



Acoustical Assessment

7825 San Leandro Street Project

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1.0 INTRODUCTION

This report documents the results of an Acoustical Assessment completed for the 7825 San Leandro Street Project (Project). The purpose of this Acoustical Assessment is to evaluate the potential construction and operational noise and vibration levels associated with the Project and determine the level of impact the Project would have on the environment.

1.1 Project Location

The Project site comprises approximately 14.9-acres located at 7825 San Leandro Street, in the City of Oakland, California; refer to [Exhibit 1: Regional Vicinity](#) and [Exhibit 2: Site Vicinity](#). The Project site consists of 14 parcels (Assessor Parcel Numbers [APNs]: 041 417500302, 041 417501800, 041 417501600, 041 417501000, 041 417500600, 041 417500500, 041 417501700, 041 417501900, 041 42000102, 041 420900700, 041 420900101, 041 420900302, 041 420800100, and 041 420900801). The Project site is bound by Hegenberger Road to the north, San Leandro Street to the east, existing commercial uses and the Elmhurst Creek canal to the south, and train tracks to the west. The Project site is zoned as General Industrial (IG) and Commercial Industrial Mix-2 (CIX-2) districts with General Plan land use designations of Business Mix and General Industry and Transportation.

1.2 Project Description

The Project proposes to construction an approximately 311,000 square foot (sf) industrial building. The Applicant proposes a speculative warehouse, as the future tenant and nature of the ultimate use are currently unknown. The main building entrance and employee amenity space would be located at the northern and northeast corners of the building fronting onto San Leandro Street. The new facility would include up to 20,000 square feet of accessory office space with an additional 5,000 square feet of accessory office space would be provided at a mezzanine level; refer to [Exhibit 3: Site Plan](#).

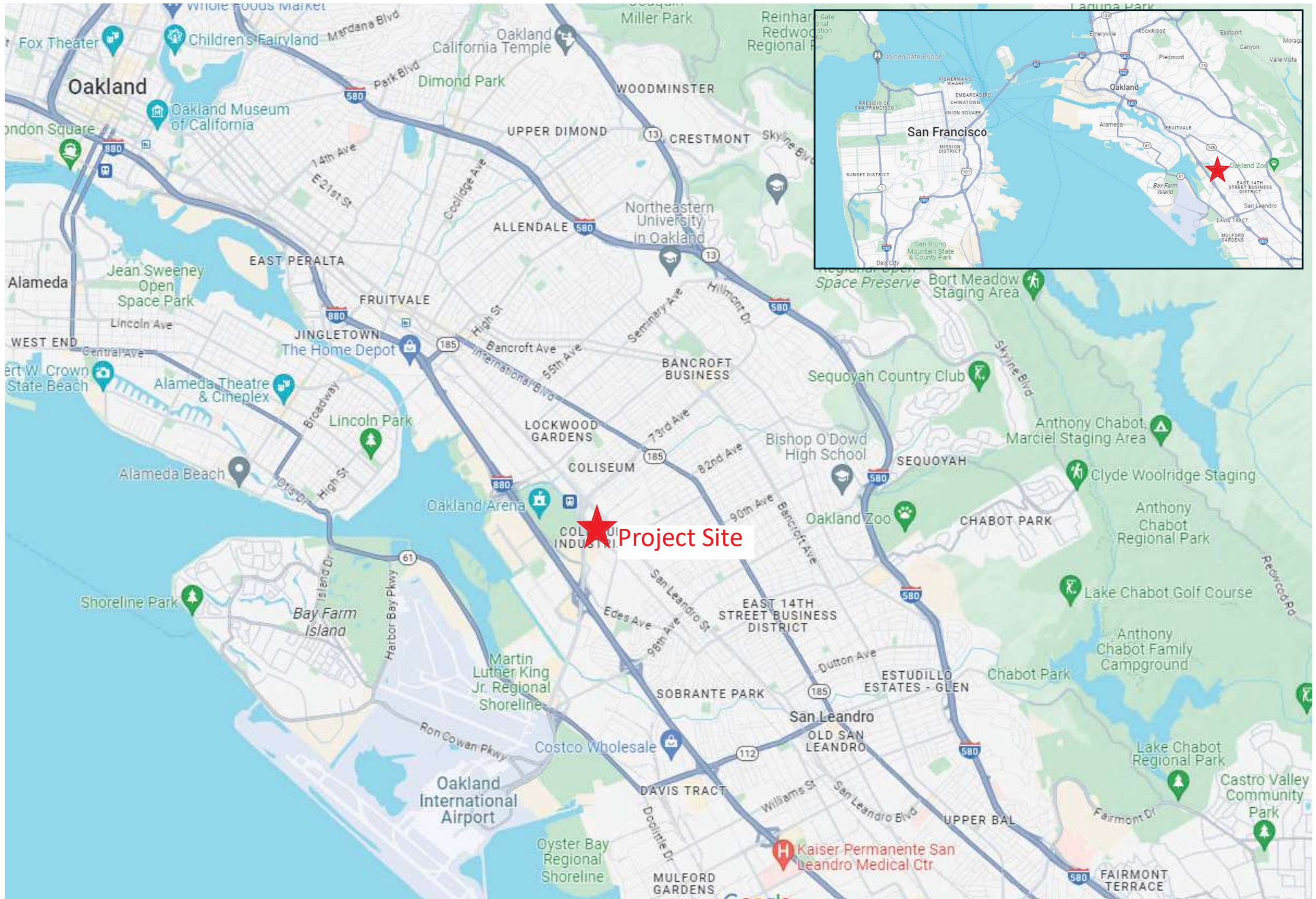
Automobile access would be provided via three driveways on the east side of the Project site from San Leandro Street. Trucks would access the site utilizing the southern driveways along San Leandro Street. Passenger vehicles would access the site through the northern driveway along San Leandro Street intersecting with 77th Avenue. Passenger vehicles would use this driveway to access the northwest employee parking area via the internal drive aisles along the western, southern, and eastern boundaries of the proposed warehouse building.

Hours of Operation

The tenant(s) of the warehouse facility has not been identified; therefore, the precise nature of facility operations cannot be determined at this time. Any future occupant would be required to adhere to the pertinent City regulations. For the purposes of this analysis, the hours of operation are conservatively assumed to be 7 days a week, 24 hours per day.

Construction Activities

Project construction is anticipated to begin in April 2027 with a duration of approximately 22 months. Construction of the Project would require approximately 646,343 square feet of hardscape demolition. Earthwork activities would require approximately 2,100 cubic yards (cy) of soil remediation export and 18,806 cy of import. Construction of the Project would require the following phases: demolition, site preparation, grading, infrastructure improvements, building construction, paving, and architectural coatings.



Source: Google Earth, 2024

Exhibit 1: Regional Vicinity
7825 San Leandro Street Project
Technical Reports



Not to scale

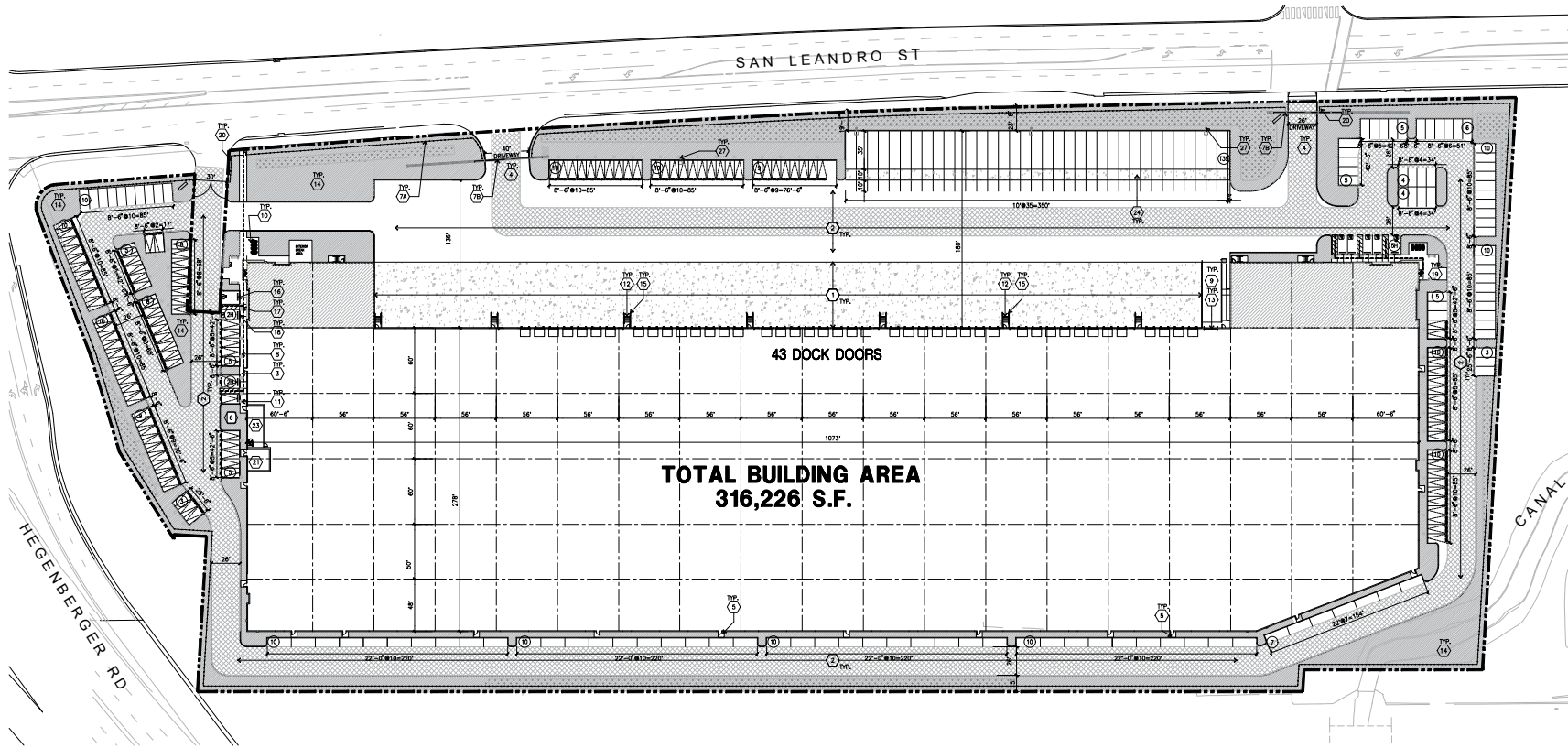
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Source: Google Earth, 2024



Not to scale



OVERALL SITE PLAN
scale: 1" = 60'-0"

SITE PLAN KEYNOTES

1. HEAVY BROOM FINISH CONCRETE PAVEMENT.
2. ASPHALT CONCRETE (AC) PAVING.
3. ACCESSIBLE PATH OF TRAVEL.
4. DRIVEWAY APRONS.
5. 8"-10" THICK CONCRETE EXTERIOR LANDING PAD TYP. ALL EXTERIOR WALL DOORS TO UNCOATED AREAS. FINISH TO BE MEDIUM BROOM FINISH SLOPE TO BE 1/4" : 12' MAX. APPROXIMATE LOCATION OF TRANSFORMER.
6. 8" HIGH BLACK METAL TUBULAR STEEL SECURITY FENCE.
7. 8" HIGH BLACK METAL TUBULAR STEEL SECURITY GATE.
8. CONCRETE RAILWAY, MEDIUM BROOM FINISH. SEE "C" DRAWINGS.
9. CONCRETE RAMP WITH CONCRETE GUARD WALL. SEE "C" DRAWINGS.
10. SHORT TERM BIKE RACK.
11. FUTURE ELECTRIC VEHICLE CHARGER.
12. EXTERIOR METAL STEEL STAIR.
13. 12' x 14' DRIVE-IN DOOR.
14. LANDSCAPE.
15. CONC. FILLED GUARD POST 12" DIA. U.N.O. 48" H.
16. PRE-CAST CONC. WHEEL STOP.
17. TRUNCATED DOME.
18. ACCESSIBLE PARKING STALL SIGN.
19. LANDSCAPE AT ENTRANCE.
20. ACCESSIBLE ENTRY SIGN.
21. PUMP ROOM.
22. NOT USED.
23. ELECTRICAL ROOM.
24. CONCRETE SLOTTED PAV. SEE SITE PLAN FOR WIDTH AND "C" DRAWINGS.
25. LONG TERM BIKE RACK.
26. NOT USED.
27. EXTERIOR PARKING LIGHT POLE.

SITE PLAN GENERAL NOTES

1. THE SITE PLAN BASED ON THE SOILS REPORT PREPARED BY GEOTECHNICAL ENGINEER, DATE PROJECT NUMBER #.
2. IF SOILS ARE EXPANSIVE IN NATURE, USE STEEL REINFORCING FOR ALL SITE CONCRETE.
3. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE WALL. FACE OF CONCRETE CURB ON GRD LINE U.N.O.
4. SEE "C" PLANS FOR ALL CONCRETE CURBS, GUTTERS AND SWALES.
5. PROVIDE STRUCTURAL CALCULATION AND CONSTRUCTION ANCHORAGE DETAIL FOR TRANSFORMER PRIOR TO INSTALLATION.
6. SEE "C" DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR SHALL VERIFY ACTUAL UTILITY LOCATIONS.
7. PROVIDE POSITIVE DRAINAGE AWAY FROM BLDG. SEE "C" DRAWINGS.
8. CONTRACTOR TO REFER TO "C" DRAWINGS FOR ALL HORIZONTAL CONTROL DIMENSIONS. SITE PLANS ARE FOR GUIDANCE AND STARTING LAYOUT POINTS.
9. SEE "C" DRAWINGS FOR FINISH GRADE ELEVATIONS.
10. CONCRETE SIDEWALKS TO BE A MINIMUM OF 4" THICK W/ TOOLED JOINTS AT 8' O.C. EXPANSION/CONSTRUCTION JOINTS SHALL BE A MAXIMUM 12' EA. MAX W/ 1:20 MAX. SLOPE. EXPANSION JOINTS TO HAVE COMPRESSIVE EXPANSION FILLER MATERIAL OF 1/4". FINISH TO BE A MEDIUM BROOM FINISH.
11. U.N.O. PROVIDE KNOX BOXES AT ALL OFFICE ENTRANCES.
12. PAINT CURBS AND PROVIDE SIGNS TO INFORM OF FIRE LANES AS REQUIRED BY FIRE DEPARTMENT.
13. ON-SITE FIRE MAIN, FIRE SPRINKLER, AND SPRINKLER MONITORING SYSTEM SHALL BE SUBMITTED SEPARATELY TO THE FIRE DEPARTMENT FOR REVIEW AND PERMITTING.
14. ALL VERTICAL MOUNTING POLES OF FIXINGS SHALL BE CAPPED.
15. LANDSCAPED AREAS SHALL BE DELINEATED WITH A MINIMUM SIX INCHES (6") HIGH CURB.
16. ALL INTERIOR AND EXTERIOR WALK SURFACES TO BE NON-SLIP TYPE.

SITE PLAN GENERAL LEGEND

- | | |
|---|--|
| CONCRETE PAVING. SEE "C" DRAWINGS FOR THICKNESS. | ACCESSIBLE PARKING STALL (8' X 18'). |
| STANDARD PARKING STALL (8' X 18'). | ACCESSIBLE AISLE. |
| CLEAN AIR/VANPOOL/EV WITH CHARGER. | ACCESSIBLE PARKING (VAN) STALL (12' X 18') + 5' W/ ACCESSIBLE AISLE. |
| CLEAN AIR/VANPOOL/EV WITH CHARGER STUB FOR FUTURE EV. | |
| TRAILER PARKING (12' X 30'). | |
| NUMBER OF PARKING STALLS. | |
| LANDSCAPED AREA. | |
| | POTENTIAL OFFICE. |
- PATH OF TRAVEL. MINIMUM WIDTH TO BE 4'. SLOPE NOT TO EXCEED 2% IN THE DIRECTION OF TRAVEL. AND CROSS SLOPE NOT TO EXCEED 2%. SEE CHL FOR GRADING PLAN.

Source: HPA, 2024

Exhibit 3: Site Plan

7825 San Leandro Street Project
Technical Reports



Not to scale

Kimley-Horn

2.0 ACOUSTIC FUNDAMENTALS

2.1 Sound and Environmental Noise

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

Noise is defined as loud, unexpected, or annoying sound. The fundamental acoustics 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 a base of steady background noise that is the sum of many distant and indistinguishable noise sources. The sound from individual local sources is superimposed on this background noise. 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 micropascals (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
Jet fly-over at 1,000 feet	- 110 -	Rock Band
Gas lawnmower at 3 feet	- 100 -	
Diesel truck at 50 feet at 50 mph	- 90 -	Food blender at 3 feet
Noisy urban area, daytime	- 80 -	Garbage disposal at 3 feet
Gas lawnmower, 100 feet	- 70 -	Vacuum cleaner at 10 feet
Commercial area	- 60 -	Normal Speech at 3 feet
Heavy traffic at 300 feet	- 50 -	Large business office
Quiet urban daytime	- 40 -	Dishwasher in next room
Quiet urban nighttime	- 30 -	Theater, large conference room (background)
Quiet suburban nighttime	- 20 -	Library
Quiet rural nighttime	- 10 -	Bedroom at night, concert hall (background)
	- 0 -	Broadcast/recording studio
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. Most commonly, environmental sounds are described in terms of the equivalent noise level (L_{eq}) that has the same acoustical energy as the summation of all the time-varying events. While L_{eq} represents the continuous sound pressure level over a given period, the day-night noise level (L_{dn}) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. 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.

Table 2: Definitions of Acoustical Terms	
Term	Definitions
Exceeded Noise Levels (L_{01} , L_{10} , L_{50} , L_{90})	The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Noise Level (L_{dn})	A 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity at nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn} .
Community Noise Equivalent Level (CNEL)	A 24-hour average L_{eq} with a 5 dBA weighting during the hours of 7:00 a.m. to 10:00 a.m. and a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
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.

Because sound levels can vary markedly over a short period of time, a method for describing either the sound's average character (L_{eq}) or the variations' statistical behavior (L_{xx}) must be utilized. The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within approximately plus or minus 1 dB. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The predicted models' accuracy depends on various factors, such as the distance between the noise receptor and the noise source, the character of the ground surface (e.g., hard or soft), and the presence or absence of structures (e.g., walls or buildings) or topography, and how well model inputs reflect these conditions.

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 A-weighted decibel (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 10.¹ When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness.² For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. 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. Under the dB scale, three sources of equal loudness together would produce an increase of 5 dBA.³

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.⁴ Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics.⁵ 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. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed in this report.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the noise receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm can reduce noise levels by 5 to 15 dBA.⁶ 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.⁷ Examples of low daytime levels are isolated, natural settings with noise levels as low as 20

¹ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ Federal Highway Administration, Highway Traffic and Construction Noise - Problem and Response, April 2006, accessed September 2024.

⁷ Compiled from James P. Cowan, *Handbook of Environmental Acoustics*, 1994, and Cyril M. Harris, *Handbook of Noise Control*, 1979.

dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or 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:⁸

- 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.

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.⁹

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.¹⁰

2.2 Groundborne Vibration

Sources of groundborne 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

⁸ Compiled from California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013, and Federal Highway Administration, *Noise Fundamentals*, 2017.

⁹ U.S. Department of Labor, *Occupational Safety and Health Standards, 29 CFR 1910 (Occupational Noise Exposure)*, accessed September 2024.

¹⁰ Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992, accessed September 2024.

transient (e.g. explosions). 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 the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave and is expressed in terms of inches-per-second (in/sec). The RMS velocity is defined as the average of the squared amplitude of the signal and is expressed in terms of velocity decibels (VdB). 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 individual's sensitivity. 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 groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

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

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 groundborne 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.

3.0 REGULATORY SETTING

3.1 Federal

No federal laws, regulations, or policies for construction-related noise and vibration directly apply to the proposed project. However, the Federal Transit Administration (FTA) has developed general assessment criteria for analyzing construction noise. Although FTA standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in the FTA's *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) routinely are used to evaluate a variety of projects proposed by local jurisdictions (i.e., not exclusively used for transit projects). The FTA construction guidelines state that each A-weighted sound level increase of 10 dB corresponds to an approximate doubling of subjective loudness. As a result, a 10-dB increase in the ambient noise level is often used as the threshold to determine if an increase in ambient noise levels because of construction would be considered substantial.

3.2 State of California

California Government Code

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

Title 24 – Building Code

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

3.3 Local

City of Oakland General Plan

The *City of Oakland General Plan* (General Plan) is a long-range planning document that provides a

framework for action and the direction in which to focus that action. The Noise Element recognizes that some land uses are more sensitive to ambient noise levels than others, due to the amount of noise exposure (i.e., the exposure duration and insulation from noise) and the types of typical activities. The City of Oakland Noise Element also includes the following relevant Noise Element policies and actions applicable to the Project:

Policy 1: Ensure the compatibility of existing and, especially, of proposed development projects not only with neighboring land uses but also with their surrounding noise environment.

Action 1.1: Use the noise-land use compatibility matrix in conjunction with the noise contour maps (especially for roadway traffic) to evaluate the acceptability of residential and other proposed land uses and also the need for any mitigation or abatement measures to achieve the desired degree of acceptability.

Action 1.2: Continue using the City’s zoning regulations and permit processes to limit the hours of operation of noise-producing activities which create conflicts with residential uses and to attach noise-abatement requirements to such activities.

Policy 2: Protect the noise environment by controlling the generation of noise by both stationary and mobile noise sources.

Action 2.1: Review the various noise prohibitions and restrictions under the City’s nuisance noise ordinance and revise the ordinance if necessary.

Action 2.2: As resources permit, increase enforcement of noise-related complaints and also of vehicle speed limits and of operational noise from cars, trucks, and motorcycles.

Policy 3: Reduce the community’s exposure to noise by minimizing the noise levels that are received by Oakland residents and others in the city.

Action 3.1: Continue to use the building-permit application process to enforce the California Noise Insulation Standards regulating the maximum allowable interior noise level in new multi-unit buildings.

Action 3.2: Review the City’s noise performance standards and revise them as appropriate to be consistent with the City Council policy.

Land Use Compatibility

The noise criteria identified in the City of Oakland General Plan Noise Element (Figure 6) are guidelines to evaluate land-use compatibility. The compatibility criteria, shown in [Table 4: Land Use Compatibility for Community Noise Exposure](#), provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. The Land Use Compatibility for Community Noise Exposure matrix describes categories of compatibility and not specific noise standards.

Table 4: Land Use Compatibility for Community Noise Exposure				
Land Use Category	Community Noise Exposure Range (L_{dn} or CNEL, dB) by Interpretation¹			
	Normally Acceptable²	Conditionally Acceptable³	Normally Unacceptable⁴	Clearly Unacceptable⁵
Residential	50 - 60	60 - 70	70 - 75	75 - 85
Transient Lodging – Motels, Hotels	50 - 65	65 – 75	75 - 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 60	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	-	50 - 70	-	70-85
Sports Arena, Outdoor Spectator Sports	-	50 - 75	70 - 85	-
Playgrounds, Neighborhood Parks	50 - 65	-	65 - 75	75 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	-	70 - 80	80 - 85
Office Buildings, Businesses, Commercial, and Professional	50 - 65	65 - 75	75-85	-
Industrial, Manufacturing, Utilities, Agriculture	50 - 70	70 - 80	80-85	-
- Noise exposure values are only provided for the range of 50 to 85 L_{dn} or CNEL, dB. Interpretations include the following: normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. - Normally Acceptable: Development may occur without an analysis of potential noise impacts <i>to the proposed development</i> (though it might still be necessary to analyze noise impacts that the project might have <i>on its surroundings</i>). - Conditionally Acceptable: Development should be undertaken only after an analysis of noise-reduction requirements is conducted, and if necessary, noise-mitigation features are included in the design. Conventional construction will usually suffice as long as it incorporates air conditioning or forced fresh-air supply systems, though it will likely require that project occupants maintain their windows closed. - Normally Unacceptable: Development should generally be discouraged; it may be undertaken only if a detailed analysis of the noise-reduction requirements is conducted, and if highly effective noise insulation, mitigation or abatement features are included in the design. - Clearly Unacceptable: Development should not be undertaken.				
Source: City of Oakland, <i>General Plan, Noise Element</i> , Figure 6: Land Use Compatibility for Community Noise Exposure, June 2005.				

City of Oakland Municipal Code

The Oakland Municipal Code (OMC) includes various directives to regulate noise in Oakland. Per the City of Oakland Municipal Code, Title 12 Streets, Sidewalks, and Public Places, Chapter 12.56 Sound Amplification Equipment. The City of Oakland also regulates noise through Section 17.120 (Performance Standards) of the Planning Code and Section 8.18.020 (Persistent Noises and Nuisances) of the Health and Safety Code.

Health and Safety Code Section 8.18.020 (Persistent Noises and Nuisances)

Within the Health and Safety Code, the noise ordinance qualitatively addresses persistent nuisance noise – persistent maintenance or emissions of any noise or sound produced by human, animal, or mechanical means, between the hours of 9:00 p.m. and 7:00 a.m. – next ensuing, which, by reason of its raucous or nerve-racking nature, shall disturb the peace or comfort, or be injurious to the health of any person. Further, the Health and Safety Code states that failure to comply with the following requirements constitutes a nuisance:

- a) All construction equipment powered by internal combustion engines shall be properly muffled and maintained.
- b) Unnecessary idling of internal combustion engines is prohibited.
- c) All stationary noise-generating construction equipment such as tree grinders and air compressors are to be located as far as is practical from existing residences.
- d) Quiet construction equipment, particularly air compressors, are to be selected whenever possible.
- e) Use of pile drivers and jack hammers shall be prohibited on Sundays and holidays, except for emergencies and as approved in advance by the Building Official.

Planning Code Section 17.120 (Performance Standards)

Within the Planning Code, the noise ordinance (Municipal Code Section 17.120.050) regulates construction noise and only operational noise from stationary sources, as cities and counties do not have regulatory authority to establish noise level limits over noise from mobile on-road sources (i.e. transportation noise), which does not include on-site construction. The maximum allowable receiving noise standards applicable to long-term exposure for residential and civic land uses, for stationary noise sources (not transportation noise) are outlined in [Table 5: Stationary Source Land Use Noise Standards](#). In addition, the noise ordinance states that if the measured ambient noise level exceeds the applicable standard in any category, then the stated applicable noise level shall be adjusted to equal the ambient noise level (see Oakland Planning Code Section 17.120.050[D]).

Table 5: Stationary Source Land Use Noise Standards¹			
Maximum Allowable Noise Level Standards (dBA)			
Land Use	Cumulative Number of Minutes in 1-hour Time Period²	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
Residential, School, Child Care, Health Care, or Nursing Home, and Public Open Space	20 (L ₃₃)	60	45
	10 (L _{16.7})	65	50
	5 (L _{8.3})	70	55
	1 (L _{1.7})	75	60
	0 (L _{max})	80	65
Anytime			
Commercial	20 (L ₃₃)	65	
	10 (L _{16.7})	70	
	5 (L _{8.3})	75	
	1 (L _{1.7})	80	
	0 (L _{max})	85	
Anytime			
Manufacturing, Mining, and Quarrying	20 (L ₃₃)	70	
	10 (L _{16.7})	75	
	5 (L _{8.3})	80	
	1 (L _{1.7})	85	
	0 (L _{max})	90	
¹ Standards above are to be further reduced by 5 dBA for simple tone noise – noise consisting primarily of speech or music, or recurring impact noise. If ambient noise level exceeds standards above, the standard shall be adjusted to equal the ambient noise level. ² L _x represents the noise level that is exceeded X percent of a given period. L _{max} is the maximum instantaneous noise level.			

Table 5: Stationary Source Land Use Noise Standards¹

Source: City of Oakland, Municipal Code Section 17.120.050 (Noise Ordinance No. 11895), 2025.

Noise level standards from the noise ordinance also apply to temporary exposure of short-and long-term construction noise. These noise level standards are shown in **Table 6: Construction or Demolition Noise Standards**.

Table 6: Construction or Demolition Noise Standards

Land Use	Daily (Weekday) 7:00 a.m. to 10:00 p.m.	Weekends 9:00 a.m. to 8:00 p.m.
Short Term Operation (less than 10 days)		
Residential	80	65
Commercial, Industrial	85	70
Long-Term Operation (more than 10 days)		
Residential	65	55
Commercial, Industrial	70	60
1. If ambient noise level exceeds standards above, the standard shall be adjusted to equal the ambient noise level.		
Source: City of Oakland, Municipal Code Section 17.120.050(G), Table 17.120.04 (Noise Ordinance No. 11895), 2025.		

City of Oakland Standard Conditions of Approval

The Oakland Standard Conditions of Approval (SCAs) were designed to achieve consistency between project approvals and enforce environmental protection measures. If the Project is approved by the City, all applicable SCAs would be adopted as enforceable conditions of approval and required, as applicable, to be implemented during construction and operation of the Project. The following SCA's relevant to noise and vibration are listed below.

SCA-62. Construction Days/Hours: The project applicant shall comply with the following restrictions concerning construction days and hours:

- a) Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, except that pier drilling and/or other extreme noise generating activities greater than 90 dBA shall be limited to between 8:00 a.m. and 4:00 p.m.
- b) Construction activities are limited to between 9:00 a.m. and 5:00 p.m. on Saturday. In residential zones and within 300 feet of a residential zone, construction activities are allowed from 9:00 a.m. to 5:00 p.m. only within the interior of the building with the doors and windows closed. No pier drilling or other extreme noise generating activities greater than 90 dBA are allowed on Saturday.
- c) No construction is allowed on Sunday or federal holidays.

Construction activities include, but are not limited to, truck idling, moving equipment (including trucks, elevators, etc.) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.

Any construction activity proposed outside of the above days and hours for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case-by-case basis by the City, with criteria including the urgency/emergency nature of the work, the proximity of residential or other sensitive uses,

and a consideration of nearby residents'/occupants' preferences. The project applicant shall notify property owners and occupants located within 300 feet at least 14 calendar days prior to construction activity proposed outside of the above days/hours. When submitting a request to the City to allow construction activity outside of the above days/hours, the project applicant shall submit information concerning the type and duration of proposed construction activity and the draft public notice for City review and approval prior to distribution of the public notice.

SCA-63. Construction Noise: The project applicant shall implement noise reduction measures to reduce noise impacts due to construction. Noise reduction measures, include, but are not limited to, the following:

- a) Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.
- b) Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.
- c) Applicant shall use temporary power poles instead of generators where feasible.
- d) Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction.
- e) The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.

SCA-64. Extreme Construction Noise

- a) **Construction Noise management Plan Required:** Prior to any extreme noise generating construction activities (e.g., pier drilling, pile driving and other activities generating greater than 90 dBA), the project applicant shall submit a Construction Noise Management Plan prepared by a qualified acoustical consultant for City review and approval that contains a set of site-specific noise attenuation measures to further reduce construction impacts associated with extreme noise generating activities. The project applicant shall implement the approved Plan during construction. Potential attenuation measures include, but are not limited to, the following:
 - I. Erect temporary plywood noise barriers around the construction site, particularly along

on sites adjacent to residential buildings;

- II. Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;
 - III. Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;
 - IV. Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and
 - V. Monitor the effectiveness of noise attenuation measures by taking noise measurements.
- b) **Public Notification Required:** The project applicant shall notify property owners and occupants located within 300 feet of the construction activities at least 14 calendar days prior to commencing extreme noise generating activities. Prior to providing the notice, the project applicant shall submit to the City for review and approval the proposed type and duration of extreme noise generating activities and the proposed public notice. The public notice shall provide the estimated start and end dates of the extreme noise generating activities and describe noise attenuation measures to be implemented.

SCA-66. Construction Noise Complaints: The project applicant shall submit to the City for review and approval a set of procedures for responding to and tracking complaints received pertaining to construction noise, and shall implement the procedures during construction. At a minimum, the procedures shall include:

- a) Designation of an on-site construction complaint and enforcement manager for the project;
- b) A large on-site sign near the public right-of-way containing permitted construction days/hours, complaint procedures, and phone numbers for the project complaint manager and City Code Enforcement unit;
- c) Protocols for receiving, responding to, and tracking received complaints; and
- d) Maintenance of a complaint log that records received complaints and how complaints were addressed, which shall be submitted to the City for review upon the City’s request.

SCA-68. Operational Noise: Noise levels from the project site after completion of the project (i.e., during project operation) shall comply with the performance standards of chapter 17.120 of the Oakland Planning Code and chapter 8.18 of the Oakland Municipal Code. If noise levels exceed these standards, the activity causing the noise shall be abated until appropriate noise reduction measures have been installed and compliance verified by the City.

SCA-70. Vibration Impacts on Adjacent Structures or Vibration-Sensitive Activities. The project applicant shall submit a Vibration Analysis prepared by an acoustical and/or structural engineer or

other appropriate qualified professional for City review and approval that establishes pre-construction baseline conditions and threshold levels of vibration that could damage the structure and/or substantially interfere with activities located adjacent to San Leandro Street. The Vibration Analysis shall identify design means and methods of construction that shall be utilized in order to not exceed the thresholds. The applicant shall implement the recommendations during construction.

4.0 EXISTING CONDITIONS

4.1 Existing Noise Sources

The Project site is impacted by various noise sources. The existing mobile noise sources in the Project area are generated by motor vehicles traveling on Hegenberger Road and San Leandro Street and trains traveling at the nearby Bay Area Rapid Transit (BART) station. The primary sources of stationary noise in the Project vicinity are those associated with the surrounding industrial uses. Stationary noise sources associated with the industrial uses may include mechanical equipment (use of heating, ventilation, and air conditioning [HVAC] units, etc.), truck operations (backup beepers, diesel engines, unloading activities, etc.), and parking lot activities (cars parking, open and closing doors, etc.). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

4.2 Noise Measurements

The Project site is currently vacant and unoccupied. To quantify existing ambient noise levels in the Project area, Kimley-Horn conducted four short-term noise measurements and one long-term noise measurement on May 8, 2024; refer to [Appendix A: Existing Ambient Noise Measurements](#). The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project site. The 10-minute measurements were taken between 10:32 a.m. and 11:32 a.m. Measurements of L_{eq} are considered representative of the noise levels throughout the day. A 24-hour measurement was taken at 12:02 p.m. on May 8, 2024 through May 9, 2024. The average noise levels and sources of noise measured at each location are listed in [Table 7: Existing Noise Measurements](#) and shown on [Exhibit 4: Noise Measurement Locations](#).

Table 7: Existing Noise Measurements					
Site	Location	Measurement Period	Duration	L_{eq} (dBA)	L_{dn} (dBA)
ST-1	At the southeast corner of the project site.	11:23 a.m. – 11:33 a.m.	10 Minutes	68.2	-
ST-2	Along the southwest boundary of the project site.	11:09 a.m. – 11:19 a.m.	10 Minutes	64.8	-
ST-3	At the northern corner of the project site.	10:52 a.m. – 11:02 a.m.	10 Minutes	66.4	-
ST-4	At the nearest residence located along 75 th Avenue.	10:32 a.m. – 10:42 a.m.	10 Minutes	68.1	-
LT-1	At the project site driveway along 77 th Avenue.	12:02 p.m. – 12:02 p.m.	24 Hour	67.8	72.0
Source: Noise measurements taken by Kimley-Horn, May 8, 2024. See Appendix A for noise measurement results.					



Source: Kimley-Horn, 2025

Exhibit 4: Noise Measurement Locations
7825 San Leandro Street Project
Technical Reports

4.3 Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Noise sensitive uses typically include residences, hospitals, schools, childcare facilities, and places of assembly. Vibration sensitive receivers are generally similar to noise sensitive receivers but may also include businesses, such as research facilities and laboratories that use vibration-sensitive equipment. The Project site is primarily surrounded by industrial land uses. Sensitive land uses nearest to the Project are listed in [Table 8: Sensitive Receptors](#).

Table 8: Sensitive Receptors	
Receptor Description	Distance and Direction from the Project ¹
Single-family Residence	625 feet to the north
Temporary Shelter for the Unhoused ²	730 feet to the west
1. Distance measured from the Project boundary line to the property line of the sensitive receptor.	
2. The City of Oakland Environmental Justice Element (2023) identified the temporary shelter for unhoused persons as a sensitive land use.	
Source: Google Earth, 2025.	

5.0 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 Noise Thresholds

California Environmental Quality Act (CEQA) Guidelines Appendix G contains analysis guidelines related to noise and vibration. The City has determined to use these guidelines as thresholds of significance for this analysis. A project would create a significant environmental impact if it would:

- NOI-1** Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- NOI-2** Generate excessive groundborne vibration or groundborne noise levels; and
- NOI-3** For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

The City of Oakland has established thresholds of significance for CEQA impacts which are consistent with those in State CEQA Guidelines Appendix G. These adopted thresholds are presented below.

1. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding construction noise except if an acoustical analysis is performed that identifies recommended measures to reduce potential impacts;
2. Generate noise in violation of the City of Oakland nuisance standards (Oakland Municipal Code section 8.18.020) regarding persistent construction-related noise;
3. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise;
4. Generate noise resulting in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or, if under a cumulative scenario where the cumulative increase results in a 5 dBA permanent increase in ambient noise levels in the project vicinity without the project (i.e., the cumulative condition including the project compared to the existing conditions) and a 3 dBA permanent increase is attributable to the project (i.e., the cumulative condition including the project compared to the cumulative baseline condition without the project);
5. Expose persons to interior DNL or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories and long-term care facilities (and may be extended by local legislative action to include single-family dwellings) per California Noise Insulation Standards (CCR Part 2, Title 24);
6. Expose the project to community noise in conflict with the land use compatibility guidelines of the Oakland General Plan after incorporation of all applicable Standard Conditions of Approval;

7. Expose persons to or generate noise levels in excess of applicable standards established by a regulatory agency (e.g., occupational noise standards of the Occupational Safety and Health Administration [OSHA];)
8. During either project construction or project operation expose persons to or generate groundborne vibration that exceeds the criteria established by the Federal Transit Administration (FTA);
9. Be located within an airport land use plan and would expose people residing or working in the project area to excessive noise levels; or
10. Be located within the vicinity of a private airstrip, and would expose people residing or working in the project area to excessive noise levels.

Specifically, the City's Noise Threshold 1 through Noise Threshold 7 is addressed in Section 6.1, City Noise Threshold 8 is addressed under Section 6.2, and City Noise Threshold 8 and 9 are addressed under Section 6.3.

5.2 Methodology

Construction

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

Construction noise modeling was conducted using the FHWA Roadway Construction Noise Model (RCNM). Reference noise levels are used to estimate construction noise levels at nearby noise-sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise. The City of Oakland does not establish quantitative construction noise standards. Project construction would occur for more than 10 days which would be considered long-term. For long-term construction, the City limits construction noise to 65 dBA at residential uses and 70 dBA at commercial and industrial uses unless ambient noise levels already exceed the standards. If the ambient noise level exceeds these standards, the standard shall be adjusted to equal the ambient noise level.

Operations

Reference noise level data are used to estimate the Project operational noise impacts from stationary sources. Noise levels are collected from field noise measurements and other published sources from similar types of activities are 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 of Oakland Planning Code and General Plan.

An analysis was conducted of the Project's effect on traffic noise conditions at offsite land uses. Without Project traffic noise levels were compared to With Project traffic noise levels. The environmental baseline is the Without Project condition. The Without Project and With Project traffic noise levels in the Project vicinity were calculated using the FHWA Highway Noise Prediction Model (FHWA-RD-77-108). The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures (walls and buildings), barriers, and topography. The noise attenuating effects of changes in elevation, topography, and intervening structures were not included in the model. Therefore, the modeling effort is considered a worst-case representation of the roadway noise. Traffic noise level significance is determined by comparing the increase in noise levels (traffic contribution only) to increments recognized by the City of Oakland Significance Criterion 4, above, which is a permanent increase in noise levels of 5 dBA or more or, for a cumulative increase that exceeds 5 dBA, a Project contribution to the cumulative scenario of 3 dBA or more.

Vibration

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

6.0 POTENTIAL IMPACTS AND MITIGATION

6.1 Acoustical Impacts

Threshold NOI-1 Would the Project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The following analysis addresses the City's criteria 1 through 7, refer to *Section 5.1 Noise Thresholds* above.

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g. land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. The nearest sensitive receptor to the Project site boundary is a single-family residence located approximately 625 feet to the north. As construction would occur up to the Project boundary line, construction activities may occur as close as 625 feet from the nearest sensitive receptor. However, construction activities would occur throughout the Project site and would not be concentrated at the point closest to the sensitive receptors. Over the course of a construction workday, equipment would traverse the Project site and not be at a fixed location.

Construction activities associated with development of the Project would include some demolition, site preparation, grading, paving, building construction, and architectural coating. Typical heavy construction equipment for each phase include:

- Demolition: dozers, excavators, and concrete saws
- Site Preparation: dozers and tractors
- Grading: graders, excavators, dozers, scrapers, and tractors
- Infrastructure: graders, excavators, dozers, scrapers, and tractors
- Building Construction: cranes, forklifts, generators, tractors, and welders
- Paving: pavers, rollers, and paving equipment
- Architectural Coating: air compressors

It is noted that only a limited amount of equipment can operate near a given location at a particular time due to factors like visibility, maneuverability, and potential interference with each other's operations.

Grading and excavation phases of Project construction tend to be the shortest in duration and often create the highest construction noise levels due to the operation of heavy equipment required to complete these activities. Equipment typically used during grading includes heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. Operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three to four minutes at lower power settings. Other primary sources of noise would be shorter-duration incidents, such as dropping large pieces of equipment or the hydraulic movement of machinery lifts, which would last less than one minute. According to the applicant, no pile-driving would be required

during construction.

Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in [Table 9: Typical Construction Noise Levels](#).

Table 9: Typical Construction Noise Levels	
Equipment	Typical Noise Level (dBA L_{max}) at 50 feet from Source
Air Compressor	80
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	80
Paver	85
Pneumatic Tool	85
Pump	77
Roller	85
Saw	76
Scraper	85
Shovel	82
Truck	84
Source: Federal Transit Administration, <i>Transit Noise and Vibration Impact Assessment Manual</i> , September 2018.	

Noise impacts for mobile construction equipment are typically assessed as emanating from the main construction activity area of the Project site.¹¹ For the Project, this area would be located approximately 1,100 feet from nearest residential receptor, 420 feet from the nearest commercial receptor, and 450 from the nearest industrial receptor. These receptors may be exposed to elevated noise levels during Project construction. The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used to calculate noise levels during construction activities; refer to [Appendix A](#). RCNM is a computer program used to assess construction noise impacts and allows for user-defined construction equipment and user-defined noise limit criteria. Noise levels were calculated for each construction phase and are based on the equipment used, distance to the nearest property/receptor, and acoustical use factor for equipment.

The noise levels calculated in [Table 10: Construction Noise Levels at Nearest Receptor](#) show

¹¹ For the purposes of this analysis, the construction area is defined as the main construction area of the Project site per the methodology in the FTA Transit Noise and Vibration Impact Assessment Manual (September 2018). Although some construction activities may occur at distances closer than 420 feet from the nearest property lines, other equipment would be further than this distance as construction equipment would be dispersed throughout the Project site during various construction activities. Therefore, the main construction area the Project site represents the most appropriate distance based on the mobile and sporadic nature of on-site construction activities.

estimated exterior noise levels at the nearest sensitive receptor for the worst-case construction noise scenario without accounting for attenuation from intervening barriers, structures, or topography. Noise levels at other receptors in the Project vicinity would be located further away and would experience lower construction noise levels than the closest receptors modeled. All construction equipment for each individual phase was assumed to operate simultaneously to represent a worst-case noise scenario as construction activities would routinely be spread throughout the construction site and would operate at different intervals.

Table 10: Construction Noise Levels at Nearest Receptor						
Construction Phase	Receptor Location			Modeled Construction Noise Level (dBA L_{eq})²	Construction Noise Threshold (dBA L_{eq})³	Exceed Threshold?
	Land Use	Direction	Distance (feet)¹			
Demolition	Residential	North	1,100	59.6	68 ⁴	No
	Commercial	West	420	68.0	70	No
	Industrial	East	450	67.4	70	No
Site Preparation	Residential	North	1,100	61.1	68 ⁴	No
	Commercial	West	420	69.5	70	No
	Industrial	East	450	68.9	70	No
Grading	Residential	North	1,100	61.4	68 ⁴	No
	Commercial	West	420	69.7	70	No
	Industrial	East	450	69.1	70	No
Infrastructure	Residential	North	1,100	61.4	68 ⁴	No
	Commercial	West	420	69.7	70	No
	Industrial	East	450	69.1	70	No
Building Construction	Residential	North	1,100	59.9	68 ⁴	No
	Commercial	West	420	68.3	70	No
	Industrial	East	450	67.7	70	No
Paving	Residential	North	1,100	60.8	68 ⁴	No
	Commercial	West	420	69.1	70	No
	Industrial	East	450	68.5	70	No
Architectural Coating	Residential	North	1,100	46.9	68 ⁴	No
	Commercial	West	420	55.2	70	No
	Industrial	East	450	54.6	70	No
1. Following FTA methodology, all equipment is assumed to operate at the center of the Project site because equipment would operate throughout the Project site and not at a fixed location for extended periods of time (i.e., some equipment would operate closer, and some would operate further away). Thus, the worst-case distance used in the RCNM model was 420 feet to the property line west of the construction zone. 2. Modeled noise levels conservatively assume the simultaneous operation of all pieces of equipment. 3. Per Oakland Planning Code Section 17.120.050(D) and (G), for long-term construction, the City limits construction noise to 65 dBA at residential uses and 70 dBA at commercial and industrial uses unless ambient noise levels already exceed the standards. If the ambient noise level exceeds these standards, the standard shall be adjusted to equal the ambient noise level. 4. As shown during the ST-4 Noise Measurement, existing ambient noise levels at the nearest sensitive receptor north are 68.1 dBA and exceed the City's construction standards. Thus, the ambient noise level recorded becomes the construction noise standard. Source: Federal Highway Administration, <i>Roadway Construction Noise Model</i> , 2006. Refer to Appendix B for noise modeling results.						

As shown in [Table 10](#), the worst-case scenario construction noise levels would not exceed the applicable City of Oakland construction thresholds for all nearby land uses. The highest exterior noise level at the nearest sensitive (residential) receptors would occur during the grading phase and would be 61.4 dBA which is below the City's 65 dBA construction noise threshold and 68 dBA ambient level. Additionally, the highest noise level at the closest commercial/industrial uses would be 69.7 dBA during grading and infrastructure and would not exceed the City's 70 dBA threshold. Although this level would exceed the lowest 64.8 dBA ambient level by 4.9 dBA, it does not represent a substantial noise increase as the temporary noise increase would still be below the City's 70 dBA commercial/industrial construction threshold. Construction equipment would operate throughout

the Project site and the associated noise levels would not occur at a fixed location for extended periods of time. Although sensitive uses may be exposed to elevated noise levels during Project construction, these noise levels would be acoustically dispersed throughout the Project site and not concentrated in one area near surrounding sensitive uses.

The City has set restrictions on construction hours to control noise impacts from construction activities. Specifically, SCA-62 states that construction activities may only take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 9:00 a.m. and 5:00 p.m., on Saturdays. Further, SCA-62 notes that any construction activity outside the proposed hours and days is subject to City approval. The Project applicant must submit information concerning the type and duration of proposed construction activity and the draft public notice for City review and approval prior to distribution of the public notice. Once approved, the Project applicant would be required to notify property owners and occupants within 300 feet at least 14 days prior to the construction activity proposed outside the allotted hours and days.

Although construction noise could cause temporary impacts to nearby residents, adherence to the City's SCAs would reduce this impact to a less than significant level. Required implementation of applicable City of Oakland SCAs would minimize construction noise by limiting hours of construction activities as stated above, requiring best available noise control technology and notification of any local residents of construction activities, and tracking and responding to noise complaints. Specifically, Project construction would comply with SCA-63, Construction Noise, which requires projects to implement construction noise reduction measures, and SCA-66, Construction Noise Complaints, which sets a protocol for receiving and addressing construction noise complaints from the public.

Nighttime Construction

The Project proposes nighttime construction during which would include approximately 10 to 12 nighttime concrete pours. As discussed in Section 2.1: Sound and Environmental Noise, noise levels above 45 dBA would affect sleep. Standard construction, which assumes windows to be shut, would result in an exterior-to-interior reduction of approximately 25 dBA. With this reduction, exterior noise level of 70 dBA would not affect sleep.

Nighttime construction activities would require concrete trucks accessing and pouring within the Project site. Based on the nature of concrete pouring and the type of equipment to be used, it is assumed that all noise-generating activities from the equipment would occur on the ground level during the nighttime construction work. The FHWA RCNM modeling software was used to calculate the hourly average noise levels for nighttime concrete pouring. Assuming five pouring trucks and five idling trucks would represent the worst-case noise condition, an hourly average noise level of 82 dBA L_{eq} at 50 feet would be generated during nighttime work.

Concrete trucks actively pouring during nighttime construction could be positioned as close as 890 feet from the nearest residences to the north during construction of Project building. As such, concrete trucks were modeled at 890 feet from the nearest residences to the north. At these distances and assuming five pouring trucks and five idling trucks would operate simultaneously at the same location, hourly average noise levels would be approximately 56 dBA L_{eq} at the residences to the north without considering any noise attenuation from the intervening structures and buildings.

When accounting for intervening structures and the exterior-to-interior reduction of approximately 25 dBA, nighttime concrete pours would attenuate to 31 dBA and would not exceed the nighttime noise limit of 45 dBA indoors and 70 dBA outdoors.

Additionally, as mentioned previously, the Project would be required to comply with SCA-62 which requires the Project applicant to provide detailed nighttime construction information and a draft public notice to the City for review and approval prior to the commencement of construction. Once approved by the City, the Project applicant would be required to notify property owners within 300 feet, at least 14 calendar days prior, of the nighttime construction activity.

Construction Traffic Noise

Construction noise may be generated by large trucks moving materials to and from the Project site. Large trucks would be necessary to deliver building materials as well as remove dump materials. Excavation and cut and fill would be required. Based on the California Emissions Estimator Model (CalEEMod) default assumptions for this Project, as analyzed in *7825 San Leandro Street Project Air Quality Assessment* (Kimley-Horn, 2026), the Project would generate the highest number of daily trips during the building construction. The model estimates that the Project would generate up to 131 worker trips and 51 vendor trips per day for building construction. Therefore, a total of 182 daily trips would occur during the building construction phase. Because of the logarithmic nature of noise levels, a doubling of the traffic volume (assuming that the speed and vehicle mix do not also change) would result in a noise level increase of 3 dBA. San Leandro Street between Hegenberger Road to the westbound onramp to 75th Avenue has an average daily trip volume of 17,390 vehicles.¹² Therefore, 182 Project construction trips would not double the existing daily traffic volume. Construction related traffic noise would not be noticeable and would not create a significant noise impact.

Summary

Project construction would be required to comply with Oakland Health and Safety Code Section 8.18.020, which requires equipment to be properly maintained and muffled, prohibits unnecessary idling, requires stationary equipment to be located as far as practical from existing residences, requires quiet equipment whenever possible, and prohibits pile drivers and jack hammers on Sundays and holidays (except for emergencies). Additionally, the proposed Project would be required to adhere to all applicable SCAs which would ensure that all construction equipment is equipped with properly operating and maintained mufflers and other state required noise attenuation devices, helping to reduce noise at the source. The SCAs are required to ensure that construction noise levels do not exceed the City's Noise Ordinance and nuisance standards, and that construction adheres to the noticing requirements from the City. As shown in [Table 10: Construction Noise Levels at Nearest Receptor](#) and with adherence to the SCAs and compliance with Health and Safety Code Section 8.18.020, construction noise impacts to nearby receptors would be less than significant.

Operations

Implementation of the proposed Project would create new sources of noise in the Project vicinity.

¹² Based on traffic data within the *7825 San Leandro Street Transportation Study*, prepared by Kimley-Horn and Associates, Inc. (2025)

The major noise sources associated with the Project would include the following:

- Mechanical equipment;
- Slow moving trucks on the Project site, approaching and leaving the loading areas;
- Activities at the loading areas (i.e., maneuvering and idling trucks, equipment noise);
- Parking areas (i.e., car door slamming, car radios, engine start-up, and car pass-by); and
- Off-site traffic.

Mechanical Equipment

Mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA L_{eq} at 50 feet.¹³ Assuming continuous 24-hour operation of HVAC units, the 24-hour weighted noise level would be approximately 58 dBA L_{dn} at 50 feet. HVAC units would be installed on the roof of the proposed warehouse building. Sound levels decrease by 6 dBA for each doubling of distance from the source.

Residential Receptors. The nearest residential receptor (residential use to the north) would be located no closer than 720 feet from HVAC equipment at the Project site. At this distance, mechanical equipment noise levels would attenuate to approximately 29 dBA L_{eq} and 35 dBA L_{dn} . Project mechanical noise would not exceed the City's 60 dBA daytime and 45 dBA nighttime residential standards (Oakland Planning Code Section 17.120.050) and would not exceed the existing 68 dBA ambient level (refer to ST-4 in [Table 7](#)).

Commercial Receptors. The nearest commercial and industrial uses (to the west) would be located no closer than 50 feet from HVAC equipment at the Project site. At this distance, mechanical equipment noise levels would attenuate to approximately 52 dBA L_{eq} and 58 dBA L_{dn} . Project mechanical equipment noise would not exceed the City's 65 dBA commercial noise standard (daytime and nighttime). Additionally, mechanical equipment noise levels would not exceed the existing 65 dBA ambient level (refer to ST-2 in [Table 7](#)).

Industrial Receptors. The nearest industrial uses (to the southeast) would be located no closer than 50 feet from HVAC equipment at the Project site. At this distance, mechanical equipment noise levels would attenuate to approximately 52 dBA L_{eq} and 58 dBA L_{dn} . Project mechanical equipment noise would not exceed the City's 70 dBA industrial noise standard (daytime and nighttime) per Oakland Planning Code Section 17.120.050. Additionally, mechanical equipment noise levels would not exceed the existing 68 dBA ambient level (refer to ST-1 in [Table 7](#)).

It should be noted that these noise levels do not assume any reductions for intervening terrain or barriers such as parapets. As described above, Project mechanical equipment noise would not exceed the City of Oakland's noise standards and impacts would be less than significant.

Truck and Loading Dock Noise

During loading and unloading activities, noise would be generated by the trucks' diesel engines, exhaust systems, and brakes during low gear shifting/braking activities; backing up toward the docks; dropping down the dock ramps; and maneuvering away from the docks. Loading/unloading

¹³ Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

activities would occur at the dock doors along the east face proposed Project building; refer to [Exhibit 3](#). Typically, heavy truck and loading dock operations generate a noise level of 64.4 dBA L_{eq} at 50 feet.¹⁴ Assuming 24-hour operation of the warehouse loading areas, the weighted 24-hour noise level would be approximately 69 dBA L_{dn} .

Residential Receptors. The nearest residential receptor would be located no closer than 820 feet north from the Projects truck loading area. At this distance, truck loading noise levels would attenuate to approximately 40 dBA L_{eq} and 44.5 dBA L_{dn} . Project truck and loading dock noise would not exceed the City's 60 dBA daytime and 45 dBA nighttime residential standards (Oakland Planning Code Section 17.120.050) and would not exceed the existing 68 dBA ambient level (refer to ST-4 in [Table 7](#)).

Commercial Receptors. The nearest commercial use (to the west) would be located no closer than 330 feet from Project's truck loading area. At this distance, truck loading noise levels would attenuate to approximately 48 dBA L_{eq} and 54 dBA L_{dn} . Project truck and loading dock noise would not exceed the City's 65 dBA commercial standard (daytime and nighttime) per Oakland Planning Code Section 17.120.050. Additionally, truck and loading noise levels would not exceed the existing 65 dBA ambient level (refer to ST-2 in [Table 7](#)).

Industrial Receptors. The nearest industrial use (to the southeast) would be located no closer than 300 feet from Project's truck loading area. At this distance, truck loading noise levels would attenuate to approximately 49 dBA L_{eq} and 55 dBA L_{dn} . Project truck and loading dock noise would not exceed the City's or 70 dBA industrial (daytime and nighttime) noise standard (Oakland Planning Code Section 17.120.050). Additionally, truck and loading noise levels would not exceed the existing ambient levels of 68 dBA (refer to ST-1 in [Table 7](#)).

It should be noted that these noise levels do not assume any reductions for intervening terrain or structures. Further, loading dock doors would be surrounded with protective aprons, gaskets, or similar improvements that, when a trailer is docked, would serve as a noise barrier between the interior warehouse activities and the exterior loading area. This would attenuate noise emanating from interior activities, and as such, interior loading and associated activities would be permissible during all hours of the day and night. As shown above, truck and loading dock noise would not exceed the City's noise standards and impacts would be less than significant.

Parking Noise

Traffic associated with parking areas is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up and car pass-bys may be an annoyance to adjacent noise-sensitive receptors. Parking lot noise can also be considered a "stationary" noise source. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA at 50 feet¹⁵ and may be an annoyance to noise-sensitive receptors. Conversations in parking areas may also be an annoyance to sensitive receptors. Sound levels of speech typically range from 33 dBA at 48 feet for

¹⁴ Loading dock reference noise level measurements conducted by Kimley-Horn on December 18, 2018.

¹⁵ Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

normal speech to 50 dBA at 50 feet for very loud speech.¹⁶ It should be noted that parking lot noise are instantaneous noise levels compared to noise standards in the L_{dn} scale, which are averaged over time. As a result, actual noise levels over time resulting from parking lot activities would be far lower.

Residential Receptors. The closest sensitive receptors would be the single-family residences located approximately 750 feet north of the parking area. At this distance, exterior noise levels from parking lot activities would attenuate to approximately 38 dBA L_{eq} and 32 dBA L_{dn} . Project parking noise would not exceed the City's 60 dBA daytime and 45 dBA nighttime residential standards (Oakland Planning Code Section 17.120.050) and would not exceed the existing 68 dBA ambient level (refer to ST-4 in [Table 7](#)).

Commercial Receptors. The nearest commercial use (to the west) would be located no closer than 300 feet from parking area. At this distance, exterior noise levels from parking lot activities would attenuate to approximately 45 dBA L_{eq} and 40 dBA L_{dn} . Project parking noise would not exceed the City's 65 dBA commercial standard (daytime and nighttime) per Oakland Planning Code Section 17.120.050. Additionally, parking noise levels would not exceed the existing 65 dBA ambient level (refer to ST-2 in [Table 7](#)).

Industrial Receptors. The nearest industrial use (to the southeast) would be located no closer than 250 feet from parking activity at the Project site. At this distance, parking noise levels would attenuate to approximately 47 dBA L_{eq} and 42 dBA L_{dn} . Project parking noise would not exceed the City's or 70 dBA industrial (daytime and nighttime) noise standard (Oakland Planning Code Section 17.120.050). Additionally, parking noise levels would not exceed the existing ambient levels of 68 dBA (refer to ST-1 in [Table 7](#)).

It should be noted that these noise levels do not assume any reductions for intervening terrain or structures. As shown above, parking lot noise would not exceed the City's noise standards and impacts would be less than significant.

Off-Site Traffic Noise

Project implementation would generate increased traffic volumes along nearby roadway segments. Based on Traffic Analysis, the proposed Project would result in approximately 2,128 daily trips. The "Existing Year Without Project" and "Existing Year With Project" scenarios are compared in [Table 11: Existing Year and Existing Year Plus Project Traffic Noise Levels](#). As shown in [Table 11](#), the "Existing Year Without Project" roadway noise levels would range from 66.8 dBA L_{dn} to 67.4 dBA L_{dn} and the "Existing Year With Project" roadway noise levels would range from 67.1 dBA L_{dn} to 67.7 dBA L_{dn} . Project generated traffic would result in a maximum increase of 0.5 dBA on existing roads. The City of Oakland considers a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project to be significant. As shown in [Table 11](#), the "Existing Year With Project" scenario traffic noise levels would not exceed the 5.0 dBA increase significance threshold along any of the surrounding roadways. As a result, the Project would not result in a perceptible increase in traffic noise levels and impacts would be less than significant.

¹⁶ Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden. *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

Table 11: Existing Year and Existing Year Plus Project Traffic Noise Levels

Roadway Segment		Existing Year Without Project		Existing Year With Project		Change	Significant Impact ²
		ADT	dBA L _{dn} ¹	ADT	dBA L _{dn} ¹		
San Leandro Street	Hegenberger Road to Westbound Onramp to 75 th Avenue	17,390	66.8	18,663	67.1	0.3	No
	75 th Avenue to 76 th Avenue	19,070	67.2	21,268	67.7	0.5	No
	76 th Avenue to 77 th Avenue	19,100	67.2	21,298	67.7	0.5	No
	77 th Avenue to 81 st Avenue	19,730	67.4	19,730	67.4	0.0	No

ADT = average daily traffic; dBA = A-weighted decibels; L_{dn} = day night noise level

1. Traffic noise levels are at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.

2. Potential impacts occur when the Project change exceeds 3 dBA.

Source: Based on traffic data within the *7825 San Leandro Street Transportation Study*, prepared by Kimley-Horn and Associates, Inc. (2025). Refer to [Appendix B](#) for traffic noise modeling assumptions and results.

Mitigation Measures: The Project shall implement all applicable measures listed in the City of Oakland's SCAs for construction and operational noise. No mitigation is required.

Level of Significance: Less than significant impact.

6.2 Vibration Impacts

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

The following analysis addresses the City's criteria 8, refer to *Section 5.1 Noise Thresholds* above.

Construction Vibration

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

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. The City does not provide numerical vibration standards for construction activities and exempts vibration caused during temporary construction in Section 17.120.060. As the nearest structure is an industrial structure, this impact discussion uses the FTA and Caltrans structural damage criterion of 0.5 in/sec PPV for industrial buildings and the human annoyance criterion of 0.4 in/sec PPV.

The FTA has published standard vibration velocities for construction equipment operations. [Table 12: Typical Construction Equipment Vibration Levels](#), lists vibration levels for typical construction equipment. It should be noted that the Project would not require the use of pile drivers. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in

magnitude with increases in distance.

Table 12: Typical Construction Equipment Vibration Levels	
Equipment	Peak Particle Velocity at 25 Feet (in/sec)
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Tractors	0.003
1. Calculated using the following formula: $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, <i>Transit Noise and Vibration Impact Assessment Manual</i> , 2018; D = the distance from the equipment to the receiver.	
Source: Federal Transit Administration, <i>Transit Noise and Vibration Impact Assessment Manual</i> , 2018.	

Construction activities are anticipated to occur up to the Project boundary line. Therefore, the nearest structure would be located adjacent to the south. However, heavy construction equipment is not anticipated to operate along the property line and would operate approximately at least 25 feet away from the Project site boundary. As indicated in Table 12, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range 0.003 to 0.089 in/sec PPV at 25 feet from the source of activity. Therefore, construction groundborne vibration would not exceed the structural damage criterion (0.5 in/sec PPV) or human annoyance criterion (0.4 in/sec PPV).

Operational Vibration

The Project would include truck movement activity at the Project site. These movements would generally be low-speed (i.e., less than 15 miles per hour) and would occur over new, smooth surfaces. For perspective, Caltrans has studied the effects of propagation of vehicle vibration on sensitive land uses and notes that “heavy trucks, and quite frequently buses, generate the highest earthborn vibrations of normal traffic.” Caltrans further notes that the highest traffic-generated vibrations are along freeways and state routes. Their study finds that “vibrations measured on freeway shoulders (five meters from the centerline of the nearest lane) have never exceeded 0.08 inches per second, with the worst combinations of heavy trucks and poor roadway conditions (while such trucks were moving at freeway speeds). This level coincides with the maximum recommended safe level for ruins and ancient monuments (and historic buildings).”¹⁷ Since the Project’s truck movements would be at low speed (not at freeway speeds) and would be over smooth surfaces (not under poor roadway conditions), Project-related vibration associated with truck activity would not result in excessive groundborne vibrations; no vehicle-generated vibration impacts would occur. In addition, there are no sources of substantial groundborne vibration associated with the Project, such as rail or subways. The Project would not create or cause any vibration impacts due to operations.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

¹⁷ California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol (“TeNS”)*, September 2013.

6.3 Airport Noise

Threshold NOI-3 For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

The following analysis addresses the City's criteria 9 and 10, refer to *Section 5.1 Noise Thresholds* above.

The closest airport to the Project site is the Oakland International Airport located approximately 1.5 miles to the southwest. The Project site would be located within two miles of a public airport, however, would be located outside the airport's 65 dBA noise contours. Additionally, there are no private airstrips located within the Project vicinity. Therefore, the Project would not expose people residing or working in the Project area to excessive airport- or airstrip-related noise levels and a less than significant impact would occur.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6.4 Cumulative Noise Impacts

Cumulative Construction Noise

The Project's construction activities would not result in a substantial temporary increase in ambient noise levels. Construction noise would be periodic and temporary noise impacts that would cease upon completion of construction activities. The Project would contribute to other proximate construction project noise impacts if construction activities were conducted concurrently. However, based on the noise analysis above, the Project's construction-related noise impacts would be less than significant following compliance with the City's allowable construction hours and construction noise standards.

Construction activities at other planned and approved projects near the Project site would be required to comply with applicable local rules related to noise and would take place during daytime hours on the days permitted by the applicable municipality, and projects requiring discretionary approvals would be required to evaluate construction noise impacts, comply with the applicable 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

Cumulative Off-Site Traffic Noise

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the proposed Project and other foreseeable projects.

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to buildout of the proposed Project and other projects in the vicinity. Cumulative increases in traffic noise levels were estimated by comparing the “Existing” and “Cumulative Year Without Project” scenarios to the “Cumulative Year With Project” scenario. The traffic analysis considers cumulative traffic from future growth assumed in the transportation model, as well as cumulative projects.

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 following criteria is used to evaluate the combined and incremental effects of the cumulative noise increase.

- ***Combined Effect.*** The “Cumulative Year With Project” (i.e., cumulative increase) noise level would cause a significant cumulative impact if a 5.0 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 proposed Project in combination with other related 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 proposed Project.

- ***Incremental Effects.*** The “Cumulative Year With Project” (i.e., Project increase) causes a 3.0 dBA increase in noise over the “Cumulative Year Without Project” noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. 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 13: Cumulative Off-Site Traffic Noise Levels identifies the traffic noise effects along roadway segments in the Project vicinity for “Existing,” “Cumulative Year Without Project,” and “Cumulative Year With Project,” conditions, including incremental and net cumulative impacts.

First, it must be determined whether the “Cumulative Year With Project” increase above existing conditions (Combined Effects) is exceeded. As indicated in Table 13, the Project has no street segments that exceed the combined effects criterion. Under the Incremental Effects criteria, cumulative noise impacts are defined by determining if the forecast ambient (“Cumulative Year Without Project”) noise level is increased by 3 dB or more. As indicated above, the Project does not exceed the Incremental Effects criteria for any roadway segment analyzed.

Therefore, the Project’s cumulative noise contribution would be less than significant. Based on the significance criteria set forth in this Report, no roadway segments would result in significant impacts because they would not exceed the City’s threshold for noise at nearby sensitive receptors. The Project would not result in long-term mobile noise impacts based on Project-generated traffic as well as cumulative and incremental noise levels. Therefore, the Project, in combination with cumulative background traffic noise levels, would result in a less than significant cumulative impact. The Project’s contribution to noise levels would not be cumulatively considerable.

Table 13: Cumulative Off-Site Traffic Noise Levels

Roadway Segment		Existing dBA L _{dn} ¹	Cumulative Without Project dBA L _{dn} ¹	Cumulative With Project dBA L _{dn} ¹	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
					dBA Difference: Existing and Cumulative Year With Project	dBA Difference: Cumulative Year Without and With Project	
San Leandro Street	Hegenberger Road to Westbound Onramp to 75 th Avenue	66.8	69.7	69.9	3.1	0.2	No
	75 th Avenue to 76 th Avenue	67.2	68.9	69.3	2.1	0.4	No
	76 th Avenue to 77 th Avenue	67.2	69.0	69.3	2.1	0.3	No
	77 th Avenue to 81 st Avenue	67.4	69.1	69.1	1.7	0.0	No
ADT = average daily traffic; dBA = A-weighted decibels; L _{dn} = day night noise level							
1. Traffic noise levels are at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.							
Source: Based on traffic data within the 7825 San Leandro Street Transportation Study, prepared by Kimley-Horn and Associates, Inc. (2025). Refer to Appendix B for traffic noise modeling assumptions and results.							

Cumulative Stationary Noise

Stationary noise sources of the proposed Project would result in an incremental increase in non-transportation noise sources in the Project vicinity. However, as discussed above, operational noise caused by the proposed Project would be less than significant. Similar to the proposed 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.

Based on the City of Oakland's Major Development Projects list, 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 was such a significant cumulative impact, the Project would not make a cumulatively considerable contribution to significant cumulative operational noises.

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

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

7.0 REFERENCES

1. California Department of Transportation, *California Vehicle Noise Emission Levels*, 1987.
2. California Department of Transportation, *Traffic Noise Analysis Protocol*, 2020.
3. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.
4. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020.
5. City of Oakland, *Noise Element in Oakland General Plan*, June 21, 2005.
6. Federal Highway Administration, *Noise Measurement Handbook – Final Report*, 2018.
7. Federal Highway Administration, *Roadway Construction Noise Model*, 2006.
8. Federal Highway Administration, *Roadway Construction Noise Model User's Guide Final Report*, 2006.
9. Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, 1992.
10. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.
11. Governor's Office of Planning and Research (OPR), *State of California 2017 General Plan Guidelines*, April 2022.
12. Kimley-Horn and Associates, Inc., *7825 San Leandro Street Transportation Study*, 2025.
13. United States Environmental Protection Agency, *Protective Noise Levels (EPA 550/9-79-100)*, 1979.

Appendix A

Existing Ambient Noise Measurements

Noise Measurement Field Data

Project:	Oakland Foundry	Job Number:	097115017
Site No.:	LT-1	Date:	5/8/2024
Analyst:	Tanay Pradhan	Time:	12:02 PM
Location:	Northern portion of site, along 77th Avenue		
Noise Sources:	Traffic, industrial activities		
Comments:			
Results (dBA):			
	Leq:	Lmin:	Lmax:
	67.8	38.6	93.2
			Peak:
			110.5

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

Weather	
Temp. (degrees F):	77
Wind (mph):	9
Sky:	Clear
Bar. Pressure:	29.9
Humidity:	25%

Photo:



Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	LxT_Data.090.s	Computer's File Name	LxTse_0006073-20240508 120219-LxT_Data.090.ldbin		
Meter	LxT SE 0006073	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2024-05-08 12:02:19	Duration	24:00:00.0		
End Time	2024-05-09 12:02:19	Run Time	24:00:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-05-08 08:47:52	Post-Calibration	None	Calibration Deviation	----

Results

Overall Metrics

LA _{eq}	67.8 dB		
LAE	117.2 dB	SEA	— dB
EA	57.8 mPa²h		
LA _{peak}	110.5 dB	2024-05-09 04:37:34	
LAS _{max}	93.2 dB	2024-05-08 18:20:16	
LAS _{min}	38.6 dB	2024-05-09 02:58:51	
LA _{eq}	67.8 dB		
LC _{eq}	75.3 dB	LC _{eq} - LA _{eq}	7.5 dB
LAI _{eq}	69.7 dB	LAI _{eq} - LA _{eq}	1.9 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	35	0:01:32.10
LAS > 115.0 dB	0	0:00:00.0
LApk > 135.0 dB	0	0:00:00.0
LApk > 137.0 dB	0	0:00:00.0
LApk > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
72.0 dB	68.9 dB	0.0 dB	
LDEN	LDay	LEve	LNight
72.4 dB	69.2 dB	67.9 dB	64.6 dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Z Level	Z Time Stamp
L _{eq}	67.8 dB		75.3 dB		— dB	
LS _(max)	93.2 dB	2024-05-08 18:20:16	— dB	None	— dB	None
LS _(min)	38.6 dB	2024-05-09 02:58:51	— dB	None	— dB	None
L _{Peak(max)}	110.5 dB	2024-05-09 04:37:34	— dB	None	— dB	None

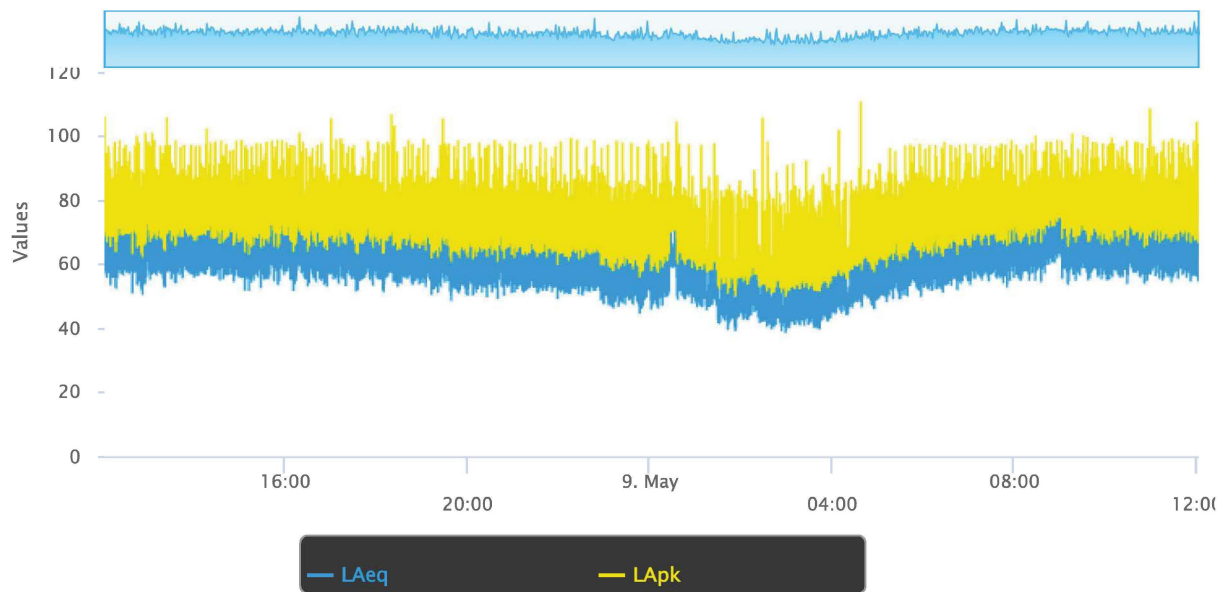
Overloads

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

Statistics

LAS 5.0	71.9 dB
LAS 10.0	68.8 dB
LAS 33.3	64.1 dB
LAS 50.0	61.5 dB
LAS 66.6	58.1 dB
LAS 90.0	49.6 dB

Time History



Noise Measurement Field Data

Project:	Oakland Foundry	Job Number:	097115017
Site No.:	ST-1	Date:	5/8/2024
Analyst:	Tanay Pradhan	Time:	11:23 AM
Location:	Southeast corner of site, near San Leandro Street		
Noise Sources:	Traffic, industrial activities		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
68.2	59.6	80.5	96.5

Equipment

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

Weather

Temp. (degrees F):	75
Wind (mph):	9
Sky:	Clear
Bar. Pressure:	29.9
Humidity:	25%

Photo:



Measurement Report

Report Summary

Meter's File Name	LxT_Data,089,s	Computer's File Name	LxTse_0006073-20240508 112332-LxT_Data,089.ldbin		
Meter	LxT SE 0006073	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2024-05-08 11:23:32	Duration	0:10:00.0		
End Time	2024-05-08 11:33:32	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-05-08 08:47:52	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA _{eq}	68.2 dB		
LAE	96.0 dB	SEA	--- dB
EA	440.5 µPa²h		
LA _{peak}	96.5 dB	2024-05-08 11:30:22	
LAS _{max}	80.5 dB	2024-05-08 11:23:44	
LAS _{min}	59.6 dB	2024-05-08 11:29:10	
LA _{eq}	68.2 dB		
LC _{eq}	76.5 dB	LC _{eq} - LA _{eq}	8.3 dB
LAI _{eq}	69.9 dB	LAI _{eq} - LA _{eq}	1.7 dB

Exceedances

Count Duration

LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApk > 135.0 dB	0	0:00:00.0
LApk > 137.0 dB	0	0:00:00.0
LApk > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
68.2 dB	68.2 dB	0.0 dB	
LDEN	LDay	LEve	LNight
68.2 dB	68.2 dB	--- dB	--- dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Z Level	Z Time Stamp
L _{eq}	68.2 dB		76.5 dB		--- dB	
LS _(max)	80.5 dB	2024-05-08 11:23:44	--- dB	None	--- dB	None
LS _(min)	59.6 dB	2024-05-08 11:29:10	--- dB	None	--- dB	None
L _{Peak(max)}	96.5 dB	2024-05-08 11:30:22	--- dB	None	--- dB	None

Overloads

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

Statistics

LAS 5.0	74.3 dB
LAS 10.0	70.4 dB
LAS 33.3	64.2 dB
LAS 50.0	63.3 dB
LAS 66.6	62.7 dB
LAS 90.0	61.3 dB

Noise Measurement Field Data

Project:	Oakland Foundry	Job Number:	097115017
Site No.:	ST-2	Date:	5/8/2024
Analyst:	Tanay Pradhan	Time:	11:09 AM
Location:	Along southwest boundary of site		
Noise Sources:	Traffic, industrial activities		
Comments:			
Results (dBA):			
	Leq:	Lmin:	Lmax:
	64.8	52.6	82.0
			Peak:
			93.4

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

Weather	
Temp. (degrees F):	75
Wind (mph):	9
Sky:	Clear
Bar. Pressure:	29.9
Humidity:	25%

Photo:



Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	LxT_Data,088.s	Computer's File Name	LxTse_0006073-20240508 110945-LxT_Data,088.ldbin		
Meter	LxT SE 0006073	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2024-05-08 11:09:45	Duration	0:10:00.0		
End Time	2024-05-08 11:19:45	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-05-08 08:47:52	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA _{eq}	64.8 dB		
LAE	92.6 dB	SEA	--- dB
EA	201.3 μ Pa ² h		
LA _{peak}	93.4 dB	2024-05-08 11:15:53	
LAS _{max}	82.0 dB	2024-05-08 11:15:54	
LAS _{min}	52.6 dB	2024-05-08 11:15:15	
LA _{eq}	64.8 dB		
LC _{eq}	74.7 dB	LC _{eq} - LA _{eq}	9.9 dB
LAI _{eq}	66.3 dB	LAI _{eq} - LA _{eq}	1.5 dB

Exceedances

Count Duration

LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApk > 135.0 dB	0	0:00:00.0
LApk > 137.0 dB	0	0:00:00.0
LApk > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
64.8 dB	64.8 dB	0.0 dB	
LDEN	LDay	LEve	LNight
64.8 dB	64.8 dB	--- dB	--- dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Z Level	Z Time Stamp
L _{eq}	64.8 dB		74.7 dB		--- dB	
LS _(max)	82.0 dB	2024-05-08 11:15:54	--- dB	None	--- dB	None
LS _(min)	52.6 dB	2024-05-08 11:15:15	--- dB	None	--- dB	None
L _{Peak(max)}	93.4 dB	2024-05-08 11:15:53	--- dB	None	--- dB	None

Overloads

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

Statistics

LAS 5.0	69.2 dB
LAS 10.0	63.4 dB
LAS 33.3	59.9 dB
LAS 50.0	58.6 dB
LAS 66.6	57.7 dB
LAS 90.0	55.8 dB

Noise Measurement Field Data

Project:	Oakland Foundry	Job Number:	097115017
Site No.:	ST-3	Date:	5/8/2024
Analyst:	Tanay Pradhan	Time:	10:52 AM
Location:	Northern corner of site		
Noise Sources:	Traffic, industrial activities		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
66.4	51.3	80.3	94.4

Equipment

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

Weather

Temp. (degrees F):	75
Wind (mph):	9
Sky:	Clear
Bar. Pressure:	29.9
Humidity:	25%

Photo:



Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	LxT_Data,087,s	Computer's File Name	LxTse_0006073-20240508 105230-LxT_Data,087.ldbin		
Meter	LxT SE 0006073	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2024-05-08 10:52:30	Duration	0:10:00.0		
End Time	2024-05-08 11:02:30	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-05-08 08:47:52	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA _{eq}	66.4 dB		
LAE	94.2 dB	SEA	--- dB
EA	291.0 µPa²h		
LA _{peak}	94.4 dB	2024-05-08 11:02:07	
LAS _{max}	80.3 dB	2024-05-08 11:02:08	
LAS _{min}	51.3 dB	2024-05-08 11:00:07	
LA _{eq}	66.4 dB		
LC _{eq}	74.1 dB	LC _{eq} - LA _{eq}	7.7 dB
LAI _{eq}	68.0 dB	LAI _{eq} - LA _{eq}	1.6 dB

Exceedances

Count Duration

LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApk > 135.0 dB	0	0:00:00.0
LApk > 137.0 dB	0	0:00:00.0
LApk > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
66.4 dB	66.4 dB	0.0 dB	
LDEN	LDay	LEve	LNight
66.4 dB	66.4 dB	--- dB	--- dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Z Level	Z Time Stamp
L _{eq}	66.4 dB		74.1 dB		--- dB	
LS _(max)	80.3 dB	2024-05-08 11:02:08	--- dB	None	--- dB	None
LS _(min)	51.3 dB	2024-05-08 11:00:07	--- dB	None	--- dB	None
L _{Peak(max)}	94.4 dB	2024-05-08 11:02:07	--- dB	None	--- dB	None

Overloads

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

Statistics

LAS 5.0	72.9 dB
LAS 10.0	69.7 dB
LAS 33.3	62.0 dB
LAS 50.0	61.0 dB
LAS 66.6	60.1 dB
LAS 90.0	57.7 dB

Noise Measurement Field Data

Project:	Oakland Foundry	Job Number:	097115017
Site No.:	ST-4	Date:	5/8/2024
Analyst:	Tanay Pradhan	Time:	10:32 AM
Location:	Northern corner of site		
Noise Sources:	Along 75th Avenue, at nearest residence		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
68.1	49.7	83.9	103.7

Equipment

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

Weather

Temp. (degrees F):	75
Wind (mph):	9
Sky:	Clear
Bar. Pressure:	29.9
Humidity:	25%

Photo:



Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	LxT_Data,086.s	Computer's File Name	LxTse_0006073-20240508 103236-LxT_Data,086.ldbin		
Meter	LxT SE 0006073	Firmware	2.404		
User		Location			
Job Description					
Note					
Start Time	2024-05-08 10:32:36	Duration	0:10:00.0		
End Time	2024-05-08 10:42:36	Run Time	0:10:00.0	Pause Time	0:00:00.0
Pre-Calibration	2024-05-08 08:47:52	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA _{eq}	68.1 dB		
LAE	95.9 dB	SEA	--- dB
EA	430.4 µPa²h		
LA _{peak}	103.7 dB	2024-05-08 10:41:44	
LAS _{max}	83.9 dB	2024-05-08 10:41:44	
LAS _{min}	49.7 dB	2024-05-08 10:37:40	
LA _{eq}	68.1 dB		
LC _{eq}	74.6 dB	LC _{eq} - LA _{eq}	6.5 dB
LAI _{eq}	72.0 dB	LAI _{eq} - LA _{eq}	3.9 dB

Exceedances

Count Duration

LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApk > 135.0 dB	0	0:00:00.0
LApk > 137.0 dB	0	0:00:00.0
LApk > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
68.1 dB	68.1 dB	0.0 dB	
LDEN	LDay	LEve	LNight
68.1 dB	68.1 dB	--- dB	--- dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Z Level	Z Time Stamp
L _{eq}	68.1 dB		74.6 dB		--- dB	
LS _(max)	83.9 dB	2024-05-08 10:41:44	--- dB	None	--- dB	None
LS _(min)	49.7 dB	2024-05-08 10:37:40	--- dB	None	--- dB	None
L _{Peak(max)}	103.7 dB	2024-05-08 10:41:44	--- dB	None	--- dB	None

Overloads

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

Statistics

LAS 5.0	74.3 dB
LAS 10.0	72.2 dB
LAS 33.3	65.3 dB
LAS 50.0	62.0 dB
LAS 66.6	60.1 dB
LAS 90.0	57.2 dB

Appendix B

Noise Modeling Data

Project: Oakland Foundry
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)	Distance (feet)	Shielding	Direction
1	Single Family Residence	1,100	0	N
2	Commercial	420	0	W
3	Industrial	450	0	NE
4	Multifamily Residence	1,870	0	N
5	E	5	0	NW
6	F	6	0	NE
7	G	7	0	SW

Construction Phase	Equipment Type	No. of Equip.	Acoustical Usage Factor	Reference Noise Level at 50ft per Unit, Lmax	RECEPTOR	1	RECEPTOR	2	RECEPTOR	3	RECEPTOR	4	RECEPTOR	5	RECEPTOR	6	RECEPTOR	7
					Noise Level at Receptor at Receptor 1, Lmax	Noise Level at Receptor at Receptor 1, Leq	Noise Level at Receptor at Receptor 2, Lmax	Noise Level at Receptor at Receptor 2, Leq	Noise Level at Receptor at Receptor 3, Lmax	Noise Level at Receptor at Receptor 3, Leq	Noise Level at Receptor at Receptor 4, Lmax	Noise Level at Receptor at Receptor 4, Leq	Noise Level at Receptor at Receptor 5, Lmax	Noise Level at Receptor at Receptor 5, Leq	Noise Level at Receptor at Receptor 6, Lmax	Noise Level at Receptor at Receptor 6, Leq	Noise Level at Receptor at Receptor 7, Lmax	Noise Level at Receptor at Receptor 7, Leq
Demolition	Concrete Saw Excavator Dozer	1	20%	90	62.8	55.8	71.1	64.1	70.5	63.5	58.1	51.2	109.6	102.6	108.0	101.0	106.7	99.7
		3	40%	81	58.6	54.6	67.0	63.0	66.4	62.4	54.0	50.0	105.5	101.5	103.9	99.9	102.5	98.6
		2	40%	82	57.9	53.9	66.2	62.2	65.6	61.6	53.3	49.3	104.7	100.7	103.1	99.1	101.8	97.8
	USER DEFINED USER DEFINED Combined LEQ		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Site Preparation	Dozer Tractor Excavator	3	40%	82	59.6	55.6	68.0	64.0	67.4	63.4	55.0	51.0	106.5	102.5	104.9	100.9	103.5	99.6
		4	40%	84	63.2	59.2	71.5	67.6	70.9	67.0	58.6	54.6	110.0	106.0	108.4	104.5	107.1	103.1
		1	40%	81	53.9	49.9	62.2	58.2	61.6	57.6	49.2	45.3	100.7	96.7	99.1	95.1	97.8	93.8
	USER DEFINED USER DEFINED Combined LEQ		#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading	Excavator Grader Dozer Tractor Scraper	2	40%	81	56.9	52.9	65.2	61.2	64.6	60.6	52.3	48.3	103.7	99.7	102.1	98.1	100.8	96.8
		1	40%	85	58.2	54.2	66.5	62.5	65.9	61.9	53.5	49.6	105.0	101.0	103.4	99.4	102.1	98.1
		1	40%	82	54.9	50.9	63.2	59.2	62.6	58.6	50.2	46.3	101.7	97.7	100.1	96.1	98.8	94.8
		2	40%	84	60.2	56.2	68.5	64.5	67.9	63.9	55.6	51.6	107.0	103.0	105.4	101.4	104.1	100.1
		2	40%	84	59.8	55.8	68.1	64.1	67.5	63.5	55.2	51.2	106.6	102.6	105.0	101.0	103.7	99.7

Decibel Addition:

$$L = 10 \log_{10} \left(\sum_{i=1}^n 10^{\frac{Li}{10}} \right)$$

	Receptor 1 (720 Feet)	Receptor 2	Receptor 3	Receptor 4
5 Idling	36.3			
5 Pouring	56.8			
Total:	56.8	14.8	14.8	14.8

Distance Attenuation - Point Source

$$dBA_2 = dBA_1 + 20 \operatorname{Log}_{10} \left(\frac{d_1}{d_2} \right)$$

where:

dBA₁ = Reference Noise Level

dBA₂ = Estimated Noise Level

d₁ = Reference Distance

d₂ = Approximate Receptor Location Distance

	dBA ₁	d ₁	d ₂	dBA ₂
Idling Trucks	85	3.28	890	36.3
Pouring	81.8	50	890	56.8

Distance Attenuation - Line Source

$$dBA_2 = dBA_1 - 10 \operatorname{Log}_{10} \left(\frac{d_2}{d_1} \right) - 5 \operatorname{Log}_{10} \left(\frac{d_2}{d_1} \right)$$

where:

dBA₁ = Reference Noise Level

dBA₂ = Estimated Noise Level

d₁ = Reference Distance

d₂ = Approximate Receptor Location Distance

dBA ₁	d ₁	d ₂	dBA ₂
------------------	----------------	----------------	------------------

Decibel Addition:

$$L = 10 \log_{10} \left(\sum_{i=1}^n 10^{\frac{Li}{10}} \right)$$

n 1	78
n 2	78
n 3	78
n 4	78
n 5	78

Total: 85.0

Source for Ref. Noise Levels: RCNM, 2005

Reference Noise Levels	Noise Level at 50 Feet	
	1	74.8
	2	77.8
	3	79.6
	4	80.8
	5	81.1
	6	82.6
	7	83.3
	8	83.9
Pouring Trucks	9	84.4
	10	84.8

Source for Ref. Noise Levels: RCNM, 2005

Decibel Addition:

$$L = 10 \log_{10} \left(\sum_{i=1}^n 10^{\frac{Li}{10}} \right)$$

n 1	61.3 Idling	5 Trucks
n 2	81.8 Pouring	5 Trucks
Total:	81.8	

Adding and Averaging Two Levels			
dB(1)	dB(2)	dB(Total)	dB(Average)
67	67	70.0	67.0

Many identical levels (like a crowd cheering in a stadium) add together logarithmically	Summation of N identical levels	
	Single Unit Level	40
	N	10Log(N)
Enter Total number of sources here >	2	3.0
	Total	43.0

Background Noise Level Correction		
Measured Noise Level of Source	Background Noise Level	Corrected Source Level
40	35	38

Predicting sound levels from a sound pressure measurement at specific distances from a source & Lw (sound power)				
Source Level @ D1	Measured Distance D1 (feet)	Enter Predicted distance D2 (feet)	Predicted Level (Free Field) No Absorption	Lw calculated from D1 (reflecting plane)
40	1.33	200	-4	40

1/3 Octave Summation example		
You can also use this to add three levels		
100 Hz	65	
125 Hz	67	70.1
160 Hz	63	

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

Project Name: Oakland Foundry

Project Number:

Scenario: Existing

Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:

Total ADT Volumes

Medium-Duty Trucks

Heavy-Duty Trucks

	Day	Evening	Night
	77.70%	12.70%	9.60%
	87.43%	5.05%	7.52%
	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Ldn at 100 Feet	Distance from Centerline of Roadway			
								Medium Trucks	Heavy Trucks		70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	San Leandro Street	Hegenberger Rd to WB On-ramp to 75th Ave	4	0	17,390	35	0	4.0%	6.0%	66.8	48	152	481	1,521
2	San Leandro Street	75th Ave to 76th Ave	4	0	19,070	35	0	4.0%	6.0%	67.2	53	167	528	1,668
3	San Leandro Street	76th Ave to 77th Ave	4	0	19,100	35	0	4.0%	6.0%	67.2	53	167	528	1,671
4	San Leandro Street	77th Ave to 81th Ave	4	0	19,730	35	0	4.0%	6.0%	67.4	55	173	546	1,726

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: Oakland Foundry
Project Number:
Scenario: Existing Plus Project
Ldn/CNEL: Ldn

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

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Ldn at 100 Feet	Distance from Centerline of Roadway Distance to Contour			
								Medium Trucks	Heavy Trucks		70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	San Leandro Street	Hegenberger Rd to WB On-ramp to 76th Ave	4	0	18,663	35	0	4.0%	6.0%	67.1	52	163	516	1,633
2	San Leandro Street	75th Ave to 76th Ave	4	0	21,268	35	0	4.0%	6.0%	67.7	59	186	588	1,860
3	San Leandro Street	76th Ave to 77th Ave	4	0	21,298	35	0	4.0%	6.0%	67.7	59	186	589	1,863
4	San Leandro Street	77th Ave to 81th Ave	4	0	19,730	35	0	4.0%	6.0%	67.4	55	173	546	1,726

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: Oakland Foundry

Project Number:

Scenario: Opening Year

Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:

Total ADT Volumes Day Evening Night

Medium-Duty Trucks 77.70% 12.70% 9.60%

Heavy-Duty Trucks 87.43% 5.05% 7.52%

 89.10% 2.84% 8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Ldn at 100 Feet	Distance from Centerline of Roadway Distance to Contour			
								Medium Trucks	Heavy Trucks		70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	San Leandro Street	Hegenberger Rd to WB On-ramp to 76th Ave	4	0	33,915	35	0	4.0%	6.0%	69.7	94	297	938	2,967
2	San Leandro Street	75th Ave to 76th Ave	4	0	28,376	35	0	4.0%	6.0%	68.9	78	248	785	2,482
3	San Leandro Street	76th Ave to 77th Ave	4	0	28,406	35	0	4.0%	6.0%	69.0	79	248	786	2,485
4	San Leandro Street	77th Ave to 81th Ave	4	0	29,476	35	0	4.0%	6.0%	69.1	82	258	815	2,578

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: Oakland Foundry

Project Number:

Scenario: Opening Year Plus Project

Ldn/CNEL: Ldn

Assumed 24-Hour Traffic Distribution:

	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Ldn at 100 Feet	Distance from Centerline of Roadway Distance to Contour			
								Medium Trucks	Heavy Trucks		70 Ldn	65 Ldn	60 Ldn	55 Ldn
1	San Leandro Street	Hegenberger Rd to WB On-ramp to 76th Ave	4	0	35,188	35	0	4.0%	6.0%	69.9	97	308	973	3,078
2	San Leandro Street	75th Ave to 76th Ave	4	0	30,574	35	0	4.0%	6.0%	69.3	85	267	846	2,674
3	San Leandro Street	76th Ave to 77th Ave	4	0	30,604	35	0	4.0%	6.0%	69.3	85	268	847	2,677
4	San Leandro Street	77th Ave to 81th Ave	4	0	29,476	35	0	4.0%	6.0%	69.1	82	258	815	2,578

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