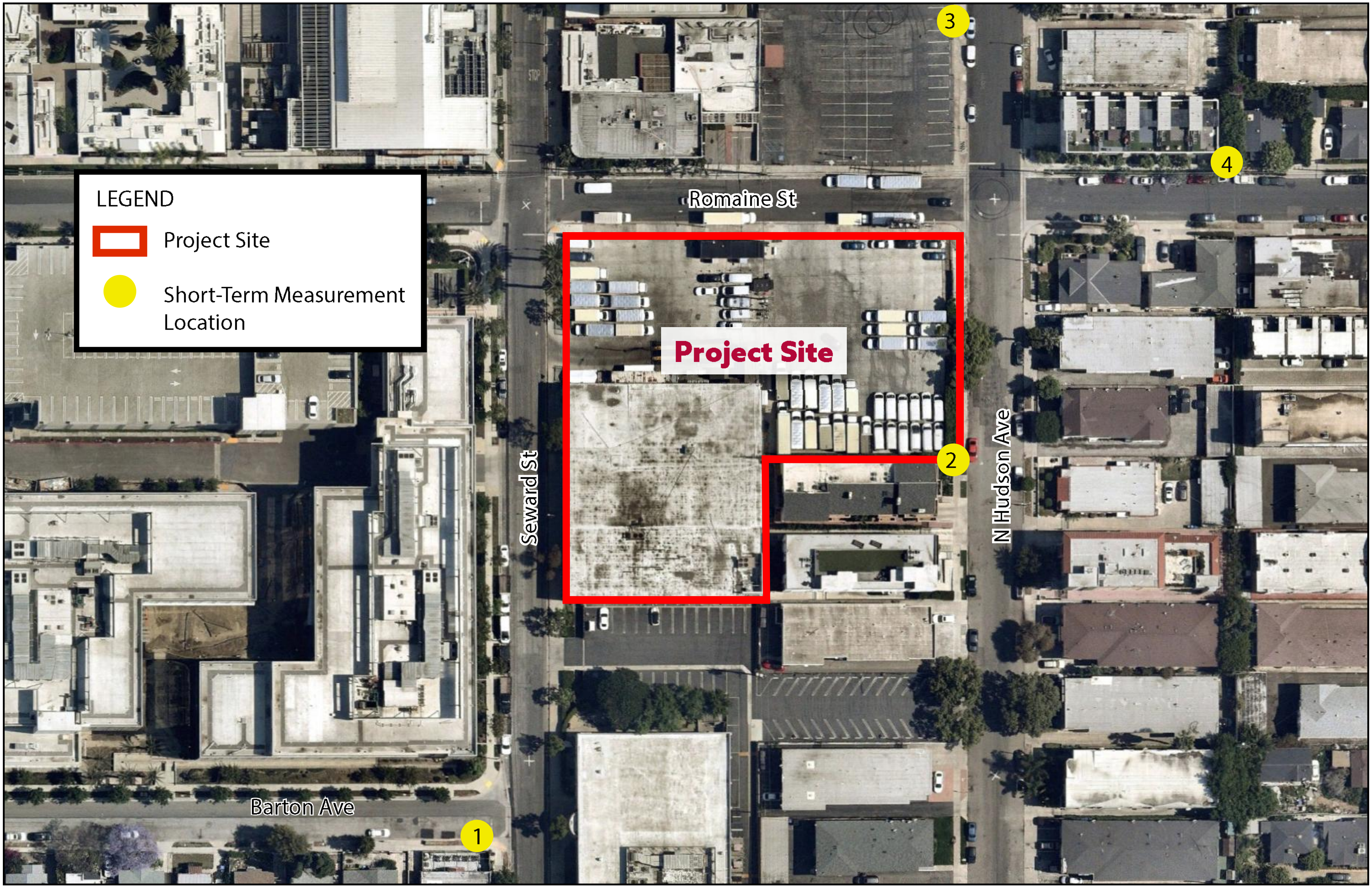
4.3 Sensitive Receptors

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses. Sensitive receptors near the Project Site are shown in Table 5: Sensitive Receptors (see Exhibit 3), along with the Noise Measurement Location that represents each sensitive receptor.

Table 5: Sensitive Receptors

	Receptor Description	**Distance[1] and Direction from the Project**
SR-1	Single Family Residential, 6506 Barton Avenue and 913 Seward Street *(represented by noise measurement ST-1)*	205 feet to the southwest
SR-2	Multifamily Residential, 945 N Hudson Avenue *(represented by noise measurement ST-2)*	Adjacent to the south
SR-3	Single Family Residential, 1006 N. Hudson Avenue *(represented by noise measurement ST-3)*	210 feet north
SR-4	Multifamily Residential, 6511 Romaine Street *(represented by noise measurement ST-4)*	205 feet northeast

Source: Google Earth, 2023.
1. Distance measured from the property line of the Project Site to the nearest receptor property line.



SOURCE:Nearmap, 2023

N.T.S.

EXHIBIT 3: Noise Measurement Locations

956 SEWARD STREET PROJECT

Kimley»Horn

5 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA Thresholds

Appendix G of the California Environmental Quality Act (CEQA) Guidelines 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:

- 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;
- Generate excessive ground-borne vibration or ground-borne noise levels; and
- 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.

Construction Noise

On-Site Construction. Noise due to construction is regulated under Section 41.40 of the LAMC, which prohibits construction noise between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, on Saturday before 8:00 A.M. and after 6:00 P.M., and at any time on Sunday or a national holiday.[12] In addition, Section 112.05 of the LAMC limits noise from construction equipment located within 500 feet of a residential zone to 75 dBA (between 7:00 A.M. and 10:00 P.M.), measured at a distance of 50 feet from the source, unless compliance with this limitation is technically infeasible.[13]

Off-Site Construction. In accordance with Section 114.02, the operation of motor driven vehicles upon any property within the City that causes the noise level on the premises of any occupied residential property to exceed the ambient noise level by more than 5 dBA is considered a noise violation.

Operational Noise

On-Site Operations. With respect to on-site operational noise, the significance criteria used in the noise analysis is an increase in the ambient noise level of 5 dBA (hourly L_{eq}) at the noise-sensitive uses, in accordance with the City of Los Angeles CEQA Thresholds Guide (Noise Regulations).[14]

Off-Site Operations. The Noise Regulations do not apply to off-site traffic (i.e., vehicles traveling on public roadways). Therefore, the City has determined to assess the significance of the Project's off-site traffic noise based on whether the Project creates, or contributes to, an increase in the ambient noise level of 3 dBA in CNEL if the noise levels fall within the "normally unacceptable" or "clearly unacceptable" category, as specified in the City's Noise Element, or an increase of 5 dBA in CNEL if the noise levels fall within the "conditionally acceptable" or "normally acceptable" category at noise-sensitive uses.

12 Los Angeles Municipal Code, Section 41.40, https://codelibrary.amlegal.com/codes/los_angeles/latest/lamc/0-0-0-128777#JD_41.40.

13 In accordance with the City of Los Angeles Noise Regulations (Los Angeles Municipal Code, Section 112.05), "technically infeasible" means that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques during the operation of the equipment.

14 City of Los Angeles, L.A. CEQA Thresholds Guide, 2006

Composite Operational Noise. In addition, the City has determined to assess the significance of the Project's composite noise levels (on-site and off-site sources) based on whether the Project's composite noise levels create an increase in the ambient noise level of 3 dBA or 5 dBA in CNEL (depending on where in the acceptable/unacceptable categories the noise levels fall) at noise-sensitive uses.

Vibration

Increases in groundborne vibration levels attribute to the Project would be primarily associated with short-term construction-related activities. Project construction could result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Construction activities would occur as at least 8 feet from adjacent residential buildings.[15]

Structural Damage Heavy construction equipment (e.g., a large bulldozer) would generate a vibration level of up to 0.089 inch/second Peak Particle Velocity (PPV) at a distance of 50 feet from the equipment.[16] With respect to potential building damage, FTA provides potential building damage criteria varies from 0.12 PPV (inch/second) for buildings that are extremely susceptible to vibration to 0.50 PPV (inch/second) for reinforced-concrete, steel or timber buildings.[17] Two historic buildings are located within the Project vicinity: Hollywood Vaults, Inc., located approximately 1,200 feet to the south of the Project Site and Hollywood Center Studio (also known as Sunset Las Palmas Studios), located approximately 300 feet northwest of the Project Site. This evaluation uses the FTA architectural damage criterion for continuous vibrations of 0.12 in/sec for this historic building (buildings extremely susceptible to vibration damage) and 0.2 in/sec peak particle velocity (PPV) at non-engineered timber and masonry buildings for all other adjacent structures.

Human Annoyance. In accordance with FTA guidance for human annoyance, a threshold of 0.04 in/sec PPV is utilized in this analysis.[18]

5.2 Methodology

Construction

Construction noise levels were based on typical noise levels generated by construction equipment published by the FTA and 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

15 Potential impacts related to structural damage could occur as vibratory construction equipment is operated near neighboring structures. An averaging of vibration velocities taking into consideration the movement of equipment throughout the construction area is not appropriate. Therefore, construction vibration levels are measured from the nearest distance equipment would operate from a receptor whereas construction noise is measured from the center of the Project Site.

16 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018

17 Ibid.

18 Ibid.

noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

Operations

The analysis of the Existing and Existing Plus Project noise environments is based on noise prediction modeling and empirical observations. Reference noise level data are used to estimate the Project 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. Operational noise is evaluated based on the standards within the City's Noise Ordinance.

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.

5.3 Project Design Features

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

Project Design Feature NOI-PDF-1: Noise from power construction equipment (including combustion engines), fixed or mobile, will be equipped with noise shielding devices such as noise blankets on construction equipment to reduce engine noise or muffling devices to reduce exhaust noise. All equipment will be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated.

Project Design Feature NOI-PDF-2: Project construction will not include the use of driven (impact) pile systems.

Project Design Feature NOI-PDF-3: Concrete trucks will be located on Romaine Street, away from sensitive uses south of the Project Site.

Project Design Feature NOI-PDF-4: All construction loading areas will be acoustically screened from off-site noise-sensitive receptors with temporary construction fencing equipped with sound blankets.

Project Design Feature NOI-PDF-5: All construction haul, dump, and water trucks would be operated within the northern portion of the Project Site, at least 50 feet from any sensitive receptors, along Romaine Street, which would allow for efficient access to the highway.

Project Design Feature NOI-PDF-6: The Project will designate a Construction Relations officer to serve as a liaison with residential communities, who will be responsible for responding to any concerns regarding construction noise and vibration. The liaison's telephone number(s) will be prominently displayed at the Project Site. Signs will be posted at the Project Site that include permitted construction days and hours.

6 POTENTIAL IMPACTS AND MITIGATION

6.1 Acoustical Impacts

Threshold 6.1 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

On-Site Construction Noise

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation). Noise generated by construction equipment, including earth movers and material handlers, can reach high levels. During construction, exterior noise levels could affect noise-sensitive uses near the construction site. Construction activities would include demolition, grading, excavation, paving, building construction, and architectural coating. Noise levels associated with individual construction equipment to be used during Project construction and renovation are listed in Table 6: Project Construction Equipment Noise Levels.[19]

It should be noted that the values shown in Table 6 are for the equipment when operating at full power. Construction noise was calculated accounting for each piece of equipment's usage factor, or fraction of time that the equipment would be in use at full power over a specific period of time.[20] Other primary sources of acoustical disturbance may include random incidents, which would last less than one minute (such as dropping of materials or the hydraulic movement of machinery lifts). It should also be noted that due to the constraints of the Project Site and standard construction practices, only a limited amount of equipment can operate on the Project Site at a particular time. Following the FTA's methodology for quantitative construction noise assessments, construction noise was predicted at the nearest noise-sensitive receptors consistent with the Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (RCNM) and the methodologies in the FTA *Transit Noise and Vibration Impact Assessment Manual*.[21] Following FTA methodology, when calculating construction noise, all equipment is assumed to operate at the center of the Project Site, as equipment would operate throughout the Project Site and not at a fixed location for extended periods of time.[22] Therefore, the distance used in the RCNM model was measured from the center of the Project construction area.

19 *Federal Highway Association, Roadway Construction Noise Model, User Guide 2005*
20 Ibid.
21 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018
22 Ibid.

Table 6: Project Construction Equipment Noise Levels			
Construction Phase	**Equipment**	**Typical Noise Level (dBA L_{max}) at 50 feet from Source**	**Usage Factor (%)**
Soft Demolition	Front End Loader Backhoe	79 78	40 40
Hard Demolition	Excavator Backhoe	81 78	40 40
Grading	Excavator Backhoe	81 78	40 40
Excavation	Front End Loader	79	40
Paving	Paver Roller Concrete Mixer Truck	77 80 79	50 20 40
Building Construction – Footings/Foundations	Backhoe Concrete Mixer Vibratory Concrete Mixer	78 61 80	40 40 20
Building Construction – Building Erection	Crane Backhoe Man Lift Welder/Torch Forklift	81 78 61 74 61	16 40 20 40 40
Building Construction – Finishes	Compressor (air) Flat Bed Truck Man Lift Forklift Welder/Torch	78 74 75 61 74	40 40 20 40 40
Architectural Coating	Compressor Man Lift	78 75	40 20

Source: Federal Highway Association, Roadway Construction Noise Model, User Guide 2005; Source for Forklift Noise level: Warehouse & Forklift Workplace Noise Levels, The Main Noise Exposed SEG – Forklift Drivers, https://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/, Accessed July 2023.

* *Noise levels were predicted for multiple building construction scenarios due to days where differing equipment mixes would occur (e.g., instances where certain types of equipment such as cranes and concrete pumps would not be operated at the same time).*

Table 7: Project Construction Noise Levels shows the estimated maximum exterior construction noise levels at the nearest receptors to the Project Site.[23] See Appendix B for predicted construction noise for each individual construction phase.

23 For predicted construction noise levels for all construction phases, see Appendix B.

Table 7: Project Construction Noise Levels				
	Receptor	**Maximum Noise Level at Receptor Property Line (L_{eq})[1, 2]**	**Noise Threshold at 50 feet (dBA L_{eq}) [2]**	**Exceeded?**
SR-1	Single Family Residential, 6506 Barton Avenue and 913 Seward Street *(represented by noise measurement ST-1)*	60.5	75	**No**
SR-2	Multifamily Residential, 945 N Hudson Avenue (*represented by noise measurement* ST-2)	74.9		**No**
SR-3	Single Family Residential, 1006 N. Hudson Avenue *(represented by noise measurement ST-3)*	62.1		**No**
SR-4	Multifamily Residential, 6511 Romaine Street *(represented by noise measurement ST-4)*	61.4		**No**

1. Per the methodology described in the FTA Noise and Vibration Manual (September 2018), distance is measured from the property line of the receptor to the center of the Project construction site.
2. Section 112.05 of the LAMC sets a maximum noise level for each piece of construction equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. This analysis conservatively assumes that multiple pieces of equipment identified in Table 6 would operate simultaneously. Therefore, the noise levels from the center of the Project Site to the property lines of the nearest sensitive receptors have been calculated.

Source: Federal Highway Administration, *Roadway Construction Noise Model,* 2006. Refer to Appendix B for noise modeling results for each construction phase.

As shown in Table 7, Project construction noise would not exceed the LAMC Section 112.05 significance criterion of 75 dBA L_{eq}. In addition, construction-related noise would be temporary and would not result in a permanent increase in ambient noise levels in the area. Construction activities would also be prohibited between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday and 6:00 p.m. to 8:00 a.m. on Saturdays, and at any time on Sunday. 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. In addition, Project construction noise would be reduced and minimized through specified project design features. Project construction would ensure the proper maintenance of construction equipment and the use of noise shielding devices such as noise blankets on all power construction equipment to minimize construction equipment (NOI-PDF-1), Project construction would not utilize pile driving systems (NOI-PDF-2), concrete trucks would be located on Romaine Street away from noise-sensitive receptors south of the Project Site(NOI-PDF-3), and all loading and unloading areas during construction will be shielded from off-site noise-sensitive receptors to block line-of-sight to the extent feasible (NOI-PDF-4). For all of these reasons, the Project would not result in the generation of a substantial temporary 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 during construction. Therefore, impacts would be less than significant, and no mitigation measures are required.

Off-Site Construction Noise

In addition to on-site construction noise, the Project would generate mobile noise from delivery/haul trucks and construction workers traveling to and from the Project Site during the Project's construction.

Haul trucks would travel to and from the Project Site using Romaine Street Hudson Avenue. Construction trucks and construction workers are expected to arrive at the Project Site before construction starts and leave when construction ends, and thus, would not overlap with the Project's construction equipment. In addition, construction workers would come from various directions to the Project Site. According to modeling assumptions included in the air quality and greenhouse gas assessment prepared by Kimley-Horn in December 2023, there would be up to 30 daily vendor truck trips accessing the Project Site during the building construction phase and 77 employee trips. The estimated noise level due to building construction trips plus existing traffic along Seward Street, Romaine Street, Hudson Avenue, and Willoughby Avenue, assuming that all construction trips would occur along all roadway segments, is shown in Table 8: Existing and Existing Plus Project Construction Traffic Noise Levels. As shown, these increases in traffic noise would be below the 5-dBA significance criterion. The Project would not result in the generation of a substantial temporary 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 during construction. Therefore, impacts would be less than significant, and no mitigation measures are required.

Table 8: Existing and Existing Plus Project Construction Traffic Noise Levels

Roadway Segment	Existing		Existing + Project Construction		Incremental Increase	Significant Impact?
	ADT	dBA CNEL[1]	ADT	dBA CNEL[1]		
Seward Street between Romaine and Willoughby	1,354	49.6	1,461	52.8	3.2	**No**
Romaine Street between Seward and Hudson	1,456	50.0	1,563	52.9	2.9	**No**
Hudson Avenue between Romaine and Willoughby	969	48.2	1,076	52.1	3.9	**No**
Willoughby Avenue between Seward and Hudson	5,312	55.6	5,419	55.6	0.0	**No**

ADT = average daily trips; dBA = A-weighted decibels; CNEL= Community Equivalent Noise Level
1. Traffic noise levels are at 100 feet from the roadway centerline.
Source: Based on existing traffic data provided by Kimley-Horn and Associates, Inc., October 2023 and construction data provided by Kimley-Horn and Associates, Inc., December 2023. Refer to Appendix B for traffic noise modeling results.

Operations

On the western side of the Project Site along Seward Street, the Project proposes to construct and operate seven stories of storage use. The Project proposes 47 automobile parking spaces provided onsite in a surface-level parking lot and 40 bicycle parking spaces provided onsite at ground-level. The Project would provide vehicular access along Romaine Street and Hudson Avenue. Romaine Street would contain one driveway permitting the entry and exit of vehicles. Hudson Avenue would contain one driveway permitting only the exit of vehicles.

On-Site Parking and Customer Loading

The proposed Project would provide 47 automobile parking spaces and 40 bicycle parking spaces on site within the surface parking lot. The proposed Project's loading area includes four loading docks and would be located on the east side of the self-storage facility and is meant to provide customers with a location adjacent to the building to load and unload their items when needed. The loading area is located to the northwest of the residential receptors to the south and would be shielded by an eight-foot concrete masonry unit (CMU) block wall and 24-inch box screen trees. The proposed self-storage facility will consist of approximately 1,400 storage units with an average size of approximately 80-85 square feet per unit. Per ExtraSpace's sizing guide, a 5x10 unit (or 50 square feet) could store the contents of a one-bedroom apartment, and a 10x10 unit (or 100 square feet) could store the contents of a larger living space or a two-bedroom apartment. Most vehicular requirements for tenants at the proposed facility would use a personal van/pickup truck.[24] Less frequently, a small 10 to 15 foot U-Haul truck (non-diesel) could be used by tenants. Larger trucks or diesel-powered vehicles will not be necessary or common, and larger cross-country moving trucks will not be able to access parking lot due to limited space. Additionally, approximately 40,000 square feet of the facility (approximately 25%) will be dedicated to film storage. The average size for film storage units is smaller than the facility average of 80 to 85 square feet, with the majority of units being 5x5 or 5x10 unit sizes. Storage and transportation of film are typically handled by small, specialized vans with minimal heat or particulate exposure as they often require additional care. Film stored at the proposed facility is not anticipated to move frequently once in storage. Therefore, loading area noise would be limited. Noise levels generated by Project parking, vehicle access, loading and unloading would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Therefore, impacts would be less than significant, and no mitigation measures are required.

On-Site Mechanical Equipment Noise

It is assumed that the proposed storage building would be climate controlled. Therefore, the Project would include rooftop mechanical equipment. Mechanical equipment (e.g., HVAC equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[25] Pursuant to LAMC Section 112.02 (Air Conditioning, Refrigeration, Heating, Pumping, Filtering Equipment), the operation of any air conditioning, refrigeration, or heating equipment shall not create any noise which would cause the noise level of another occupied property to exceed the ambient noise level by more than 5 dBA. Assuming that mechanical equipment would be located within a portion of the rooftop nearest to each receptor, rooftop mechanical equipment would be positioned at least 50 feet away from multi-family residences located to the south of the Project Site. As shown in Table 9: Mechanical Noise Levels, mechanical equipment noise levels would not increase ambient noise levels beyond the acceptable levels (5 dBA over ambient). Project mechanical equipment would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Therefore, impacts would be less than significant, and no mitigation measures are required.

24 Operational assumptions are based on empirical observations at an existing storage facility with similar unit sizing and storage purpose.

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

Table 9: Mechanical Noise Levels

	Receptor	Distance to Receptor (feet) [1]	Level at Receptor (dBA)[2]	Ambient Level (dBA)[3]	Ambient + Project Noise at Receptor (dBA)	Incremental Increase (dBA)	Incremental Increase Threshold (dBA)	Significant?
SR-1	Single Family Residential, 6506 Barton Avenue and 913 Seward Street *(represented by noise measurement ST-1)*	250	38.0	58.6	58.6	0.0	5.0	**No**
SR-2	Multifamily Residential, 945 N Hudson Avenue (*represented by noise measurement* ST-2)	50	52.0	53.6	55.9	2.3	5.0	**No**
SR-3	Single Family Residential, 1006 N. Hudson Avenue *(represented by noise measurement ST-3)*	250	38.0	53.6	53.7	0.1	5.0	**No**
SR-4	Multifamily Residential, 6511 Romaine Street *(represented by noise measurement ST-4)*	260	37.7	58.0	58.0	0.0	5.0	**No**

1. *Distance estimated using location of rooftop equipment as indicated on Roof Plan.*
2. *Distance attenuation calculated assuming reference noise level of 52 dBA Leq at 50 feet: Source for reference level: Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, Noise Navigator Sound Level Database with Over 1700 Measurement Values, July 6, 2010.*
3. *See Table 4 and Table 5 for representative ambient noise levels.*

Off-Site Traffic Noise

Implementation of the Project would generate increased traffic volumes along nearby roadway segments. According to the Average Daily Traffic (ADT) Volumes provided in the traffic analysis prepared by Kimley Horn, the proposed project would increase the ADT volume that would result in noise increases on Project Site area roadways. 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 from the Transportation Assessment. As shown in Table 10: Opening Year and Opening Year Plus Project Traffic Noise Levels, Opening Year Plus Project traffic-generated noise levels on Project Site area roadways would range between 46.4 dBA CNEL and 57.1 dBA CNEL at 100 feet from the roadway centerline, and the Project would result in a maximum increase of 0.6 dBA CNEL along Romaine Street. Increases in traffic noise would not result in increases beyond acceptable levels (see Thresholds section above). Therefore, impacts would be less than significant, and no mitigation measures are required.

Table 10: Opening Year and Opening Year Plus Project Traffic Noise Levels						
Roadway Segment	**Opening Year**		**Opening Year + Project**		**Incremental Increase**	**Significant Impact?**
	ADT	**dBA CNEL[1]**	**ADT**	**dBA CNEL[1]**		
Seward Street between Romaine and Willoughby	1,381	49.7	1,412	49.8	0.1	**No**
Romaine Street between Seward and Hudson	1,485	50.0	1,735	50.7	0.7	**No**
Hudson Avenue between Romaine and Willoughby	989	48.3	1,052	48.6	0.3	**No**
Willoughby Avenue between Seward and Hudson	5,419	55.7	5,435	55.7	0.0	**No**
ADT = average daily trips; dBA = A-weighted decibels; CNEL= Community Equivalent Noise Level 2. Traffic noise levels are at 100 feet from the roadway centerline. Source: Based on traffic data provided by Kimley-Horn and Associates, Inc., October 2023. Refer to Appendix B for traffic noise modeling results.						

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 6.2 Would the Project generate excessive ground-borne vibration or ground-borne noise levels?

Construction

On-Site Construction Vibration

Increases in ground-borne vibration levels attributable to the Project would be primarily associated with short-term construction-related activities. Project construction 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 FTA and Caltrans have published standard vibration velocities for construction equipment operations. 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. 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 concrete with no plaster, the FTA and Caltrans guidelines show that a vibration level of up to 0.50 in/sec is considered safe for newer residential structures and modern commercial and industrial structures and would not result in any construction vibration damage and a vibration level of 0.4 in/sec is unpleasant (see Table 3).[26, 27]

26 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.
27 California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020

Receptors susceptible to building damage include all structures located adjacent to the Project Site including the residential structure and commercial structure to the south. This evaluation uses the Caltrans architectural damage criterion for continuous vibrations of 0.3 in/sec peak particle velocity (PPV) at older residential structures and 0.25 in/sec PPV for historic structures, and human annoyance criterion of 0.4 in/sec PPV in accordance with FTA and Caltrans guidance.[28, 29]

Table 11: Typical Construction Equipment Vibration Levels lists the reference vibration levels for typical construction equipment (measured at 25 feet). The 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 that would be used during Project construction range from 0.076 to 0.21 in/sec PPV at 25 feet from the source of activity. The use of loaded trucks and a vibratory compactor/roller could be operated at a distance of approximately 10 feet from the adjacent multi-family housing located on North Hudson Avenue to the south of the Project Site and approximately 300 feet from the nearest historic structure (Hollywood Center Studio).

Table 11: Typical Construction Equipment Vibration Levels

Equipment	Reference Level PPV at 25 Feet (in/sec)	PPV at 10 Feet (in/sec)	PPV at 20 Feet (in/sec)	PPV at 300 feet (in/sec)
Loaded Trucks	0.076	0.300	0.106	0.014
Vibratory compactor/roller	0.21	0.830	0.293	0.039
Structural Damage Threshold	**0.20**	**0.3**	**0.3**	**0.25**
Exceeds Thresholds?	--	**Yes**	**No**	**No**
Human Annoyance Threshold	--	**0.40**	**0.4**	**0.40**
Exceeds Thresholds?	--	**Yes**	**No**	**No**

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

As shown in Table 11, vibration levels at the nearest historic structure would not exceed the 0.25 in/sec PPV threshold for historic buildings. Therefore, impacts to historic structures would be less than significant. At 10 feet (nearest structures to the south), construction equipment vibration velocities would exceed the 0.30 in/sec PPV threshold for structural damage and the human annoyance threshold of 0.40 in/sec PPV. As described in PDF-NOI-5, all construction haul, dump, and water trucks would be operated within the northern portion of the Project Site to provide efficient access to the highway. This area is located greater than 20 feet from any sensitive receptors. As shown in Table 11, vibration from loaded trucks would not exceed structural damage or human annoyance thresholds at 20 feet. With regard to vibratory rollers, **Mitigation Measure NOI-1** prohibits the use of a vibratory compactor or roller within 20 feet of any adjacent residential structure. With implementation of **Mitigation Measure NOI-1**, vibration velocities would be 0.293 in/sec PPV for a vibratory compactor/roller, which would not exceed structural damage or human annoyance thresholds of 0.30 in/sec and 0.40 in/sec, respectively. Impacts would be less than significant with mitigation incorporated.

[28] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.
[29] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020

Off-Site Construction Vibration

With regard to construction trucks, Project construction would involve truck travel along nearby roadways, generating vibration events with each passing truck. According to the FTA's Transit Noise and Vibration Impact Assessment, a truck rarely creates vibration levels that exceed 70 VdB (equivalent to 0.012 inches per second PPV) when they are on roadways.[30] Multiple trucks traveling along the roadway would increase the frequency of vibration events but would not affect the vibration velocity experienced by receptors because each truck passing is a single vibration event that ceases once the truck has passed. Therefore, vibration impacts associated with construction of the proposed Project would be less than significant and no mitigation measures are required.

Operation

With respect to vibration-generating activities, operation of the Project would primarily involve personal automobiles and small box trucks commonly used for household moving/storage purposes used by employees and customers accessing the surface parking, and occasional loading and unloading at the southeast portion of the Project Site. 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.[31] In addition, as described above, most vehicular requirements for tenants at the proposed facility would use a personal van/pickup truck. Less frequently, a small 10 to 15 foot U-Haul truck (non-diesel) could be used by tenants. Larger trucks or diesel-powered vehicles will not be necessary or common, and larger cross-country moving trucks will not be able to access parking lot due to limited space. Therefore, operation of the Project would result in less than significant ground-borne vibration impacts no mitigation is required.

Mitigation Measures:

NOI-1 The use of a vibratory compactor or roller shall be a minimum of 20 feet away from any adjacent structure. Any activity requiring a compactor or roller within 20 feet of an adjacent structure shall be conducted using a non-vibratory/static roller or a walk-behind roller.

Level of Significance: Less than significant impact with mitigation incorporated.

Threshold 6.3 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 Project Site is located approximately 8.4 miles south of the Hollywood-Burbank Airport and is not located within the Planning Boundary/Influence Area of the Hollywood-Burbank Airport. The Project Site

30 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.
31 Ibid.

is not located within an existing or projected noise contour associated with any private or public airport. Therefore, no impacts would occur, and no mitigation measures are required.

Mitigation Measures: No mitigation is required.

Level of Significance: No 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. The nearest related project is located at 1000-1006 Seward Street, located 260 feet north of the Project Site. According to the Draft EIR, project construction is anticipated to occur in 2022, with a completion date of 2025. The proposed Project would be under construction as early as 2025 and is anticipated to be complete in 2026. Therefore, there is potential for overlapping construction activities between the two projects. 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. Based on the fact that 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

<u>Cumulative Off-Site Traffic Noise</u>

The cumulative mobile noise analysis is conducted in a two-step process. First, the combined effects from both the Project and other projects are compared. Second, for combined effects that are determined to be cumulatively significant, the Project's incremental effects are then analyzed. A project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "Cumulative With Project" condition to "Existing" conditions. This comparison accounts for the traffic noise increase generated by the Project combined with the traffic noise increase generated by cumulative projects.

The following criteria is used to evaluate the combined effect of the cumulative noise increase.

- Combined Effect. The cumulative with Project noise level ("Cumulative With Project") would cause a significant cumulative impact if a 3.0 dB increase over "Existing" conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use.

Although there may be a significant noise increase due to the Project in combination with identified cumulative projects (combined effects), it must also be demonstrated that the Project has an incremental effect. In other words, a significant portion of the noise increase must be due to the Project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

- Incremental Effects. The "Cumulative With Project" causes a 1.0 dBA increase in noise over the "Cumulative Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded and if noise levels exceed acceptable noise levels. Noise by definition is a localized phenomenon and reduces as distance from the source increases. Consequently, only the proposed Project and growth due to occur in the general area would contribute to cumulative noise impacts. Table 12: Cumulative Plus Project Buildout Conditions Traffic Noise Levels identifies the traffic noise effects along roadway segments in the vicinity of the Project site for "Existing," "Cumulative Without Project," and "Cumulative With Project," conditions, and net cumulative impacts.

Table 12: Cumulative Plus Project Buildout Conditions Traffic Noise Levels

Roadway Segment	CNEL @ 100 feet from Centerline			Combined Effects	Incremental Effects	Cumulatively Significant Impact?
	Existing	Cumulative Without Project	Cumulative With Project	dBA Difference: Existing and Cumulative With Project	dBA Difference: Cumulative Without and With Project	
Seward Street between Romaine and Willoughby	49.6	50.7	50.8	1.2	0.1	No
Romaine Street between Seward and Hudson	50.0	52.0	52.5	2.5	0.5	No
Hudson Avenue between Romaine and Willoughby	48.2	49.6	49.8	1.6	0.2	No
Willoughby Avenue between Seward and Hudson	55.6	55.7	55.8	0.2	0.1	No

ADT = average daily trips; dBA = A-weighted decibels; CNEL = day-night noise level
1. Traffic noise levels are at 100 feet from the roadway centerline.
Refer to **Appendix B** for traffic noise modeling assumptions and results.

First, it must be determined whether the "Cumulative With Project" 3.0 dB increase above existing conditions (*Combined Effects*) is exceeded. Next, under the *Incremental Effects* criteria, cumulative noise impacts are defined by determining if the forecast ambient ("Cumulative Without Project") noise level is increased by 1.0 dB or more. As shown in Table 12, neither Combined Effects (3.0 dB) nor Incremental Effects (1.0 dB) criteria have been exceeded. Thus, the Project, in combination with cumulative background traffic noise levels, would result in a less than significant cumulative impact. The Project's contribution to traffic noise would not be cumulatively considerable.

Cumulative Stationary Noise

Stationary noise sources of the Project would result in an incremental increase in non-transportation noise sources in the Project Site vicinity. However, as discussed above, operational noise caused by the 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 past, 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 were 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 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 REFERENCES

1. California Department of Transportation, *California Vehicle Noise Emission Levels*, 1987.
2. California Department of Transportation, *Traffic Noise Analysis Protocol*, 2011.
3. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.
4. California Department of Transportation, *Transportation Related Earthborne Vibrations*, 2002.
5. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2013.
6. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual,* 2020
7. City of Los Angeles, *General Plan Noise Element*, 1999
8. City of Los Angeles, *Municipal Code, 2022*
9. City of Los Angeles, 1000 Seward Project, 2022 https://planning.lacity.org/eir/1000Seward/deir/files/D_II.pdf
10. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010
11. Environmental Health Perspectives, *Vehicle Motion Alarms: Necessity, Noise Pollution, or Both?* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3018517/, accessed September 2022.
12. Federal Highway Administration, *Noise Fundamentals,* 2017.
13. Federal Highway Administration, *Roadway Construction Noise Model*, 2006.
14. Federal Highway Administration, *Roadway Construction Noise Model User's Guide Final Report*, 2006.
15. Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, 1992.
16. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018
17. James P. Cowan, *Handbook of Environmental Acoustics,* 1994
18. United States Environmental Protection Agency, *Protective Noise Levels (EPA 550/9-79-100)*, 1979.

Appendix A

NOISE MEASUREMENT DATA

Noise Measurement Field Data

Project:	956 Seward Los Angeles	**Job Number:**	999750001
Site No.:	ST-1	**Date:**	6/6/2023
Analyst:	Ryan Callahan	**Time:**	9:08 AM
Location:	Corner of Seward Street and Barton Street		
Noise Sources:	Vehicle activity on Seward, occasional birds		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
58.6	46.1	70.1	90.3

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):	< 5
Sky:	Clear
Bar. Pressure:	29.90 inHg
Humidity:	62%

Photo:

Kimley»Horn

Summary

File Name on Meter	Ing.045.s
File Name on PC	LxTse_0005586-20230606 100752-Ing.045.ldbin
Serial Number	0005586
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2023-06-06 10:07:52
Stop	2023-06-06 10:22:52
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-06-06 10:03:28
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.6 dB			
	A	**C**	**Z**	
Under Range Peak	**79.1**	76.1	81.1	dB
Under Range Limit	**25.3**	26.0	31.7	dB
Noise Floor	16.2	16.9	22.6	dB
	First	**Second**	**Third**	
Instrument Identification	Kimley-Horn & Associates, Inc.	1100 W.Town & Country Rd, 700	714.939.1030	

Results

LAeq	58.6 dB		
LAE	88.1 dB		
EA	72.444 µPa²h		
LApeak (max)	2023-06-06 10:08:32	90.3	dB
LASmax	2023-06-06 10:17:48	70.1	dB
LASmin	2023-06-06 10:09:48	46.1	dB
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	58.6	58.6	-99.9	58.6	58.6	-99.9	-99.9	dB

LCeq	67.3 dB
LAeq	58.6 dB
LCeq - LAeq	8.7 dB
LAIeq	60.9 dB
LAeq	58.6 dB
LAIeq - LAeq	2.3 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	58.6		67.3			
LS(max)	70.1	2023/06/06 10:17:48				
LS(min)	46.1	2023/06/06 10:09:48				
LPeak(max)	90.3	2023/06/06 10:08:32				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA 5.00	65.2 dB
LA 10.00	63.5 dB
LA 33.30	55.6 dB
LA 50.00	52.1 dB
LA 66.60	49.7 dB
LA 90.00	47.4 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**
Direct	2019-10-29 12:18:45	-28.39	2.58	5.73	0.93
PRMLxT1L	2023-06-06 10:03:27	-28.81	59.32	45.72	59.12
PRMLxT1L	2023-06-01 09:59:25	-28.74	44.79	51.19	54.83
PRMLxT1L	2023-05-19 09:46:38	-28.70	52.77	49.80	48.80
PRMLxT1L	2023-05-18 02:36:18	-28.71	58.04	58.44	43.74
PRMLxT1L	2023-05-18 02:35:35	-28.72	43.46	45.66	54.05
PRMLxT1L	2023-05-17 02:27:40	-28.58	19.55	38.93	38.82
PRMLxT1L	2023-05-16 13:21:54	-28.85	0.26	27.73	113.28
PRMLxT1L	2023-05-16 11:52:20	-26.38	-∞	-∞	-∞
PRMLxT1L	2023-04-26 09:15:01	-28.85	76.98	76.87	81.65
PRMLxT1L	2023-04-06 09:21:13	-28.77	61.09	62.99	55.90
PRMLxT1L	2023-04-05 10:10:57	-28.82	61.07	62.73	63.28

Preamp	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**	**100**	**125**	**160**	**200**	**250**	**315**	**400**
Direct	0.50	3.86	9.51	0.44	-3.11	1.43	6.00	2.05	-3.57	7.95	14.24	0.02	5.29	13.46	6.91	5.51
PRMLxT1L	53.11	55.62	59.35	48.39	51.52	54.26	57.37	58.12	48.84	50.77	48.89	42.29	51.51	46.84	39.38	36.32
PRMLxT1L	55.61	55.13	46.54	58.98	55.37	53.40	60.52	61.55	53.00	57.22	54.29	50.43	48.59	53.16	48.67	38.00
PRMLxT1L	52.00	39.09	41.90	44.54	44.27	55.94	46.08	38.21	39.28	36.32	41.84	37.83	28.38	27.10	20.72	18.53
PRMLxT1L	36.86	45.45	44.57	44.25	45.37	42.13	44.24	42.17	49.38	46.91	45.31	39.67	36.93	37.94	31.38	31.85
PRMLxT1L	49.68	46.86	45.84	44.80	45.33	50.12	46.54	43.31	38.67	34.92	41.71	34.37	35.33	32.12	32.74	34.37
PRMLxT1L	40.98	38.49	42.22	45.35	53.62	50.58	55.65	55.97	45.06	48.50	57.02	46.86	45.21	48.96	41.59	40.78
PRMLxT1L	47.99	1.24	53.84	3.20	29.02	12.93	8.79	13.00	2.53	4.20	8.02	6.36	7.37	10.15	10.23	11.37
PRMLxT1L	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	78.87	69.59	78.40	77.46	72.93	68.86	65.19	70.21	66.08	62.22	63.22	61.41	59.31	57.78	54.64	51.74
PRMLxT1L	55.12	63.06	53.53	59.15	63.58	61.85	64.44	59.44	63.93	71.99	69.74	65.10	67.40	66.56	63.07	64.14
PRMLxT1L	60.59	56.56	51.86	49.82	54.28	53.13	48.55	48.94	45.22	45.31	47.95	45.66	38.49	38.18	31.85	30.30

Preamp	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
Direct	6.87	6.62	5.46	4.67	7.03	8.87	9.88	11.23	13.40	11.42	40.36	23.45	16.13	16.83	19.76	18.96	19.66
PRMLxT1L	29.73	33.08	28.44	113.92	48.80	18.43	65.85	19.67	58.83	19.79	27.84	21.00	22.22	23.71	25.18	27.26	30.41
PRMLxT1L	35.30	34.57	31.56	113.94	48.87	27.91	66.17	19.57	58.46	19.97	27.67	21.16	22.24	23.95	25.19	27.56	30.43
PRMLxT1L	16.75	17.58	28.67	113.99	49.10	18.71	66.92	19.07	57.59	18.77	25.79	21.07	22.14	23.94	25.77	27.93	30.49
PRMLxT1L	29.23	20.94	29.38	114.00	49.13	18.97	66.90	19.34	57.63	18.78	27.07	21.40	22.47	23.67	25.40	27.56	30.57
PRMLxT1L	35.53	21.18	29.23	113.84	48.93	18.19	66.80	19.12	57.47	19.02	26.43	20.70	22.16	23.53	25.66	27.93	30.55
PRMLxT1L	33.76	31.26	29.33	114.26	49.16	18.25	65.02	18.44	55.46	19.14	23.95	18.58	19.94	19.94	19.89	19.93	19.26
PRMLxT1L	10.61	9.93	13.33	11.58	11.86	14.26	13.51	15.55	17.21	17.03	18.07	19.53	21.32	23.43	24.72	27.02	29.47
PRMLxT1L	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	48.13	38.64	34.05	113.90	49.05	21.77	65.89	20.59	58.90	19.95	27.61	21.62	22.68	24.21	25.72	27.90	30.56
PRMLxT1L	65.24	58.91	48.04	114.03	49.22	25.83	66.10	19.89	58.75	19.84	27.89	21.18	22.55	23.87	25.47	27.73	30.68
PRMLxT1L	33.12	23.46	29.94	113.98	49.14	20.21	66.05	19.60	58.87	19.68	27.65	21.14	21.97	23.50	25.77	27.69	30.50

Noise Measurement Field Data

Project:	956 Seward Los Angeles	**Job Number:**	999750001
Site No.:	ST-2	**Date:**	6/6/2023
Analyst:	Ryan Callahan	**Time:**	9:28 AM
Location:	On Hudson Road near Romaine Street		
Noise Sources:	Vehicle activity on Romaine and Hudson, worker activity nearby.		
Comments:	Light construction work occuring on Hudson.		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
53.6	41.4	69.7	93.2

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):	< 5
Sky:	Clear
Bar. Pressure:	29.91 inHg
Humidity:	60%

Photo:

Kimley»Horn

Summary

File Name on Meter	lng.046.s
File Name on PC	LxTse_0005586-20230606 102859-lng.046.ldbin
Serial Number	0005586
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2023-06-06 10:28:59
Stop	2023-06-06 10:43:59
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-06-06 10:03:27
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.6 dB			
	A	**C**	**Z**	
Under Range Peak	**79.1**	76.1	81.1	dB
Under Range Limit	**25.3**	26.0	31.7	dB
Noise Floor	16.2	16.9	22.6	dB
	First	**Second**	**Third**	
Instrument Identification	Kimley-Horn & Associates, Inc.	1100 W.Town & Country Rd, 700	714.939.1030	

Results

LA_{eq}	53.6 dB		
LAE	83.1 dB		
EA	22.909 µPa²h		
$LA_{peak\ (max)}$	2023-06-06 10:35:50	93.2	dB
LAS_{max}	2023-06-06 10:42:12	69.7	dB
LAS_{min}	2023-06-06 10:32:16	41.4	dB
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LA_{peak} > 135.0 dB	0	0.0 s
LA_{peak} > 137.0 dB	0	0.0 s
LA_{peak} > 140.0 dB	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	53.6	53.6	-99.9	53.6	53.6	-99.9	-99.9	dB

LC_{eq}	63.5 dB
LA_{eq}	53.6 dB
LC_{eq} - LA_{eq}	9.9 dB
LAI_{eq}	59.1 dB
LA_{eq}	53.6 dB
LAI_{eq} - LA_{eq}	5.5 dB

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	53.6		63.5			
$L_{S(max)}$	69.7	2023/06/06 10:42:12				
$L_{S(min)}$	41.4	2023/06/06 10:32:16				
$L_{Peak(max)}$	93.2	2023/06/06 10:35:50				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA 5.00	58.8 dB
LA 10.00	56.7 dB
LA 33.30	51.8 dB
LA 50.00	49.5 dB
LA 66.60	47.2 dB
LA 90.00	44.3 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
Direct	2019-10-29 12:18:45	-28.39	2.58	5.73	0.93	0.50	3.86	9.51	0.44	-3.11	1.43	6.00	2.05	-3.57
PRMLxT1L	2023-06-06 10:03:27	-28.81	59.32	45.72	59.12	53.11	55.62	59.35	48.39	51.52	54.26	57.37	58.12	48.84
PRMLxT1L	2023-06-01 09:59:25	-28.74	44.79	51.19	54.83	55.61	55.13	46.54	58.98	55.37	53.40	60.52	61.55	53.00
PRMLxT1L	2023-05-19 09:46:38	-28.70	52.77	49.80	48.80	52.00	39.09	41.90	44.54	44.27	55.94	46.08	38.21	39.28
PRMLxT1L	2023-05-18 02:36:18	-28.71	58.04	58.44	43.74	36.86	45.45	44.57	44.25	45.37	42.13	44.24	42.17	49.38
PRMLxT1L	2023-05-18 02:35:35	-28.72	43.46	45.66	54.05	49.68	46.86	45.84	44.80	45.33	50.12	46.54	43.31	38.67
PRMLxT1L	2023-05-17 02:27:40	-28.58	19.55	38.93	38.82	40.98	38.49	42.22	45.35	53.62	50.58	55.65	55.97	45.06
PRMLxT1L	2023-05-16 13:21:54	-28.85	0.26	27.73	113.28	47.99	1.24	53.84	3.20	29.02	12.93	8.79	13.00	2.53
PRMLxT1L	2023-05-16 11:52:20	-26.38	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	2023-04-26 09:15:01	-28.85	76.98	76.87	81.65	78.87	69.59	78.40	77.46	72.93	68.86	65.19	70.21	66.08
PRMLxT1L	2023-04-06 09:21:13	-28.77	61.09	62.99	55.90	55.12	63.06	53.53	59.15	63.58	61.85	64.44	59.44	63.93
PRMLxT1L	2023-04-05 10:10:57	-28.82	61.07	62.73	63.28	60.59	56.56	51.86	49.82	54.28	53.13	48.55	48.94	45.22

Preamp	100	125	160	200	250	315	400	500	630
Direct	7.95	14.24	0.02	5.29	13.46	6.91	5.51	6.87	6.62
PRMLxT1L	50.77	48.89	42.29	51.51	46.84	39.38	36.32	29.73	33.08
PRMLxT1L	57.22	54.29	50.43	48.59	53.16	48.67	38.00	35.30	34.57
PRMLxT1L	36.32	41.84	37.83	28.38	27.10	20.72	18.53	16.75	17.58
PRMLxT1L	46.91	45.31	39.67	36.93	37.94	31.38	31.85	29.23	20.94
PRMLxT1L	34.92	41.71	34.37	35.33	32.12	32.74	34.37	35.53	21.18
PRMLxT1L	48.50	57.02	46.86	45.21	48.96	41.59	40.78	33.76	31.26
PRMLxT1L	4.20	8.02	6.36	7.37	10.15	10.23	11.37	10.61	9.93
PRMLxT1L	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	62.22	63.22	61.41	59.31	57.78	54.64	51.74	48.13	38.64
PRMLxT1L	71.99	69.74	65.10	67.40	66.56	63.07	64.14	65.24	58.91
PRMLxT1L	45.31	47.95	45.66	38.49	38.18	31.85	30.30	33.12	23.46

Preamp	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
Direct	5.46	4.67	7.03	8.87	9.88	11.23	13.40	11.42	40.36	23.45	16.13	16.83	19.76	18.96	19.66
PRMLxT1L	28.44	113.92	48.80	18.43	65.85	19.67	58.83	19.79	27.84	21.00	22.22	23.71	25.18	27.26	30.41
PRMLxT1L	31.56	113.94	48.87	27.91	66.17	19.57	58.46	19.97	27.67	21.16	22.24	23.95	25.19	27.56	30.43
PRMLxT1L	28.67	113.99	49.10	18.71	66.92	19.07	57.59	18.77	25.79	21.07	22.14	23.94	25.77	27.93	30.49
PRMLxT1L	29.38	114.00	49.13	18.97	66.90	19.34	57.63	18.78	27.07	21.40	22.47	23.67	25.40	27.56	30.57
PRMLxT1L	29.23	113.84	48.93	18.19	66.80	19.12	57.47	19.02	26.43	20.70	22.16	23.53	25.66	27.93	30.55
PRMLxT1L	29.33	114.26	49.16	18.25	65.02	18.44	55.46	19.14	23.95	18.58	19.94	19.94	19.89	19.93	19.26
PRMLxT1L	13.33	11.58	11.86	14.26	13.51	15.55	17.21	17.03	18.07	19.53	21.32	23.43	24.72	27.02	29.47
PRMLxT1L	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	34.05	113.90	49.05	21.77	65.89	20.59	58.90	19.95	27.61	21.62	22.68	24.21	25.72	27.90	30.56
PRMLxT1L	48.04	114.03	49.22	25.83	66.10	19.89	58.75	19.84	27.89	21.18	22.55	23.87	25.47	27.73	30.68
PRMLxT1L	29.94	113.98	49.14	20.21	66.05	19.60	58.87	19.68	27.65	21.14	21.97	23.50	25.77	27.69	30.50

Noise Measurement Field Data

Project:	956 Seward Los Angeles	**Job Number:**	999750001
Site No.:	ST-3	**Date:**	6/6/2023
Analyst:	Ryan Callahan	**Time:**	9:51 AM
Location:	North of Romaine Street on Hudson		
Noise Sources:	Pedestrian and vehicle activity.		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
55.0	42.7	72.4	86.8

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):	< 5
Sky:	Clear
Bar. Pressure:	29.91 inHg
Humidity:	58%

Photo:

Kimley»Horn

Summary

File Name on Meter	lng.047.s
File Name on PC	LxTse_0005586-20230606 105100-lng.047.ldbin
Serial Number	0005586
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2023-06-06 10:51:00
Stop	2023-06-06 11:06:00
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-06-06 10:03:27
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.6 dB			
	A	**C**	**Z**	
Under Range Peak	**79.1**	76.1	81.1	dB
Under Range Limit	**25.3**	26.0	31.7	dB
Noise Floor	16.2	16.9	22.6	dB
	First	**Second**	**Third**	
Instrument Identification	Kimley-Horn & Associates, Inc.	1100 W.Town & Country Rd, 700	714.939.1030	

Results

LAeq	55.0 dB		
LAE	84.5 dB		
EA	31.623 µPa²h		
LApeak (max)	2023-06-06 11:05:44	86.8	dB
LASmax	2023-06-06 11:05:44	72.4	dB
LASmin	2023-06-06 10:57:58	42.7	dB
SEA	-99.9 dB		

	Exceedance Counts	**Duration**
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	55.0	55.0	-99.9	55.0	55.0	-99.9	-99.9	dB

LCeq	64.4 dB
LAeq	55.0 dB
LCeq - LAeq	9.4 dB
LAIeq	57.3 dB
LAeq	55.0 dB
LAIeq - LAeq	2.3 dB

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
Leq	55.0		64.4			
LS(max)	72.4	2023/06/06 11:05:44				
LS(min)	42.7	2023/06/06 10:57:58				
LPeak(max)	86.8	2023/06/06 11:05:44				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA 5.00	61.2 dB
LA 10.00	58.4 dB
LA 33.30	50.8 dB
LA 50.00	48.7 dB
LA 66.60	47.4 dB
LA 90.00	45.1 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**
Direct	2019-10-29 12:18:45	-28.39	2.58	5.73	0.93
PRMLxT1L	2023-06-06 10:03:27	-28.81	59.32	45.72	59.12
PRMLxT1L	2023-06-01 09:59:25	-28.74	44.79	51.19	54.83
PRMLxT1L	2023-05-19 09:46:38	-28.70	52.77	49.80	48.80
PRMLxT1L	2023-05-18 02:36:18	-28.71	58.04	58.44	43.74
PRMLxT1L	2023-05-18 02:35:35	-28.72	43.46	45.66	54.05
PRMLxT1L	2023-05-17 02:27:40	-28.58	19.55	38.93	38.82
PRMLxT1L	2023-05-16 13:21:54	-28.85	0.26	27.73	113.28
PRMLxT1L	2023-05-16 11:52:20	-26.38	-∞	-∞	-∞
PRMLxT1L	2023-04-26 09:15:01	-28.85	76.98	76.87	81.65
PRMLxT1L	2023-04-06 09:21:13	-28.77	61.09	62.99	55.90
PRMLxT1L	2023-04-05 10:10:57	-28.82	61.07	62.73	63.28

Preamp	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**
Direct	0.50	3.86	9.51	0.44	-3.11	1.43	6.00	2.05	-3.57	7.95	14.24	0.02	5.29	13.46	6.91	5.51	6.87	6.62
PRMLxT1L	53.11	55.62	59.35	48.39	51.52	54.26	57.37	58.12	48.84	50.77	48.89	42.29	51.51	46.84	39.38	36.32	29.73	33.08
PRMLxT1L	55.61	55.13	46.54	58.98	55.37	53.40	60.52	61.55	53.00	57.22	54.29	50.43	48.59	53.16	48.67	38.00	35.30	34.57
PRMLxT1L	52.00	39.09	41.90	44.54	44.27	55.94	46.08	38.21	39.28	36.32	41.84	37.83	28.38	27.10	20.72	18.53	16.75	17.58
PRMLxT1L	36.86	45.45	44.57	44.25	45.37	42.13	44.24	42.17	49.38	46.91	45.31	39.67	36.93	37.94	31.38	31.85	29.23	20.94
PRMLxT1L	49.68	46.86	45.84	44.80	45.33	50.12	46.54	43.31	38.67	34.92	41.71	34.37	35.33	32.12	32.74	34.37	35.53	21.18
PRMLxT1L	40.98	38.49	42.22	45.35	53.62	50.58	55.65	55.97	45.06	48.50	57.02	46.86	45.21	48.96	41.59	40.78	33.76	31.26
PRMLxT1L	47.99	1.24	53.84	3.20	29.02	12.93	8.79	13.00	2.53	4.20	8.02	6.36	7.37	10.15	10.23	11.37	10.61	9.93
PRMLxT1L	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	78.87	69.59	78.40	77.46	72.93	68.86	65.19	70.21	66.08	62.22	63.22	61.41	59.31	57.78	54.64	51.74	48.13	38.64
PRMLxT1L	55.12	63.06	53.53	59.15	63.58	61.85	64.44	59.44	63.93	71.99	69.74	65.10	67.40	66.56	63.07	64.14	65.24	58.91
PRMLxT1L	60.59	56.56	51.86	49.82	54.28	53.13	48.55	48.94	45.22	45.31	47.95	45.66	38.49	38.18	31.85	30.30	33.12	23.46

Preamp	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
Direct	5.46	4.67	7.03	8.87	9.88	11.23	13.40	11.42	40.36	23.45	16.13	16.83	19.76	18.96	19.66
PRMLxT1L	28.44	113.92	48.80	18.43	65.85	19.67	58.83	19.79	27.84	21.00	22.22	23.71	25.18	27.26	30.41
PRMLxT1L	31.56	113.94	48.87	27.91	66.17	19.57	58.46	19.97	27.67	21.16	22.24	23.95	25.19	27.56	30.43
PRMLxT1L	28.67	113.99	49.10	18.71	66.92	19.07	57.59	18.77	25.79	21.07	22.14	23.94	25.77	27.93	30.49
PRMLxT1L	29.38	114.00	49.13	18.97	66.90	19.34	57.63	18.78	27.07	21.40	22.47	23.67	25.40	27.56	30.57
PRMLxT1L	29.23	113.84	48.93	18.19	66.80	19.12	57.47	19.02	26.43	20.70	22.16	23.53	25.66	27.93	30.55
PRMLxT1L	29.33	114.26	49.16	18.25	65.02	18.44	55.46	19.14	23.95	18.58	19.94	19.94	19.89	19.93	19.26
PRMLxT1L	13.33	11.58	11.86	14.26	13.51	15.55	17.21	17.03	18.07	19.53	21.32	23.43	24.72	27.02	29.47
PRMLxT1L	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	34.05	113.90	49.05	21.77	65.89	20.59	58.90	19.95	27.61	21.62	22.68	24.21	25.72	27.90	30.56
PRMLxT1L	48.04	114.03	49.22	25.83	66.10	19.89	58.75	19.84	27.89	21.18	22.55	23.87	25.47	27.73	30.68
PRMLxT1L	29.94	113.98	49.14	20.21	66.05	19.60	58.87	19.68	27.65	21.14	21.97	23.50	25.77	27.69	30.50

Noise Measurement Field Data

Project:	956 Seward Los Angeles	**Job Number:**	999750001
Site No.:	ST-4	**Date:**	6/6/2023
Analyst:	Ryan Callahan	**Time:**	10:08 AM
Location:	On Romaine Street, west of Hudson.		
Noise Sources:	Vehicle activity on Romaine and Hudson, worker activity nearby.		
Comments:	Vehicle activity and pedestrians.		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
58.0	42.2	72.9	89.7

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):	< 5
Sky:	Clear
Bar. Pressure:	29.91 inHg
Humidity:	58%

Photo:

Kimley»Horn

Summary

File Name on Meter	Ing.048.s
File Name on PC	LxTse_0005586-20230606 110830-Ing.048.ldbin
Serial Number	0005586
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2023-06-06 11:08:30
Stop	2023-06-06 11:23:30
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2023-06-06 10:03:27
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.6			dB
	A	**C**	**Z**	
Under Range Peak	**79.1**	76.1	81.1	dB
Under Range Limit	**25.3**	26.0	31.7	dB
Noise Floor	16.2	16.9	22.6	dB
	First	**Second**	**Third**	
Instrument Identification	Kimley-Horn & Associates, Inc.	1100 W.Town & Country Rd, 700	714.939.1030	

Results

LAeq	58.0 dB		
LAE	87.5 dB		
EA	63.096 µPa²h		
LApeak (max)	2023-06-06 11:10:43	89.7	dB
LASmax	2023-06-06 11:10:43	72.9	dB
LASmin	2023-06-06 11:10:19	42.2	dB
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	58.0	58.0	-99.9	58.0	58.0	-99.9	-99.9	dB

LCeq	68.5 dB
LAeq	58.0 dB
LCeq - LAeq	10.5 dB
LAIeq	60.6 dB
LAeq	58.0 dB
LAIeq - LAeq	2.6 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	58.0		68.5			
LS(max)	72.9	2023/06/06 11:10:43				
LS(min)	42.2	2023/06/06 11:10:19				
LPeak(max)	89.7	2023/06/06 11:10:43				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA 5.00	64.7 dB
LA 10.00	61.9 dB
LA 33.30	54.1 dB
LA 50.00	50.7 dB
LA 66.60	48.3 dB
LA 90.00	44.9 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**
Direct	2019-10-29 12:18:45	-28.39	2.58	5.73	0.93	0.50	3.86	9.51	0.44	-3.11	1.43	6.00	2.05	-3.57
PRMLxT1L	2023-06-06 10:03:27	-28.81	59.32	45.72	59.12	53.11	55.62	59.35	48.39	51.52	54.26	57.37	58.12	48.84
PRMLxT1L	2023-06-01 09:59:25	-28.74	44.79	51.19	54.83	55.61	55.13	46.54	58.98	55.37	53.40	60.52	61.55	53.00
PRMLxT1L	2023-05-19 09:46:38	-28.70	52.77	49.80	48.80	52.00	39.09	41.90	44.54	44.27	55.94	46.08	38.21	39.28
PRMLxT1L	2023-05-18 02:36:18	-28.71	58.04	58.44	43.74	36.86	45.45	44.57	44.25	45.37	42.13	44.24	42.17	49.38
PRMLxT1L	2023-05-18 02:35:35	-28.72	43.46	45.66	54.05	49.68	46.86	45.84	44.80	45.33	50.12	46.54	43.31	38.67
PRMLxT1L	2023-05-17 02:27:40	-28.58	19.55	38.93	38.82	40.98	38.49	42.22	45.35	53.62	50.58	55.65	55.97	45.06
PRMLxT1L	2023-05-16 13:21:54	-28.85	0.26	27.73	113.28	47.99	1.24	53.84	3.20	29.02	12.93	8.79	13.00	2.53
PRMLxT1L	2023-05-16 11:52:20	-26.38	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	2023-04-26 09:15:01	-28.85	76.98	76.87	81.65	78.87	69.59	78.40	77.46	72.93	68.86	65.19	70.21	66.08
PRMLxT1L	2023-04-06 09:21:13	-28.77	61.09	62.99	55.90	55.12	63.06	53.53	59.15	63.58	61.85	64.44	59.44	63.93
PRMLxT1L	2023-04-05 10:10:57	-28.82	61.07	62.73	63.28	60.59	56.56	51.86	49.82	54.28	53.13	48.55	48.94	45.22

Preamp	**Date**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**
Direct	2019-10-29 12:18:45	7.95	14.24	0.02	5.29	13.46	6.91	5.51	6.87	6.62	5.46	4.67
PRMLxT1L	2023-06-06 10:03:27	50.77	48.89	42.29	51.51	46.84	39.38	36.32	29.73	33.08	28.44	113.92
PRMLxT1L	2023-06-01 09:59:25	57.22	54.29	50.43	48.59	53.16	48.67	38.00	35.30	34.57	31.56	113.94
PRMLxT1L	2023-05-19 09:46:38	36.32	41.84	37.83	28.38	27.10	20.72	18.53	16.75	17.58	28.67	113.99
PRMLxT1L	2023-05-18 02:36:18	46.91	45.31	39.67	36.93	37.94	31.38	31.85	29.23	20.94	29.38	114.00
PRMLxT1L	2023-05-18 02:35:35	34.92	41.71	34.37	35.33	32.12	32.74	34.37	35.53	21.18	29.23	113.84
PRMLxT1L	2023-05-17 02:27:40	48.50	57.02	46.86	45.21	48.96	41.59	40.78	33.76	31.26	29.33	114.26
PRMLxT1L	2023-05-16 13:21:54	4.20	8.02	6.36	7.37	10.15	10.23	11.37	10.61	9.93	13.33	11.58
PRMLxT1L	2023-05-16 11:52:20	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	2023-04-26 09:15:01	62.22	63.22	61.41	59.31	57.78	54.64	51.74	48.13	38.64	34.05	113.90
PRMLxT1L	2023-04-06 09:21:13	71.99	69.74	65.10	67.40	66.56	63.07	64.14	65.24	58.91	48.04	114.03
PRMLxT1L	2023-04-05 10:10:57	45.31	47.95	45.66	38.49	38.18	31.85	30.30	33.12	23.46	29.94	113.98

Preamp	**Date**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
Direct	2019-10-29 12:18:45	7.03	8.87	9.88	11.23	13.40	11.42	40.36	23.45	16.13	16.83	19.76	18.96	19.66
PRMLxT1L	2023-06-06 10:03:27	48.80	18.43	65.85	19.67	58.83	19.79	27.84	21.00	22.22	23.71	25.18	27.26	30.41
PRMLxT1L	2023-06-01 09:59:25	48.87	27.91	66.17	19.57	58.46	19.97	27.67	21.16	22.24	23.95	25.19	27.56	30.43
PRMLxT1L	2023-05-19 09:46:38	49.10	18.71	66.92	19.07	57.59	18.77	25.79	21.07	22.14	23.94	25.77	27.93	30.49
PRMLxT1L	2023-05-18 02:36:18	49.13	18.97	66.90	19.34	57.63	18.78	27.07	21.40	22.47	23.67	25.40	27.56	30.57
PRMLxT1L	2023-05-18 02:35:35	48.93	18.19	66.80	19.12	57.47	19.02	26.43	20.70	22.16	23.53	25.66	27.93	30.55
PRMLxT1L	2023-05-17 02:27:40	49.16	18.25	65.02	18.44	55.46	19.14	23.95	18.58	19.94	19.94	19.89	19.93	19.26
PRMLxT1L	2023-05-16 13:21:54	11.86	14.26	13.51	15.55	17.21	17.03	18.07	19.53	21.32	23.43	24.72	27.02	29.47
PRMLxT1L	2023-05-16 11:52:20	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞
PRMLxT1L	2023-04-26 09:15:01	49.05	21.77	65.89	20.59	58.90	19.95	27.61	21.62	22.68	24.21	25.72	27.90	30.56
PRMLxT1L	2023-04-06 09:21:13	49.22	25.83	66.10	19.89	58.75	19.84	27.89	21.18	22.55	23.87	25.47	27.73	30.68
PRMLxT1L	2023-04-05 10:10:57	49.14	20.21	66.05	19.60	58.87	19.68	27.65	21.14	21.97	23.50	25.77	27.69	30.50

Appendix B

NOISE MODELING DATA

Project: 956 Seward Street
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, Direction)	Distance (feet)	Shielding	Direction	Distance (Concrete Mixer)
1	SFR Seward and Barton	397	0	SW	425
2	MFR Hudson s/o project	75	0	S	150
3	SFR Hudson n/o Romaine	330	0	N	200
4	MFR Romaine	355	0	NE	215

					RECEPTOR 1		RECEPTOR 2		RECEPTOR 3		RECEPTOR 4	
Construction Phase	**Equipment Type**	**No. of Equip.**	**Acoustical Usage Factor**	**Reference Noise Level at 50ft per Unit, Lmax**	**Noise Level at Receptor 1, Lmax**	**Noise Level at Receptor 1, Leq**	**Noise Level at Receptor 2, Lmax**	**Noise Level at Receptor 2, Leq**	**Noise Level at Receptor 3, Lmax**	**Noise Level at Receptor 3, Leq**	**Noise Level at Receptor 4, Lmax**	**Noise Level at Receptor 4, Leq**
Soft Demolition												
	Front End Loader	1	40%	79	61.1	57.1	75.6	71.6	62.7	58.7	62.1	58.1
	Backhoe	1	40%	78	59.6	55.6	74.1	70.1	61.2	57.2	60.6	56.6
Combined LEQ						**59.4**		**73.9**		**61.1**		**60.4**
Hard Demolition												
	Excavator	1	40%	81	62.7	58.7	77.2	73.2	64.3	60.3	63.7	59.7
	Backhoe	1	40%	78	59.6	55.6	74.1	70.1	61.2	57.2	60.6	56.6
Combined LEQ						**60.5**		**74.9**		**62.1**		**61.4**
Grading												
	Excavator	1	40%	81	62.7	58.7	77.2	73.2	64.3	60.3	63.7	59.7
	Backhoe	1	40%	78	59.6	55.6	74.1	70.1	61.2	57.2	60.6	56.6
Combined LEQ						**60.5**		**74.9**		**62.1**		**61.4**
Excavation												
	Front End Loader	2	40%	79	64.1	60.1	78.6	74.6	65.7	61.7	65.1	61.1
Combined LEQ						**60.1**		**74.6**		**61.7**		**61.1**
Paving												
	Paver	1	50%	77	59.2	56.2	73.7	70.7	60.8	57.8	60.2	57.2
	Roller	1	20%	80	62.0	55.0	76.5	69.5	63.6	56.6	63.0	56.0
	Concrete Mixer Truck	1	40%	79	60.2	56.2	69.3	65.3	66.8	62.8	66.1	62.2
Combined Paving LEQ						**60.6**		**73.8**		**64.7**		**64.1**
Building Construction - Footings/Foundation												
	Backhoe	1	40%	78	59.6	55.6	74.1	70.1	61.2	57.2	60.6	56.6
	Concrete Mixer Truck	1	40%	61	42.4	38.4	51.5	47.5	49.0	45.0	48.3	44.4
	Vibratory Concrete Mixer	1	20%	80	62.0	55.0	76.5	69.5	63.6	56.6	63.0	56.0
Combined LEQ						**58.4**		**72.8**		**60.1**		**59.4**
Building Construction - Building Erection												
	Crane	1	16%	81	62.6	54.6	77.1	69.1	64.2	56.3	63.6	55.6
	Backhoe	1	40%	78	59.6	55.6	74.1	70.1	61.2	57.2	60.6	56.6
	Man Lift	2	20%	61	46.0	39.0	60.5	53.5	47.6	40.6	47.0	40.0
	Welder/Torch	1	40%	74	56.0	52.0	70.5	66.5	57.6	53.6	57.0	53.0
	Forklift*	1	40%	61	43.0	39.0	57.5	53.5	44.6	40.6	44.0	40.0
Combined LEQ						**59.2**		**73.7**		**60.8**		**60.2**
Building Construction C - Finishes												
	Compressor (air)	1	40%	78	59.7	55.7	74.2	70.2	61.3	57.3	60.7	56.7
	Flat Bed Truck	1	40%	74	56.3	52.3	70.8	66.8	57.9	53.9	57.3	53.3
	Man Lift	3	20%	75	61.5	54.5	75.9	69.0	63.1	56.1	62.4	55.5
	Forklift*	1	40%	61	43.0	39.0	57.5	53.5	44.6	40.6	44.0	40.0
	Welder/Torch	1	40%	74	56.0	52.0	70.5	66.5	57.6	53.6	57.0	53.0
Combined LEQ						**60.0**		**74.4**		**61.6**		**60.9**
Architectural Coating												
	Compressor (air)	1	40%	78	59.7	55.7	74.2	70.2	61.3	57.3	60.7	56.7
	Man Lift	3	20%	75	61.5	54.5	75.9	69.0	63.1	56.1	62.4	55.5
Combined LEQ						**58.2**		**72.6**		**59.8**		**59.1**

Source for Ref. Noise Levels: RCNM, 2005

* Warehouse & Forklift Workplace Noise Levels, The Main Noise Exposed SEG – Forklift Drivers, https://www.noisetesting.info/blog/warehouse-forklift-workplace-noise-levels/, Accessed July 26, 2022.

Project: Seward Project
Mechanical Equipment Noise Calculations

Receptor	Reference Level (dBA)	Reference Distance (feet)	Distance to Receptor (feet)	Level at Receptor (dBA)[4]	Ambient	Ambient +Project	Threshold	Significant (Night)?
1 SFR Seward and Barton	52	50	250	38.0	58.6	58.6	63.6	No
2 MFR Hudson s/o project	52	50	50	52.0	53.6	55.9	58.6	No
3 SFR Hudson n/o Romaine	52	50	270	37.4	55.0	55.1	60.0	No
4 MFR Romaine	52	50	300	36.4	58.0	58.0	63.0	No

1. Source for reference level: Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values* , July 6, 2010.

2. Distance estimated using location of rooftop equipment as indiciated on Site Plan

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

Project Name:
Project Number:
Scenario: Existing
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%

								Vehicle Mix		Distance from Centerline of Roadway				
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Seward	Between Romaine and Willoughby	2	0	1,354	25	0	2.0%	1.0%	49.6	-	-	-	-
2	Romaine Street	Between Seward and Hudson	2	0	1,456	25	0	2.0%	1.0%	50.0	-	-	-	-
3	Hudson Avenue	Between Romain and Willoughby	2	0	969	25	0	2.0%	1.0%	48.2	-	-	-	-
4	Willoughby Avenue	Between Seward and Hudson	2	0	5,312	25	0	2.0%	1.0%	55.6	-	-	36	114

[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:
Project Number:
Scenario: Existing Plus Project Construction
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%

								Vehicle Mix		Distance from Centerline of Roadway				
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Seward	Between Romaine and Willoughby	2	0	1,461	25	0	1.9%	3.0%	52.8	-	-	-	60
2	Romaine Street	Between Seward and Hudson	2	0	1,563	25	0	1.9%	2.9%	52.9	-	-	-	62
3	Hudson Avenue	Between Romain and Willoughby	2	0	1,076	25	0	1.8%	3.7%	52.1	-	-	-	51
4	Willoughby Avenue	Between Seward and Hudson	2	0	5,419	25	0	2.0%	1.5%	56.6	-	-	46	145

[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:
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%

								Vehicle Mix		Distance from Centerline of Roadway				
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	**Roadway**	**Segment**	**Lanes**	**Width**	**Volume**	**(mph)**	**Factor**	**Trucks**	**Trucks**	**100 Feet**	**70 CNEL**	**65 CNEL**	**60 CNEL**	**55 CNEL**
1	Seward	Between Romaine and Willoughby	2	0	1,381	25	0	2.0%	1.0%	49.7	-	-	-	-
2	Romaine Street	Between Seward and Hudson	2	0	1,485	25	0	2.0%	1.0%	50.0	-	-	-	-
3	Hudson Avenue	Between Romain and Willoughby	2	0	989	25	0	2.0%	1.0%	48.3	-	-	-	-
4	Willoughby Avenue	Between Seward and Hudson	2	0	5,419	25	0	2.0%	1.0%	55.7	-	-	37	117

[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:
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%

								Vehicle Mix		Distance from Centerline of Roadway				
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Seward	Between Romaine and Willoughby	2	0	1,412	25	0	2.0%	1.0%	49.8	-	-	-	-
2	Romaine Street	Between Seward and Hudson	2	0	1,735	25	0	2.0%	1.0%	50.7	-	-	-	37
3	Hudson Avenue	Between Romain and Willoughby	2	0	1,052	25	0	2.0%	1.0%	48.6	-	-	-	-
4	Willoughby Avenue	Between Seward and Hudson	2	0	5,435	25	0	2.0%	1.0%	55.7	-	-	37	117

[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:
Project Number:
Scenario: Horizon Year Cumulative
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%

								Vehicle Mix		Distance from Centerline of Roadway				
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Seward	Between Romaine and Willoughby	2	0	1,741	25	0	2.0%	1.0%	50.7	-	-	-	37
2	Romaine Street	Between Seward and Hudson	2	0	2,344	25	0	2.0%	1.0%	52.0	-	-	-	50
3	Hudson Avenue	Between Romain and Willoughby	2	0	1,332	25	0	2.0%	1.0%	49.6	-	-	-	-
4	Willoughby Avenue	Between Seward and Hudson	2	0	5,515	25	0	2.0%	1.0%	55.7	-	-	38	119

[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:
Project Number:
Scenario: Horizon Year Plus Project Cumulative + 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%

								Vehicle Mix		Distance from Centerline of Roadway				
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Seward	Between Romaine and Willoughby	2	0	1772	25	0	2.0%	1.0%	50.8	-	-	-	38
2	Romaine Street	Between Seward and Hudson	2	0	2594	25	0	2.0%	1.0%	52.5	-	-	-	56
3	Hudson Avenue	Between Romain and Willoughby	2	0	1395	25	0	2.0%	1.0%	49.8	-	-	-	-
4	Willoughby Avenue	Between Seward and Hudson	2	0	5531	25	0	2.0%	1.0%	55.8	-	-	38	119

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

Equipment		PPV at 25 feet (in/sec)	Calculated distance (feet) 50	Approximate L_V (VdB) at 25 feet	Calculated distance (feet) 50
Pile Driver (impact)	upper range	1.518	0.5367	112	103
	typical	0.644	0.2277	104	95
Pile Driver (sonic)	upper range	0.734	0.2595	105	96
	typical	0.17	0.0601	93	84
Clam shovel drop (slurry wall)		0.202	0.0714	94	85
Hydromill (slurry wall)	in soil	0.008	0.0028	66	57
	in rock	0.017	0.0060	75	66
Vibratory Roller		0.21	0.0742	94	85
Hoe Ram		0.089	0.0315	87	78
Large bulldozer		0.089	0.0315	87	78
Caisson drilling		0.089	0.0315	87	78
Loaded trucks		0.076	0.0269	86	77
Jackhammer		0.035	0.0124	79	70
Small bulldozer		0.003	0.0011	58	49
Rock Breaker		0.059	0.0209		
		PPV at 50 ft			
Blasting		0.4	0.4000		

$L_v(D) = L_v(25\text{ feet}) - (30 \times \log_{10}(D/25\text{ feet}))$

Source: FTA, Noise and Vibration Manual, 2006. Page 12-11.

Notes:

1. Calculated using the following formula:

PPV equip = PPVref x (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 12-2 of the FTA Transit Noise and Vibration Impact Assessment Guidelines

D = the distance from the equipment to the receiver

Custom

Equipment	PPV at 25 feet (in/sec)	Calculated distance (feet) 8	10	26	30	35	40	75
Loaded trucks	0.076	0.420	0.300	0.07	0.057815	0.045879802	0.037552047	0.015
Vibratory compactor/roller	0.21	1.160	0.830	0.20	0.159752	0.126773138	0.103762236	0.040