Appendix H

Noise/Vibration Assessment

644 AND 675 PIERCY ROAD
NOISE AND VIBRATION ASSESSMENT

San José, California

April 28, 2023

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INTRODUCTION

The project proposes the construction of an industrial building on two vacant parcels located at 644 and 675 Piercy Road in the City of San José, California. The proposed single-story industrial building would include two office spaces, approximately 209,000 square feet (to be conservative, maximum square footage of 250,000 is used for this analysis) and would reach a maximum height of 44 feet. The project also includes 20,000 square feet of mezzanine floor, 10,000 square feet of warehouse usage, and 10,000 square feet of office space. The exact industrial use of the proposed buildings is yet to be determined; however, it is likely to be used for industrial distribution, manufacturing, and/or research and development activities. Vehicular access to the project site would be provided via four new driveways. Two 45-foot-wide driveways would be located on the southwest side of the development, providing access to and from Hellyer Avenue. A 26-foot-wide driveway would be located on the northeast side of the development, providing access to and from Piercy Road. An additional 24-foot-wide driveway would be located on the southeast side of the development, providing access to and from Tennant Avenue. All driveways would provide ingress and egress for the proposed project. Parking would be provided via new surface parking lots on the northeast, southeast, and southwest sides of the new building. The project includes 168 automobile parking spaces (including 8 accessible spaces, 17 electric vehicle spaces, and 14 vanpool spaces), 18 motorcycle spaces, 36 bicycle parking spaces (7 long-term spaces and 29 short-term spaces) and 76 trailer parking spaces.

This report evaluates the project's potential to result in significant impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into three sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses ambient noise conditions in the project vicinity; 2) the Plan Consistency Analysis section discusses noise and land use compatibility utilizing policies in the City's General Plan; and 3) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and presents mitigation measures, where necessary, to mitigate project impacts to a less-than-significant level.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is the intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest

sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA DNL. Typically, the highest steady traffic noise level during the daytime is about equal to the DNL and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12 to 17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a

newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57 to 62 dBA DNL with open windows and 65 to 70 dBA DNL if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials, while 65 to 70 dBA is a typical value for a primary/major arterial. Levels of 75 to 80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

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 the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The DNL 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. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 50 dBA DNL. At a DNL of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the DNL increases to 70 dBA, the percentage of the population highly annoyed increases to about 25 to 30 percent of the population. There is, therefore, an increase of about 2 percent per dBA between a DNL of 60 to 70 dBA. Between a DNL of 70 to 80 dBA, each decibel increase increases by about 3 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the DNL is 60 dBA, approximately 30 to 35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 3 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 4 percent increase in the percentage of the population highly annoyed.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
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 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons 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 decibels 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 micro Pascals). 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 decibels 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 A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
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 upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

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

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Fundamentals of Groundborne Vibration

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 method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception of vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings.” Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential structures
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020.

Regulatory Background – Noise

This section describes the relevant guidelines, policies, and standards established by State Agencies, Santa Clara County, and the City of San José. The State CEQA Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

Federal Government

Federal Transit Administration. The Federal Transit Administration (FTA) has identified construction noise thresholds in the *Transit Noise and Vibration Impact Assessment Manual*,[1] which limit daytime construction noise to 80 dBA L_{eq} at residential land uses and to 90 dBA L_{eq} at commercial and industrial land uses.

State of California

State CEQA Guidelines. The California Environmental Quality Act (CEQA) contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

1 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, FTA Report No. 0123, September 2018.

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

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

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

2022 California Building Cal Green Code. The State of California established exterior sound transmission control standards for new non-residential buildings as set forth in the 2022 California Green Building Standards Code (Section 5.507.4.1 and 5.507.4.2). The sections that pertain to this project are as follows:

> **5.507.4.1 Exterior noise transmission, prescriptive method.** Wall and roof-ceiling assemblies exposed to the noise source making up the building envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 when the building falls within the 65 dBA L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway noise source, as determined by the local general plan noise element.
>
> **5.507.4.2 Performance method.** For buildings located, as defined by Section 5.507.4.1, wall and roof-ceiling assemblies exposed to the noise source making up the building envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level ($L_{eq\ (1\text{-}hr)}$) of 50 dBA in occupied areas during any hour of operation.

The performance method, which establishes the acceptable interior noise level, is the method typically used when applying these standards.

Santa Clara County

Santa Clara County Airport Land Use Commission Comprehensive Land Use Plan. The Comprehensive Land Use Plan (CLUP) adopted by the Santa Clara County Airport Land Use Commission contains standards for projects within the vicinity of San José International Airport which are relevant to this project;

4.3.2.1 Noise Compatibility Policies

N-1 The Community Noise Equivalent Level (CNEL) method of representing noise levels shall be used to determine if a specific land use is consistent with the CLUP.

N-2 In addition to the other policies herein, the Noise Compatibility Policies presented in Table 4-1 shall be used to determine if a specific land use is consistent with this CLUP.

N-3 Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5 (not shown in this report).

N-6 Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. Table 4-1 presents acceptable noise levels for other land uses in the vicinity of the Airport.

Table 4 - 1

NOISE COMPATIBILITY POLICIES

LAND USE CATEGORY	CNEL					
	55-60	60-65	65-70	70-75	75-80	80-85
Residential – low density Single-family, duplex, mobile homes	*	**	***	****	****	****
Residential – multi-family, condominiums, townhouses	*	**	***	****	****	****
Transient lodging - motels, hotels	*	*	**	****	****	****
Schools, libraries, indoor religious assemblies, hospitals, nursing homes	*	***	****	****	****	****
Auditoriums, concert halls, amphitheaters	*	***	***	****	****	****
Sports arena, outdoor spectator sports, parking	*	*	*	**	***	****
Playgrounds, neighborhood parks	*	*	***	****	****	****
Golf courses, riding stables, water recreation, cemeteries	*	*	*	**	***	****
Office buildings, business commercial and professional, retail	*	*	**	***	****	****
Industrial, manufacturing, utilities, agriculture	*	*	*	***	***	****
* Generally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Mobile homes may not be acceptable in these areas. Some outdoor activities might be adversely affected.					
** Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Outdoor activities may be adversely affected. Residential: Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.					
*** Generally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor activities are likely to be adversely affected.					
**** Unacceptable	New construction or development shall not be undertaken.					

Source: Based on General Plan Guidelines, Appendix C (2003), Figure 2 and Santa Clara County ALUC 1992 Land Use Plan, Table 1

Source: Comprehensive Land Use Plan Santa Clara County, Norman Y Mineta San José International Airport, May 25, 2011, Amended May 23, 2019.

City of San José

City of San José General Plan. The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies with the goal of minimizing the impact of noise on people through noise reduction and suppression techniques, and through appropriate land use policies in the City of San José. The following policies are applicable to the proposed project:

EC-1.2 Minimize the noise impacts of new development on land uses sensitive to increased noise levels (Categories 1, 2, 3 and 6) by limiting noise generation and by requiring use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would:

- Cause the DNL at noise sensitive receptors to increase by five dBA DNL or more where the noise levels would remain "Normally Acceptable;" or

- Cause the DNL at noise sensitive receptors to increase by three dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level.

EC-1.3 Mitigate noise generation of new nonresidential land uses to 55 dBA DNL at the property line when located adjacent to existing or planned noise sensitive residential and public/quasi-public land uses.

EC-1.6 Regulate the effects of operational noise from existing and new industrial and commercial development on adjacent uses through noise standards in the City's Municipal Code.

EC-1.7 Require construction operations within San José to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

EC-1.11 Require safe and compatible land uses within the Mineta International Airport noise zone (defined by the 65 CNEL contour as set forth in State law) and encourage aircraft operating procedures that minimize noise.

Regulatory Background – Vibration

City of San José

City of San José General Plan. The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies to achieve the goal of minimizing vibration impacts on people, residences, and business operations in the City of San José. The following policies are applicable to the proposed project:

EC-2.3 Require new development to minimize continuous vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, including ruins and ancient monuments or buildings that are documented to be structurally weakened, a continuous vibration limit of 0.08 in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to a building. A continuous vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction. Equipment or activities typical of generating continuous vibration include but are not limited to: excavation equipment; static compaction equipment; vibratory pile drivers; pile-extraction equipment; and vibratory compaction equipment. Avoid use of impact pile drivers within 125 feet of any buildings, and within 300 feet of historical buildings, or buildings in poor condition. On a project-specific basis, this distance of 300 feet may be reduced where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction. Transient vibration impacts may exceed a vibration limit of 0.08 in/sec PPV only when and where warranted by a technical study by a qualified professional that verifies that there will be virtually no risk of cosmetic damage to sensitive buildings from the new development during demolition and construction.

Existing Noise Environment

The project site is located at 644 and 675 Piercy Road in the City of San José, California. Adjoining the site to the west is a vacant lot, which is the location of a future industrial development project currently under review. Existing residential land uses are located approximately 65 feet to the north, opposite Piercy Road, and approximately 55 feet to the east, opposite Tennant Avenue.

The existing noise environment at the site results primarily from traffic noise along nearby U.S. Highway 101 (Highway 101) and local vehicular traffic along Hellyer Avenue. Aircraft associated with Mineta San José International Airport also contributes to the noise environment.

A noise monitoring survey consisting of two long-term (LT-1 and LT-2) and two short-term (ST-1 and ST-2) noise measurements was made at the site between Tuesday, January 24, 2023, and Thursday, January 26, 2023. All measurement locations are shown in Figure 1.

Long-term noise measurement LT-1 was made along the northern boundary of the project site, approximately 45 feet from the centerline of Piercy Road. The noise levels measured at LT-1 would be representative of the existing noise environment at the residential uses opposite Piercy Road to the north. Hourly average noise levels typically ranged from 55 to 65 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 51 to 63 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise level on Wednesday, January 25, 2023, was 65 dBA DNL. The daily trend in noise levels at LT-1 is shown in Figures A1 through A3 of Appendix A.

LT-2 was made approximately 45 feet east of the centerline of Tennant Avenue at a location representative of the existing noise environment at the residential development east of the project site. Hourly average noise levels at LT-2 typically ranged from 55 to 66 dBA L_{eq} during daytime hours and from 51 to 62 dBA L_{eq} during nighttime hours. The day-night average noise level on Wednesday, January 25, 2023, was 65 dBA DNL. The daily trend in noise levels at LT-2 is shown in Figures A4 through A6 of Appendix A.

Short-term noise measurements were made on Tuesday, January 24, 2023, between 12:30 p.m. and 1:00 p.m. in 10-minute intervals. Results of the measurements are summarized in Table 4.

ST-1 was made near the corner of Basking Ridge Avenue and Jenny Street, approximately 60 feet from the centerline of Basking Ridge Avenue. Traffic along Basking Ridge Avenue was the primary noise source at this location. During the 10-minute measurement, 59 passenger cars along Basking Ridge Avenue and three passenger cars along nearby Alyssa Drive generated noise levels ranging from 57 to 75 dBA, and one heavy truck pass-by along Basking Ridge Avenue generated noise levels of 74 dBA. The 10-minute L_{eq} measured at ST-1 was 62 dBA.

ST-2 was made at the end of the Gravina Loop, with the sound level meter positioned approximately 25 feet from the centerline. Ambient background noise levels ranged from 38 to 41 dBA at ST-2. Traffic along Piercy Road, which was the dominant noise source at this location, ranged from 44 to 50 dBA. Jet flyovers generated noise levels of 45 to 49 dBA, and other airplanes generated noise levels of 45 to 56 dBA at ST-2. Other noise sources during this 10-minute period included chickens (43 to 44 dBA) and a distant car alarm (42 to 44 dBA). The 10-minute L_{eq} measured at ST-2 was 46 dBA.

TABLE 4 Summary of Short-Term Noise Measurements (dBA)

Noise Measurement Location	Date, Time	Measured Noise Level, dBA					
		L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
ST-1: Corner of Basking Ridge Avenue and Jenny Street	1/24/2023, 12:30-12:40	75	72	66	55	45	62
ST-2: End of the Gravina Loop	1/24/2023, 12:50-13:00	56	55	50	43	40	46

FIGURE 1 Aerial Image of the Project Site and Surrounding Area with Long- and Short-Term Measurement Locations Identified

Source: Google Earth, 2023.

PLAN CONSISTENCY ANALYSIS

Noise and Land Use Compatibility

The Cal Green Code standards specify an interior noise environment attributable to exterior sources not to exceed an hourly equivalent noise level ($L_{eq\ (1\text{-}hr)}$) of 50 dBA in occupied areas of nonresidential uses during any hour of operation.

The future noise environment at the site would continue to result primarily from vehicular traffic along nearby Highway 101 and local traffic along Hellyer Avenue. The traffic study completed for the proposed project includes existing and cumulative plus project traffic volumes. By comparing the cumulative plus project volumes to the existing the future noise level increase was calculated to be 3 dBA DNL along Hellyer Avenue. This increase was applied to the ambient measurements throughout the site to estimate the future noise environment at the project site.

Future Interior Noise Environment

The nearest building façade is approximately 100 to 145 feet from the centerline of Tennant Avenue and about 65 to 195 feet from the centerline of Piercy Road. At these distances, daytime hourly average noise levels at the proposed building exteriors would range from 55 to 66 dBA L_{eq}, with day-night average noise levels up to 62 dBA DNL.

Standard construction materials for non-residential uses would provide about 25 dBA of noise reduction in interior spaces. The inclusion of adequate forced-air mechanical ventilation systems is normally required so that windows may be kept closed at the occupant's discretion and would provide an additional 5 dBA reduction. The standard construction materials in combination with forced-air mechanical ventilation would satisfy the daytime threshold of 50 dBA $L_{eq(1\text{-}hr)}$.

NOISE IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA, provides a discussion of each project impact, and presents mitigation measures, where necessary, to reduce project impacts to less-than-significant levels.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

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

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

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

or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

Impact 1a: **Temporary Construction Noise.** Existing noise-sensitive land uses would be exposed to a temporary increase in ambient noise levels for a period of less than one year. Therefore, with the implementation of the City's Standard Permit Condition, this temporary noise increase would be reduced to a **less-than-significant** level.

The project applicant proposes the construction of one single-story industrial building on the project site. The construction schedule assumed that the earliest possible start date would be October 2023, and the development would be built over a period of 11 months, with construction expected to conclude in July 2024. Construction phases would include site preparation, grading, trenching, building construction, architectural coating, and paving. During each phase of construction, there would be a different mix of equipment operating, and noise levels would vary by phase and vary within phases, based on the amount of equipment in operation and the location at which the equipment is operating.

Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Policy EC-1.7 of the City's General Plan requires all construction operations within the City to use best available noise suppression devices and techniques and to limit construction hours near residential uses per the Municipal Code allowable hours, which are between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday when construction occurs within 500 feet of a residential land use. Further, the City considers significant construction noise impacts to occur if a project that is located within 500 feet of residential uses or 200 feet of commercial or office uses would involve substantial noise-generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

While the City of San José does not establish noise level thresholds for construction activities, this analysis uses the noise limits established by the Federal Transit Administration (FTA) to identify the potential for impacts due to substantial temporary construction noise. The FTA identifies construction noise limits in the *Transit Noise and Vibration Impact Assessment Manual*.[1] During daytime hours, an exterior threshold of 80 dBA L_{eq} shall be applied at residential land uses and 90 dBA L_{eq} shall be applied at commercial and industrial land uses.

Construction activities are typically carried out in phases. During each phase of construction, there would be a different mix of equipment operating, and noise levels would vary by phase and vary within phases, based on the amount of equipment in operation and the location at which the equipment is operating. The typical range of maximum instantaneous noise levels for the proposed project would be 70 to 90 dBA L_{max} at a distance of 50 feet (see Table 5) from the equipment.

Table 6 shows the hourly average noise level ranges, by construction phase, typical for various types of projects. Hourly average noise levels generated by construction are about 75 to 89 dBA L_{eq} for industrial buildings, measured at a distance of 50 feet from the center of a busy construction site. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain often result in lower construction noise levels at distant receptors.

TABLE 5 Construction Equipment 50-Foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor[3]	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:

[1] Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

[2] Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

[3] Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

TABLE 6 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

Equipment expected to be used in each construction phase are summarized in Table 7, along with the quantity of each type of equipment and the reference noise level at 50 feet, assuming the operation of the two loudest pieces of construction equipment for each construction phase.

Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (RCNM) was used to calculate the hourly average noise levels for each phase of construction, assuming the two loudest pieces of equipment would operate simultaneously, as recommended by the FTA for construction noise evaluations. This construction noise model includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information gathered during the construction of the Central Artery/Tunnel Project in Boston, Massachusetts (CA/T Project or "Big Dig"). The usage factors represent the percentage of time that the equipment would be operating at full power. Table 7 also summarizes the construction noise levels for the two loudest pieces of equipment propagated to the surrounding receiving land uses.

To assess construction noise impacts at the receiving property lines of existing noise-sensitive receptors, the construction hourly average noise levels calculated from all equipment per phase in Table 7 operating simultaneously propagated from the geometrical center of the project site to the nearest property lines of the receptors. These noise level estimates are shown in Table 8. Noise levels in Table 8 do not assume reductions due to intervening buildings or existing barriers. It should also be noted that another industrial project has been proposed at the adjoining site to the north, which would be constructed between June 2023 and March 2024. Since both construction projects would occur at the same time, this future site to the north is not treated as a receptor subject to construction noise at the proposed project site. Potential cumulative construction impacts are discussed later in this report.

TABLE 7 Estimated Construction Noise Levels for the Proposed Industrial Building at a Distance of 50 feet

Phase of Construction	Total Workdays	Construction Equipment (Quantity)	Estimated Construction Noise Level at 50 feet
Site Preparation	10 days	Rubber-Tired Dozer (3)[a] Tractor/Loader/Backhoe (4)[a]	82
Grading/Excavation	30 days	Excavator (2) Grader (1)[a] Rubber-Tired Dozer (1) Scraper (2) Tractor/Loader/Backhoe (2)[a]	84
Trenching/Foundation	20 days	Tractor/Loader/Backhoe (1)[a] Excavator (1)[a]	82
Building – Exterior	220 days	Crane (1) Forklift (3) Generator Set (1)[a] Tractor/Loader/Backhoe (3)[a] Welder (1)	82
Building – Interior/ Architectural Coating	10 days	Air Compressor (1)[a]	74
Paving	20 days	Paver (2)[a] Paving Equipment (2)[a] Roller (2)	83

[a] Denotes two loudest pieces of construction equipment per phase

TABLE 8 Estimated Construction Noise Levels at Nearby Land Uses

Phase of Construction	Calculated Hourly Average Noise Levels, L_{eq} (dBA)			
	NW Residential (400ft[a])	East Residential (490ft[a])	Distant West Industrial (1,600ft)	Distant South Commercial & Industrial (1,460ft)
Site Preparation	70[b]	68[b]	58[b]	58[b]
Grading/ Excavation	70[b]	68[b]	58[b]	59[b]
Trenching/Foundation	64[b]	62[b]	52[b]	52[b]
Building –Exterior	68[b]	66[b]	56[b]	57[b]
Building – Interior/ Architectural Coating	56[b]	54[b]	44[b]	44[b]
Paving	69[b]	67[b]	56[b]	57[b]

[a] These existing residential receptors are located within 500 feet of the boundary of the project site; however, the distances shown in the table were measured from the center of the proposed industrial building.

[b] These levels represent construction noise levels calculated from all equipment per phase operating simultaneously.

There are several individual rural residences located along Piercy Road to the northwest and along Tenant Avenue to the east of the project site that are within 500 feet of the project site. As shown in Table 8, construction noise levels would intermittently range from 54 to 70 dBA L_{eq} at existing residential uses and from 44 to 59 dBA L_{eq} at existing industrial and commercial uses when activities are focused near the center of the proposed building. These construction noise levels would not exceed the exterior threshold of 80 dBA L_{eq} at residential land uses. The 90 dBA L_{eq} threshold would not be exceeded at commercial land uses in the project vicinity during project construction. While specific construction activities would at times exceed the 80 dBA L_{eq} residential threshold when work is conducted near the property lines of the site, construction would move throughout the project site during the planned 11-month period and thus would not constitute a significant temporary increase. Since project construction would not last for a period of more than one year, this temporary construction impact would not be considered significant in accordance with Policy EC-1.7 of the City's General Plan.

The City requires that reasonable noise reduction measures be incorporated into the construction plan and implemented during all phases of construction activity as part of their Standard Permit Condition. The following measures shall be included as part of the proposed project construction:

- Limit construction to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday for any on-site or off-site work within 500 feet of any residential unit. Construction outside of these hours may be approved through a development permit based on a site-specific "construction noise mitigation plan" and a finding by the Director of Planning, Building and Code Enforcement that the construction noise mitigation plan is adequate to prevent noise disturbance of affected residential uses.

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Prohibit unnecessary idling of internal combustion engines.

- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses.

- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.

- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to the adjacent land uses and nearby residences.
- Designate a "disturbance coordinator" who shall be responsible for responding to any complaints about construction noise. The disturbance coordinator shall determine the cause of the noise complaint (e.g., bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. Conspicuously post a telephone

number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

Since total construction of the proposed project would last for a period of less than one year, this would be considered a less-than-significant impact. Implementation of GP Policy EC-1.7, Municipal Code requirements, and the City's Standard Permit Conditions listed above would further reduce the possibility of annoyance at noise-sensitive receptors in the project vicinity.

Mitigation Measure 1a: No mitigation required.

Impact 1b: Permanent Noise Level Increase/Exceed Applicable Standards. The proposed project would not result in a substantial permanent noise level increase at residential uses. The proposed project would not exceed applicable standards at the noise-sensitive uses. **This is a less-than-significant impact.**

According to Policy EC-1.2 of the City's General Plan, a significant permanent noise increase would occur if the project would increase noise levels at noise-sensitive receptors by 3 dBA DNL or more where ambient noise levels exceed the "normally acceptable" noise level standard. Where ambient noise levels are at or below the "normally acceptable" noise level standard, noise level increases of 5 dBA DNL or more would be considered significant. The City's General Plan defines the "normally acceptable" outdoor noise level standard for the nearby residential land uses to be 60 dBA DNL. Existing ambient levels, based on the measurements made in the project vicinity, exceed 60 dBA DNL. Therefore, a significant impact would occur if noise due to the proposed project would permanently increase ambient levels by 3 dBA DNL.

Under the City's Noise Element, noise levels from new nonresidential building equipment shall not exceed a noise level of 55 dBA DNL at receiving noise-sensitive land uses. Noise-sensitive receptors surrounding the site would include existing residences to the northwest and to the east. Additionally, the City's Municipal Code limits noise levels from industrial uses to 55 dBA DNL at existing residential uses and to 70 dBA DNL at existing and future industrial uses, which are located to the west. The Municipal Code does limit noise levels at commercial properties to 60 dBA DNL; however, the nearest commercial use would be more than 800 feet from the southern boundary of the project site, and noise levels generated at the project site would be well below 60 dBA DNL at these receptors. Therefore, the project would have no impact on the nearest commercial uses and are not discussed further in this section. While exceeding the Municipal Code thresholds would not constitute a significant CEQA impact, these thresholds should be used during the final design phase of the project to control noise at existing receptors in the project vicinity.

Project Traffic Increase

The traffic study included peak hour turning movements for existing traffic volumes and project trips at 10 intersections in the vicinity of the project site. The project trips were added to the existing volumes to estimated existing plus project traffic volumes. By comparing the existing plus project volumes to the existing volumes, the project's contribution to the overall noise increase is calculated. Table 9 summarizes the estimated noise level increase along each roadway segment included in the traffic report. As shown in Table 9, the project's contribution would be at or below

1 dBA DNL along all segments in the project vicinity. The project would not result in a permanent noise increase of 3 dBA DNL or more at noise-sensitive receptors in the project vicinity.

TABLE 9 Estimated Noise Level Increases of Existing Plus Project Traffic Volumes Over Existing Volumes at Receptors in the Project Vicinity

Roadway	Segment	Estimated Noise Level Increase Over Existing Volumes, dBA DNL
Blossom Hill Road/ Silver Creek Road	West of Hellyer Avenue	0
	East of Hellyer Avenue	0
Hellyer Avenue	North of Silver Creek Road	0
	Silver Creek Road to Piercy Road	0
	Piercy Road to north project driveway	0
	North project driveway to south project driveway	0
	South project driveway to Bernal Road/Silicon Valley Boulevard/Tennant Avenue	0
	South of Bernal Road/Silicon Valley Boulevard/Tennant Avenue	0
Piercy Road	West of Hellyer Avenue	0
	Hellyer Avenue to project driveway	0
	South of project driveway	0
Bernal Road/Silicon Valley Boulevard/Tennant Avenue	West of SR 85 ramps	0
	SR 85 SB ramps to Highway 101 SB ramps	0
	Highway 101 SB ramps to Highway 101 NB ramps	0
	Highway 101 NB ramps to Hellyer Avenue	0
	Hellyer Avenue to project driveway	1
	East of project driveway	0
Highway 101 NB off ramp	At Bernal Road/Silicon Valley Boulevard	0
Highway 101 NB on ramp	At Bernal Road/Silicon Valley Boulevard	0
Highway 101 SB off ramp	At Bernal Road/Silicon Valley Boulevard	0
SR 85 SB off ramp	At Bernal Road/Silicon Valley Boulevard	0
SR 85 SB on ramp	At Bernal Road/Silicon Valley Boulevard	0

Mechanical Equipment

The exact usage of the proposed buildings is yet to be determined. Potential uses include industrial distribution, manufacturing, and/or research and development activities. Without knowing the specific uses, details pertaining to the type, number, location, etc. of mechanical equipment are unavailable at this time. For these types of uses, however, typical equipment would include heating, ventilation, air conditioning (HVAC) systems, exhaust fans, chillers, etc. Typically, most of the equipment would be located on the roof or in the loading dock areas, which the site plan shows along the western façade. The proposed building would shield equipment noise located in the loading docks from the residences to the east. Worst-case scenario would, therefore, be mechanical equipment located on the rooftops of each building, which would a maximum of 44 feet above the ground for the proposed building.

For industrial uses similar to the proposed project, typical mechanical equipment would generate noise levels ranging from 61 to 62 dBA at a distance of 20 feet.

Assuming the equipment to be located about 10 feet from the edge of the nearest rooftop façade and up to five pieces of equipment to be operating simultaneously at any time during a 24-hour period, which would represent worst-case conditions, the total potential noise generated by the mechanical equipment would be up to 69 dBA L_{eq} and 75 dBA DNL at 20 feet.

The estimated mechanical equipment noise levels due to such equipment propagated to the nearest property lines of the surrounding land uses are summarized in Table 10. For the ground-level receptors located within 200 feet of the proposed buildings (i.e., the northwest and east residential land uses), a minimum equipment setback of 10 feet from the edge of the rooftop would result in at least 10 dB attenuation. Attenuation is not assumed for the remaining receptors, due to the distance and elevation of the receptors having direct line-of-sight to the rooftop of the proposed buildings (i.e., future west industrial uses). Note, the existing distant west industrial uses would be shielded from equipment noise sources at the project site by the future industrial buildings.

TABLE 10 Estimated Mechanical Equipment Noise Levels at Receiving Land Uses

Receptor	Distance from Rooftop Equipment, feet	Hourly L_{eq}, dBA	DNL, dBA	Noise Level Increase, dBA DNL
Northwest Residential	245	36 to 37[a]	44[a]	0
East Residential	130	42 to 43[a]	49[a]	0
Future West Industrial	55	59 to 60	67	N/A[b]

[a] Minimum attenuation of 10 dB is assumed due to elevation of noise sources and distance of ground-level receptors being within 200 feet of the proposed buildings.
[b] Future receptors would not be exposed to a noise level increase since they are not exposed to existing ambient noise level conditions.

Hourly average noise levels and day-night average thresholds would not exceed 55 dBA at the property lines of the surrounding noise-sensitive land uses. Additionally, the Municipal Code threshold of 70 dBA for industrial uses would not be exceeded at the future industrial properties to

the west. The proposed mechanical equipment noise levels would not measurably contribute to ambient noise levels in the area (0 dBA DNL increase).

The final design plans should be reviewed by a qualified acoustical consultant to address any potential conflicts with the General Plan or Municipal Code. The following condition of approval shall be incorporated into the proposed project:

Condition of Approval

As a project condition of approval, mechanical equipment shall be selected and designed to reduce noise levels to meet City requirements at the nearby noise-sensitive land uses. A qualified acoustical consultant shall be retained to review mechanical noise as these systems are selected to determine specific noise reduction measures necessary to reduce noise to comply with the City's noise level requirements. Noise reduction measures could include, but are not limited to, selection of equipment that emits low noise levels and installation of noise barriers, such as enclosures and parapet walls, to block the line-of-sight between the noise source and the nearest receptors. Other alternate measures may be optimal, such as locating equipment in less noise-sensitive areas, such as along the building façades farthest from adjacent neighbors, where feasible.

Parking Lot Noise

Surface parking lots for passenger cars would be located along the northern and eastern property lines of the site. Truck parking spaces are shown along the southern property line. Noise sources associated with the use of the parking lots would include vehicular circulation, loud engines, door slams, and human voices. The maximum noise levels of a passing car at 15 mph typically range from 45 to 55 dBA L_{max} at a distance of 100 feet. The noise generated during an engine start is similar. Door slams cause slightly lower noise levels. The hourly average noise levels resulting from all of these noise-generating activities in a busy parking lot typically ranges from 40 to 50 dBA L_{eq} at a distance of 100 feet from the parking area. Noise levels decrease at a rate of 6 dB per doubling of distance. Table 11 summarizes the estimated parking lot noise at the surrounding receptors when the noise source is centered at the nearest parking area on the project site. No attenuation is assumed in Table 11 under worst-case conditions.

TABLE 11 Estimated Parking Lot Noise Levels at Receiving Land Uses

Receptor	Distance from Center of Nearest Parking Area, feet	Hourly L_{eq}, dBA	DNL, dBA	Noise Level Increase, dBA DNL
Northwest Residential	160	36 to 46	39	0
East Residential	110	39 to 49	42	0
Future West Industrial	315	30 to 40	33	N/A[a]

[a] Future receptors would not be exposed to a noise level increase since they are not exposed to existing ambient noise level conditions.

Noise levels resulting from parking activities would be well below ambient noise levels due to traffic along local roadways, and the proposed parking lot/parking activities would not measurably contribute to ambient noise levels in the area (0 dBA DNL increase).

Truck Deliveries

The proposed project would include up to 135 daily truck trips. All loading docks are shown along the southern façade of the proposed building. Additionally, truck parking spaces are shown along the southern boundary. Therefore, truck parking and truck loading and unloading activities would be shielded from receptors to the north of the project site (i.e., the northwest residences). For the proposed project, it is assumed that 12 to 18 total trips would occur during the peak AM and PM hours, up to six trips during the remaining daytime hours between 7:00 a.m. and 10:00 p.m., and up to three trips during each nighttime hour between 10:00 p.m. and 7:00 a.m., assuming 24-hour deliveries at the project site. It is further assumed that all trucks would access the project site from Hellyer Avenue.

Truck delivery noise would include both maneuvering activities occurring at the loading docks and truck parking spaces located between the buildings, as well as truck pass-by activities occurring at each of the driveways.

Trucks maneuvering would generate a combination of engine, exhaust, and tire noise, as well as the intermittent sounds of back-up alarms and releases of compressed air associated with truck/trailer air brakes. Heavy trucks used for incoming deliveries typically generate maximum instantaneous noise levels of 70 to 75 dBA L_{max} at a distance of 50 feet. The noise level of backup alarms can vary depending on the type and directivity of the sound, but maximum noise levels are typically in the range of 65 to 75 dBA L_{max} at a distance of 50 feet. Hourly average noise levels due to truck maneuvering would range from 64 to 72 dBA L_{eq} at 50 feet. Due to the orientation of the building, the residences located to the northwest of the project site would be well shielded from all traffic maneuvering and would not be considered receptors for this noise source. Table 12 summarizes the estimated truck maneuvering noise at the surrounding receptors.

TABLE 12 Estimated Truck Maneuvering Noise Levels at Receiving Land Uses

Receptor	Distance from Center of Nearest Truck Parking Area, feet	Hourly L_{eq}, dBA	DNL, dBA	Noise Level Increase, dBA DNL
East Residential	585	43 to 50	50	0
Future West Industrial	360	47 to 55	54	N/A[a]

[a] Future receptors would not be exposed to a noise level increase since they are not exposed to existing ambient noise level conditions.

Noise levels resulting from truck maneuvering activities would be at or below ambient noise levels due to traffic along local roadways, and the 55 dBA DNL threshold would not be exceeded at the existing residential uses with direct line-of-sight to the noise source (i.e., east residences). The proposed truck maneuvering activities would not measurably contribute to ambient noise levels in the area (0 dBA DNL increase).

To estimate the pass-by noise levels for heavy trucks traveling at speeds of 15 to 25 mph, Federal Highway Administration's Traffic Noise Model (FHWA TNM), version 2.5, was used to model various hourly scenarios for truck traffic, based on the daily trip distribution assumed for the project. Table 13 summarizes the estimated truck pass-by noise levels at the surrounding receptors, assuming the nearest driveway on the project site, which would represent the worst-case scenario for each of the surrounding receptors.

TABLE 13 Estimated Truck Pass-by Noise Levels at Receiving Land Uses

Receptor	Distance from Center of Nearest Driveway, feet	Hourly L_{eq}, dBA	DNL, dBA	Noise Level Increase, dBA DNL
East Residential	320	36 to 44	43	0
Future West Industrial	75	49 to 56	56	N/A[a]

[a] Future receptors would not be exposed to a noise level increase since they are not exposed to existing ambient noise level conditions.

Noise levels resulting from truck pass-by activities along the nearest driveways would be at or below ambient noise levels, and the 55 dBA DNL threshold would not be exceeded at the existing residential uses with direct line-of-sight to the noise source (i.e., east residences). The proposed truck pass-by activities would not measurably contribute to ambient noise levels in the area (0 dBA DNL increase).

Total Combined Project-Generated Noise

The operational noise levels produced by the proposed project combined (i.e., traffic, mechanical equipment, parking lot, truck loading/unloading activities, and truck pass-bys) would potentially result in a permanent noise increase of 1 dBA DNL or less. Further, operational noise levels would not exceed 55 dBA DNL at the nearest residential land uses. This is a less-than-significant impact.

Mitigation Measure 1b: None required.

Impact 2: Exposure to Excessive Groundborne Vibration. Construction-related vibration levels could potentially exceed applicable vibration thresholds at nearby sensitive land uses. **This is a less-than-significant impact.**

The construction of the project may generate perceptible vibration when heavy equipment or impact tools (e.g., jackhammers, hoe rams) are used. Construction activities would include demolition, site preparation work, foundation work, and new building framing and finishing. Pile driving equipment, which can cause excessive vibration, is not expected to be required for the proposed project.

According to Policy EC-2.3 of the City of San José General Plan, a vibration limit of 0.08 in/sec PPV shall be used to minimize the potential for cosmetic damage to sensitive historical structures, and a vibration limit of 0.20 in/sec PPV shall be used to minimize damage at buildings of normal conventional construction. The vibration limits contained in this policy are conservative and designed to provide the ultimate level of protection for existing buildings in San José. As discussed

in detail below, vibration levels exceeding these thresholds would be capable of cosmetically damaging adjacent buildings. Cosmetic damage (also known as threshold damage) is defined as hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. Minor damage is defined as hairline cracking in masonry or the loosening of plaster. Major structural damage is defined as wide cracking or the shifting of foundation or bearing walls. Table 14 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet. Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.), may generate substantial vibration in the immediate vicinity. Jackhammers typically generate vibration levels of 0.035 in/sec PPV, and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet.

Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Table 14 also summarizes the distances to the 0.08 in/sec PPV threshold for historical buildings and to the 0.2 in/sec PPV threshold for all other buildings.

According to the City's Historic Resource Inventory,[2] the nearest historical building is nearly 2 miles from the project site. Vibration levels due to project construction activities would not result in vibration levels of 0.08 in/sec PPV or more at a historical structure. All buildings in the immediate vicinity of the project site would consist of normal conventional construction materials and would, therefore, be subject to the City's 0.2 in/sec PPV threshold.

TABLE 14 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft. (in/sec)	Minimum Distance to Meet 0.08 in/sec PPV (feet)	Minimum Distance to Meet 0.2 in/sec PPV (feet)
Clam shovel drop		0.202	59	26
Hydromill (slurry wall)	in soil	0.008	4	2
	in rock	0.017	7	3
Vibratory Roller		0.210	61	27
Hoe Ram		0.089	28	13
Large bulldozer		0.089	28	13
Caisson drilling		0.089	28	13
Loaded trucks		0.076	24	11
Jackhammer		0.035	12	6
Small bulldozer		0.003	2	<1

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., February 2023.

Table 15 summarizes the vibration levels at each of the surrounding buildings in the project vicinity. Vibration levels are highest close to the source and then attenuate with increasing distance at the rate $\left({}^{D_{ref}}/_{D}\right)^{1.1}$, where D is the distance from the source in feet and D_{ref} is the reference distance of 25 feet. While construction noise levels increase based on the cumulative equipment

[2] www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/historic-preservation/historic-resources-inventory

in use simultaneously, construction vibration levels would be dependent on the location of individual pieces of equipment. That is, equipment scattered throughout the site would not generate a collective vibration level, but a vibratory roller, for instance, operating near the project site boundary would generate the worst-case vibration levels for the receptor sharing that property line. Further, construction vibration impacts are assessed based on damage to buildings on receiving land uses, not receptors at the nearest property lines. Therefore, the distances used to propagate construction vibration levels (as shown in Table 15), which are different than the distances used to propagate construction noise levels (as shown in Table 8), were estimated under the assumption that each piece of equipment from Table 14 was operating along the nearest boundary of the project site, which would represent the worst-case scenario.

As shown in Table 15, the nearest structure surrounding the project site would be the residential structures to the south, which are 60 feet or more from the boundary of the project site, at which vibration levels would be at or below 0.080 in/sec PPV. This would be below the City's 0.2 in/sec PPV threshold. All other buildings in the project vicinity would be exposed to lower vibration levels due to project construction.

Neither cosmetic, minor, or major damage would occur at conventional buildings surrounding the project site. At these locations, and in other surrounding areas where vibration would not be expected to cause cosmetic damage, vibration levels may still be perceptible. However, as with any type of construction, this would be anticipated and would not be considered significant, given the intermittent and short duration of the phases that have the highest potential of producing vibration (use of jackhammers and other high-power tools). By use of administrative controls, such as notifying neighbors of scheduled construction activities and scheduling construction activities with the highest potential to produce perceptible vibration during hours with the least potential to affect nearby businesses, perceptible vibration can be kept to a minimum.

TABLE 15 Vibration Levels at Nearest Receptors

Equipment		PPV (in/sec)			
		Northwest Residential (90ft)	**East Residential (60ft)**	**Distant West Industrial (1,315ft)**	**Distant South Commercial & Industrial (975ft)**
Clam shovel drop		0.049	0.077	0.003	0.004
Hydromill (slurry wall)	in soil	0.002	0.003	0.0001	0.0001
	in rock	0.004	0.006	0.0002	0.0003
Vibratory Roller		0.051	0.080	0.003	0.004
Hoe Ram		0.022	0.034	0.001	0.002
Large bulldozer		0.022	0.034	0.001	0.002
Caisson drilling		0.022	0.034	0.001	0.002
Loaded trucks		0.019	0.029	0.001	0.001
Jackhammer		0.009	0.013	0.0004	0.001
Small bulldozer		0.001	0.001	0.00004	0.0001

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., February 2023.

In summary, the construction of the project would not generate vibration levels exceeding the General Plan threshold of 0.08 in/sec PPV at the nearest historic properties or the City's 0.2 in/sec

PPV threshold at the nonhistorical buildings surrounding the project site. This would be a less-than-significant impact.

Mitigation Measure 2: **None required.**

Impact 3: **Excessive Aircraft Noise.** The project site is located more than 10 miles from San José Mineta International Airport. The noise environment attributable to aircraft is considered normally acceptable under the Santa Clara County ALUC noise compatibility policies. This is a **less-than-significant** impact.

San José Mineta International Airport is a public-use airport located more than 10 miles northwest of the project site. According to the City's new Airport Master Plan Environmental Impact Report,[3] the project site lies well outside the 60 dBA CNEL/DNL contour line (see Figure 3). The proposed project would be compatible with the City's exterior noise standards for aircraft noise. This would be a less-than-significant impact.

Mitigation Measure 3: **None required.**

[3] David J. Powers & Associates, Inc., Integrated Final Environmental Impact Report, Amendment to Norman Y. Mineta San Jose International Airport Master Plan, April 2020.

FIGURE 3 2037 CNEL Noise Contours for SJIA Relative to Project Site

Figure 5
Scenario 2: With Project 2037 Noise Contour Map

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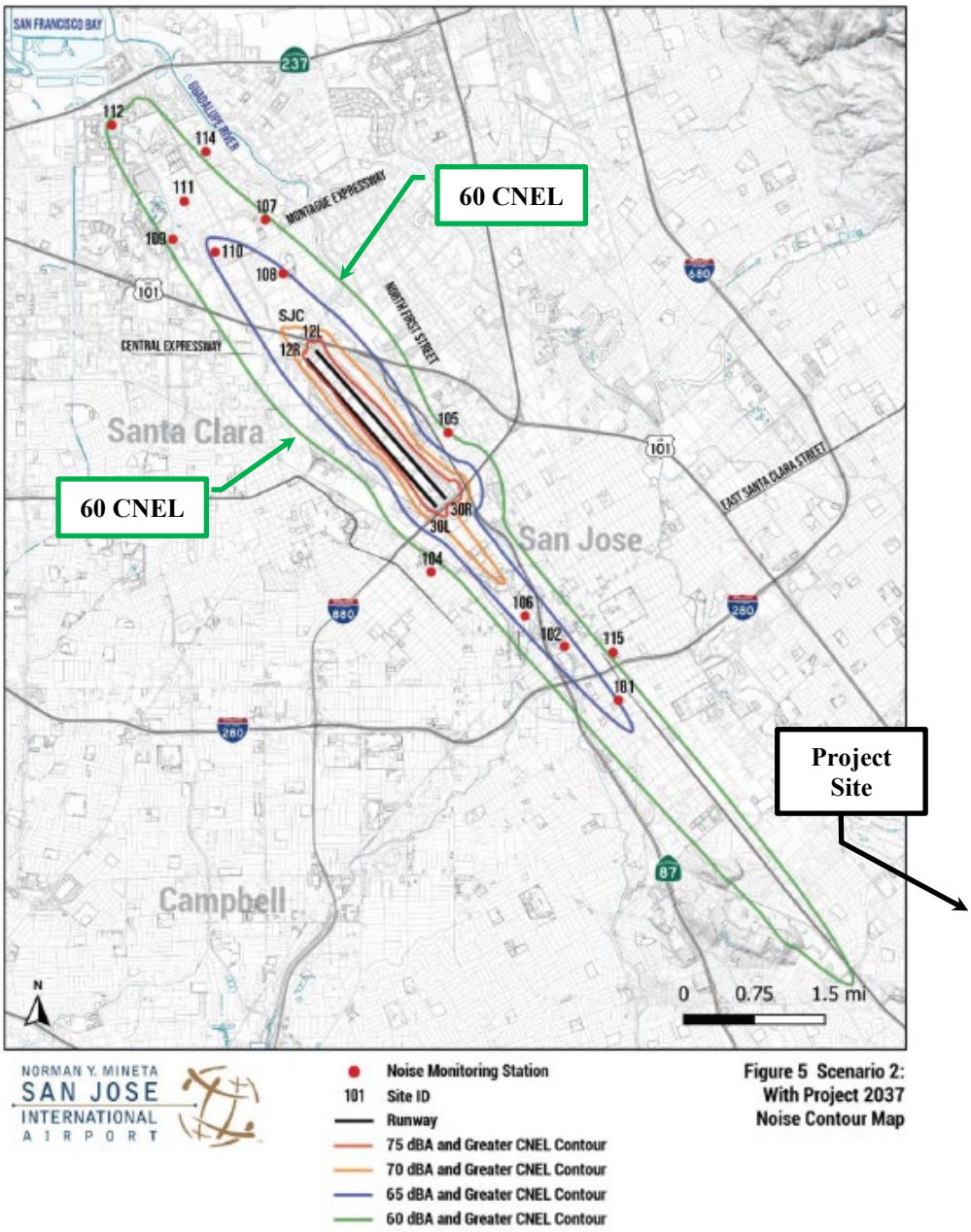

Figure 5 Scenario 2: With Project 2037 Noise Contour Map

Source: BridgeNet International 2019

Cumulative Impacts

From the City's website,[4] only one project planned or approved project would be located within 1,000 feet of the project site: 550 Piercy Road. This project adjoins the site to the north and consists of two light industrial buildings, which would include 24-hour truck trips accessing Piercy Road and Hellyer Avenue and mechanical equipment noise. Since these projects are on adjoining sites with shared off-site noise-sensitive receptors, temporary and permanent cumulative noise impacts for both of these projects are analyzed below.

Temporary Construction Noise

The 550 Piercy Road project would potentially be constructed over an 18-month period from January 2023 to August 2024. Since 550 Piercy Road is still under planning review, these dates are not confirmed and could change. It is likely that both 550 Piercy Road and 644/675 Piercy Road projects would have an overlapping construction period of up to 11 months. However, both sites are large, and the construction work would be distributed throughout each site. With the incorporation of best management practices proposed for both project sites and understanding the overlapping construction activities that use heavy, noise-generating equipment (i.e., excavation, trenching, and foundation work) would be limited to six months, the cumulative construction impact would be reduced to a less-than-significant level.

All other planned or approved construction projects would be more than 1,000 feet from the project site. Therefore, there would not be a cumulative construction impact with the incorporation of construction best management practices as conditions of approval.

Permanent Noise Level Increase/Exceed Applicable Standards

Traffic Noise

For a substantial permanent cumulative noise increase to occur, two qualifications must be met: 1) if the cumulative plus project traffic volumes result in a noise level increase at sensitive receptors of 5 dBA DNL or greater, with a future noise level of less than 60 dBA DNL, or of 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or greater, compared to existing traffic volumes; and 2) if the cumulative plus project traffic volumes result in a 1 dBA DNL or more noise level increase compared to cumulative (no project) conditions, which would be considered a cumulatively considerable contribution to the overall traffic noise increase.

The traffic study included peak hour turning movements for cumulative and cumulative plus project at 10 intersections in the vicinity of the project site. Both cumulative scenarios include pending traffic volumes from 550 Piercy Road. Table 16 summarizes the noise level difference calculated by comparing both the cumulative (no project) and cumulative plus project traffic scenarios to the existing scenario. As shown in Table 16, all roadway segments that would result in a noise level increase of 3 dBA DNL or more occur were calculated for both the cumulative (no project) and cumulative plus project scenarios. Therefore, the project would not result in

[4] https://gis.sanjoseca.gov/maps/devprojects/

cumulative traffic noise increase of 1 dBA DNL or more. There would not be a cumulative noise level increase.

Mechanical Equipment

Mechanical equipment noise generated at both proposed industrial projects were combined at each of the existing off-site receptors to estimate the cumulative noise impact. Both projects would have HVAC systems, assumed to be located on the rooftop of the proposed buildings. For both buildings on the 550 Piercy Road site and for the proposed building at 644/675 Piercy Road, combined rooftop noise would be up to 69 dBA L_{eq} and 75 dBA DNL at 20 feet. Under this assumption, Table 17 summarizes the combined mechanical equipment for both project sites propagated to the surrounding receptors. Table 17 includes a conservative 10 dBA attenuation due to the building façade, elevation of the noise sources, and intervening buildings.

Hourly average noise levels and day-night average thresholds would not exceed 55 dBA at the property lines of the surrounding residential land uses. Additionally, the Municipal Code threshold of 70 dBA for industrial uses would not be exceeded at the existing industrial property to the west of 550 Piercy Road. While a 2 dBA DNL increase is assumed at the existing adjoining industrial uses to the west, these would not be considered noise-sensitive uses subject to Policy EC-1.2. This would be a less-than-significant cumulative impact.

Parking Lot Noise

Surface parking lots at 644/675 Piercy Road would be located along the northern and eastern property lines, while 550 Piercy Road would have surface parking lots along the northern, southern, and eastern property lines of the site. Table 18 summarizes the combined noise levels for parking lots at both buildings propagated to the existing surrounding land uses. While the 644/675 Piercy Road building would partially shield the existing east residences from parking lot noise generated at 550 Piercy Road, some residences would still have direct line-of-site. Conservatively, no shielding is assumed for these residences. However, the 550 Piercy Road buildings would completely shield the west industrial building from parking lot noise generated at 644/675 Piercy Road.

Hourly average noise levels and day-night average thresholds would not exceed 55 dBA at the property lines of the surrounding residential land uses. Additionally, the Municipal Code threshold of 70 dBA for industrial uses would not be exceeded at the existing industrial property to the west of 550 Piercy Road. The proposed parking lot/parking activities at both sites would not measurably contribute to ambient noise levels in the area (0 dBA DNL increase).

Truck Maneuvering Noise

As discussed above, the proposed 644/675 Piercy Road project would include up to 135 daily truck trips, with all loading docks and truck parking spaces located along the southern façade of the proposed building facing Hellyer Avenue. Additionally, the 550 Piercy Road buildings would completely shield the west industrial building from truck maneuvering noise generated at 644/675 Piercy Road. Approximately 258 daily truck trips would occur at 550 Piercy Road, with all loading

docks and truck parking spaces located between the project buildings on the interior of the site. Existing residences north of Piercy Road would be shielded from truck maneuvering activities at both sites. Assuming 24-hour deliveries at both sites, Table 19 summarizes the cumulative truck maneuvering noise levels for both projects at the surrounding receptors.

Hourly average noise levels and day-night average thresholds would not exceed 55 dBA at the property lines of the surrounding residential land uses. Additionally, the Municipal Code threshold of 70 dBA for industrial uses would not be exceeded at the existing industrial property to the west of 550 Piercy Road. The proposed truck maneuvering activities at both sites would not measurably contribute to ambient noise levels in the area (0 dBA DNL increase).

Truck Pass-by Noise

Truck trips at the 644/675 Piercy Road site are assumed to access the site from Hellyer Avenue only since all loading docks are located along the southern building façade. However, the 550 Piercy Road site would have trucks accessing the site from two driveways along Piercy Road and two driveways along Hellyer Avenue. Table 20 summarizes the cumulative truck pass-by noise at receiving property lines surrounding the sites. The existing industrial building west of 550 Piercy Road would be shielded from the driveways accessing the 644/675 Piercy Road site by the 550 Piercy Road buildings, and the existing residences north of Piercy Road would be shielded from the driveways accessing the 644/675 Piercy Road site by the on-site project building.

Hourly average noise levels and day-night average thresholds would not exceed 55 dBA at the property lines of the surrounding residential land uses. Additionally, the Municipal Code threshold of 70 dBA for industrial uses would not be exceeded at the existing industrial property to the west of 550 Piercy Road. The proposed truck pass-by activities at both sites would not measurably contribute to ambient noise levels in the area (0 dBA DNL increase) at existing residential land uses.

Total Cumulative Operational Noise

The operational noise levels produced by both proposed project combined (i.e., traffic, mechanical equipment, parking lot, truck loading/unloading activities, and truck pass-bys) would potentially result in a permanent noise increase of 2 to 3 dBA DNL at the industrial uses to the west of 550 Piercy Road and up to 1 dBA DNL at the existing residences to the north and to the east.

Cumulative operational noise levels would be up to 60 dBA L_{eq} and 62 dBA DNL at the industrial uses to the west of 550 Piercy Road and would range from 53 to 54 dBA L_{eq} and 54 dBA DNL at the residences to the north and to the east of the project sites.

Therefore, cumulative hourly average noise levels and day-night average levels would not exceed the 55 dBA threshold at the property lines of the surrounding residential land uses or the 60 dBA threshold at the industrial site to the west. This would be a less-than-significant cumulative noise impact.

TABLE 16 Estimated Noise Level Increases of Cumulative and Cumulative Plus Project Traffic Volumes Over Existing Volumes at Receptors in the Project Vicinity

Roadway	Segment	Estimated Noise Level Increase Over Existing Volumes, dBA DNL		Project's Contribution, dBA DNL
		Cumulative	Cumulative Plus Project	
Blossom Hill Road/ Silver Creek Road	West of Hellyer Avenue	3	3	0
	East of Hellyer Avenue	2	2	0
Hellyer Avenue	North of Silver Creek Road	2	2	0
	Silver Creek Road to Piercy Road	2	2	0
	Piercy Road to north project driveway	3	3	0
	North project driveway to south project driveway	3	3	0
	South project driveway to Bernal Road/Silicon Valley Boulevard/Tennant Avenue	3	3	0
	South of Bernal Road/Silicon Valley Boulevard/Tennant Avenue	0	0	0
Piercy Road	West of Hellyer Avenue	1	1	0
	Hellyer Avenue to project driveway	1	1	0
	South of project driveway	1	1	0
Bernal Road/Silicon Valley Boulevard/Tennant Avenue	West of SR 85 ramps	2	2	0
	SR 85 SB ramps to Highway 101 SB ramps	2	2	0
	Highway 101 SB ramps to Highway 101 NB ramps	2	2	0
	Highway 101 NB ramps to Hellyer Avenue	3	3	0
	Hellyer Avenue to project driveway	1	1	0
	East of project driveway	1	1	0
Highway 101 NB off ramp	At Bernal Road/Silicon Valley Boulevard	0	0	0

Roadway	Segment	Estimated Noise Level Increase Over Existing Volumes, dBA DNL		Project's Contribution, dBA DNL
		Cumulative	Cumulative Plus Project	
Highway 101 NB on ramp	At Bernal Road/Silicon Valley Boulevard	0	0	0
Highway 101 SB off ramp	At Bernal Road/Silicon Valley Boulevard	0	0	0
SR 85 SB off ramp	At Bernal Road/Silicon Valley Boulevard	0	0	0
SR 85 SB on ramp	At Bernal Road/Silicon Valley Boulevard	0	0	0

TABLE 17 Estimated Cumulative Mechanical Equipment Noise Levels at Receiving Land Uses

Receptor	550 Piercy Road Project		644/675 Piercy Road Project		Both Projects Combined		Noise Level Increase, dBA DNL
	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	
Existing Industrial West of 550 Piercy Road Site	53 to 54	61	22 to 23[a]	29[a]	Up to 54	61	1 to 2 dBA
Existing Residential North of 550 Piercy Road Site	39 to 40[a]	46[a]	36 to 37[a]	44[a]	Up to 42	48	0 dBA
Existing Residential East of 644/675 Piercy Road Site	24 to 25[a]	31[a]	42 to 43[a]	49[a]	Up to 43	49	0 dBA

[a] Conservative attenuation of 10 dB is assumed due to elevation of noise sources, intervening buildings providing shielding, and/or building façade.

TABLE 18 Estimated Cumulative Parking Lot Noise Levels at Receiving Land Uses

Receptor	550 Piercy Road Project		644/675 Piercy Road Project		Both Projects Combined		Noise Level Increase, dBA DNL
	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	
Existing Industrial West of 550 Piercy Road Site	41 to 51	45	--	--	Up to 51	45	0 dBA
Existing Residential North of 550 Piercy Road Site	35 to 45	38	36 to 46	39	Up to 49	42	0 dBA
Existing Residential East of 644/675 Piercy Road Site	20 to 30	23	39 to 49	42	Up to 49	45	0 dBA

TABLE 19 Estimated Cumulative Truck Maneuvering Noise Levels at Receiving Land Uses

Receptor	550 Piercy Road Project		644/675 Piercy Road Project		Both Projects Combined		Noise Level Increase, dBA DNL
	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	
Existing Industrial West of 550 Piercy Road Site	46 to 52	53	--	--	Up to 52	53	0 dBA
Existing Residential East of 644/675 Piercy Road Site	37 to 43	44	43 to 50	50	Up to 51	51	0 dBA

TABLE 20 Estimated Cumulative Truck Pass-by Noise Levels at Receiving Land Uses

Receptor	550 Piercy Road Project		644/675 Piercy Road Project		Both Projects Combined		Noise Level Increase, dBA DNL
	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	Hourly L_{eq}, dBA	DNL, dBA	
Existing Industrial West of 550 Piercy Road Site	47 to 53	54	--	--	Up to 53	54	1 dBA
Existing Residential North of 550 Piercy Road Site	45 to 51	53	--	--	Up to 51	53	0 dBA
Existing Residential East of 644/675 Piercy Road Site	25 to 31	33	36 to 44	43	Up to 44	44	0 dBA

APPENDIX A

FIGURE A1 Daily Trend in Noise Levels for LT-1, Tuesday, January 24, 2023

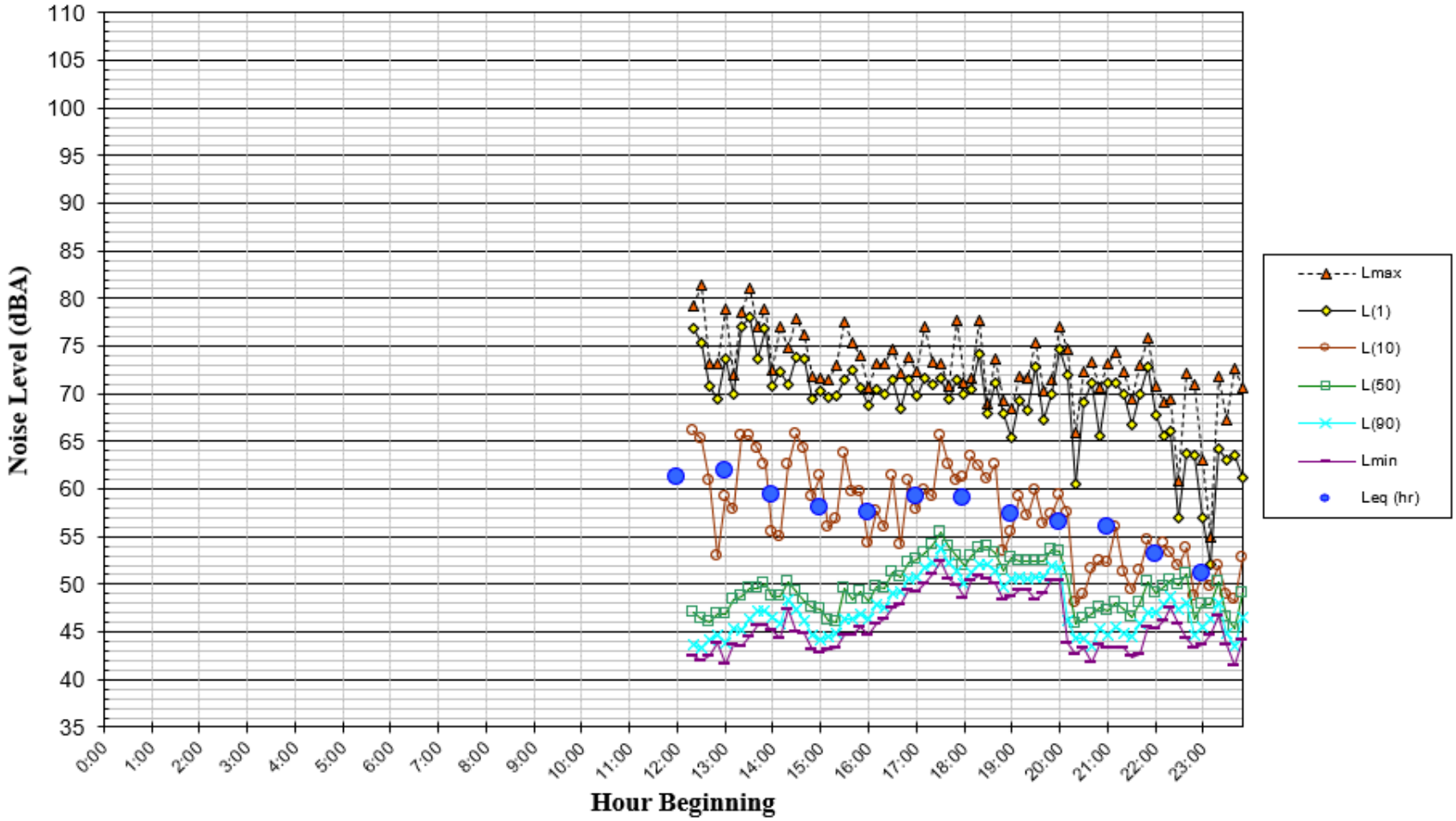

FIGURE A2 Daily Trend in Noise Levels for LT-1, Wednesday, January 25, 2023

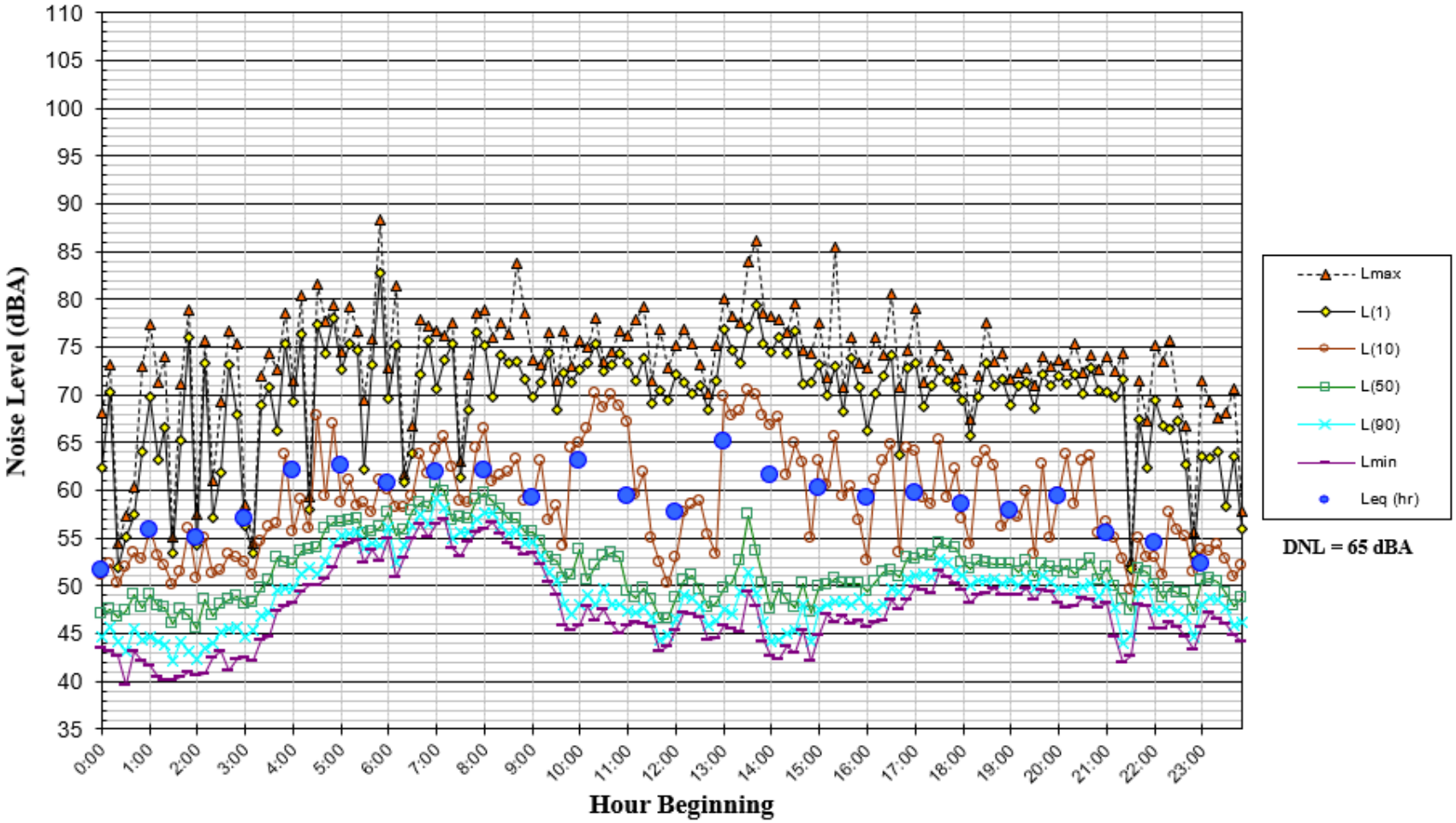

FIGURE A3 Daily Trend in Noise Levels for LT-1, Thursday, January 26, 2023

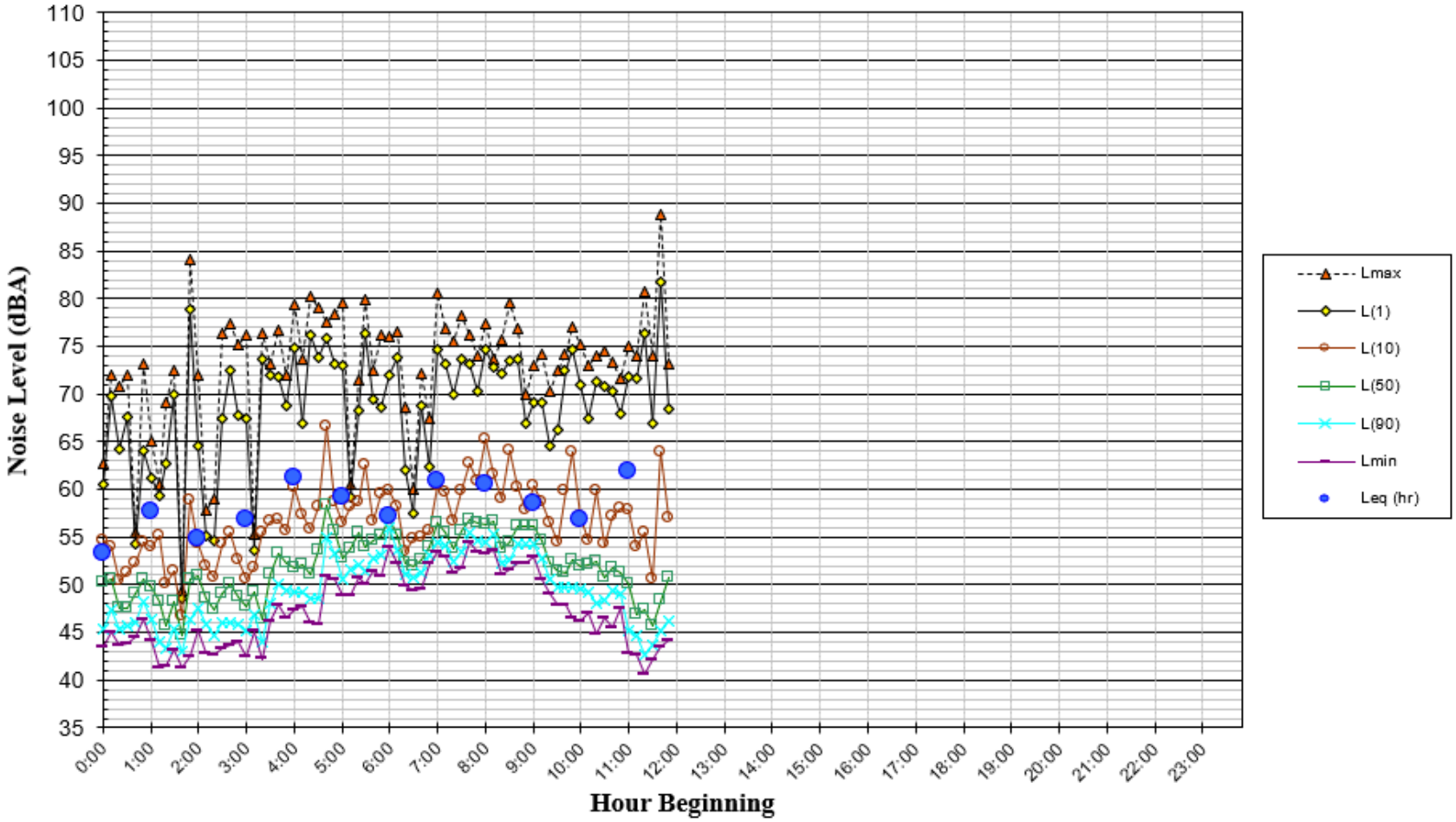

FIGURE A4 Daily Trend in Noise Levels for LT-2, Tuesday, January 24, 2023

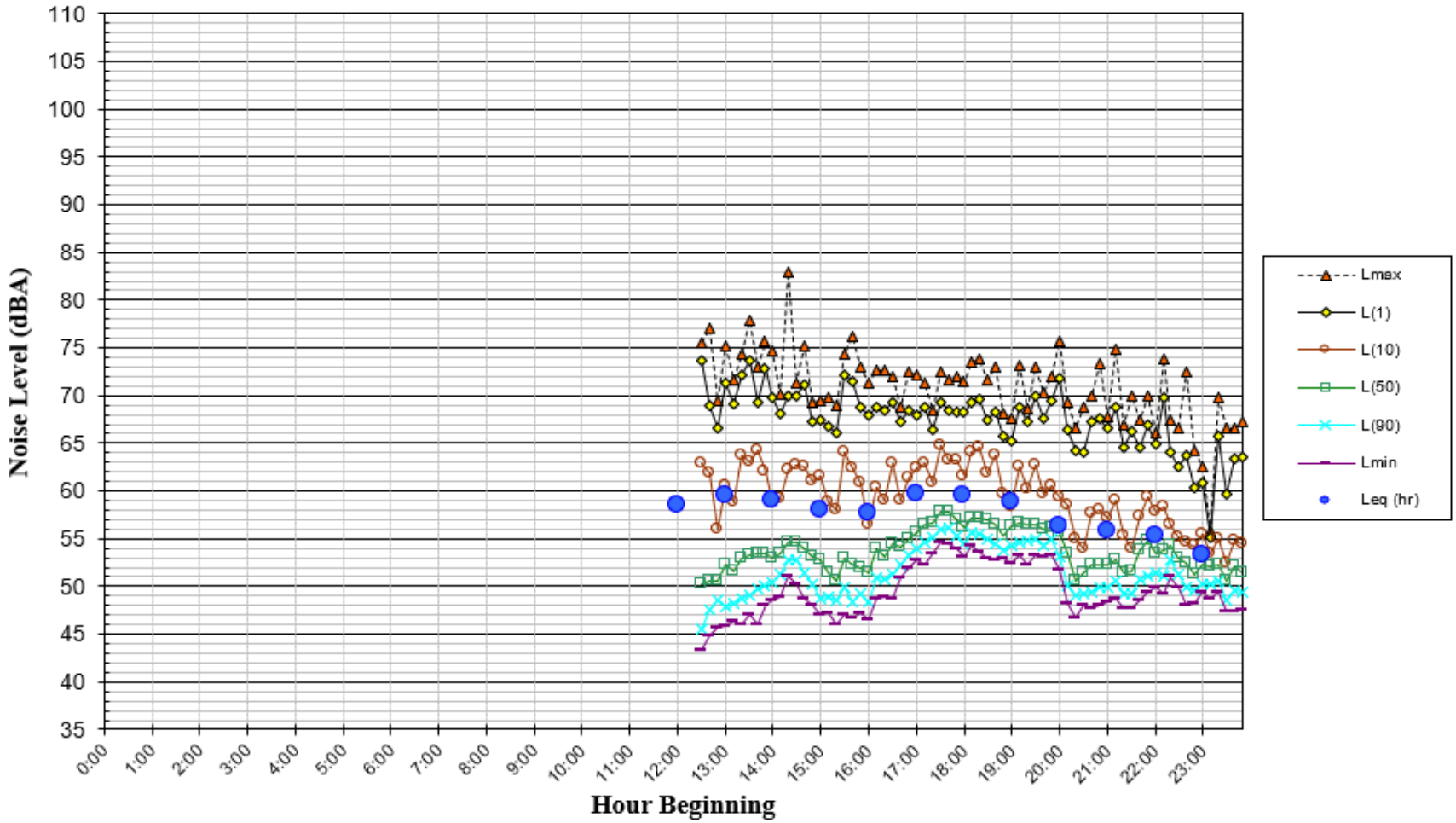

FIGURE A5 Daily Trend in Noise Levels for LT-2, Wednesday, January 25, 2023

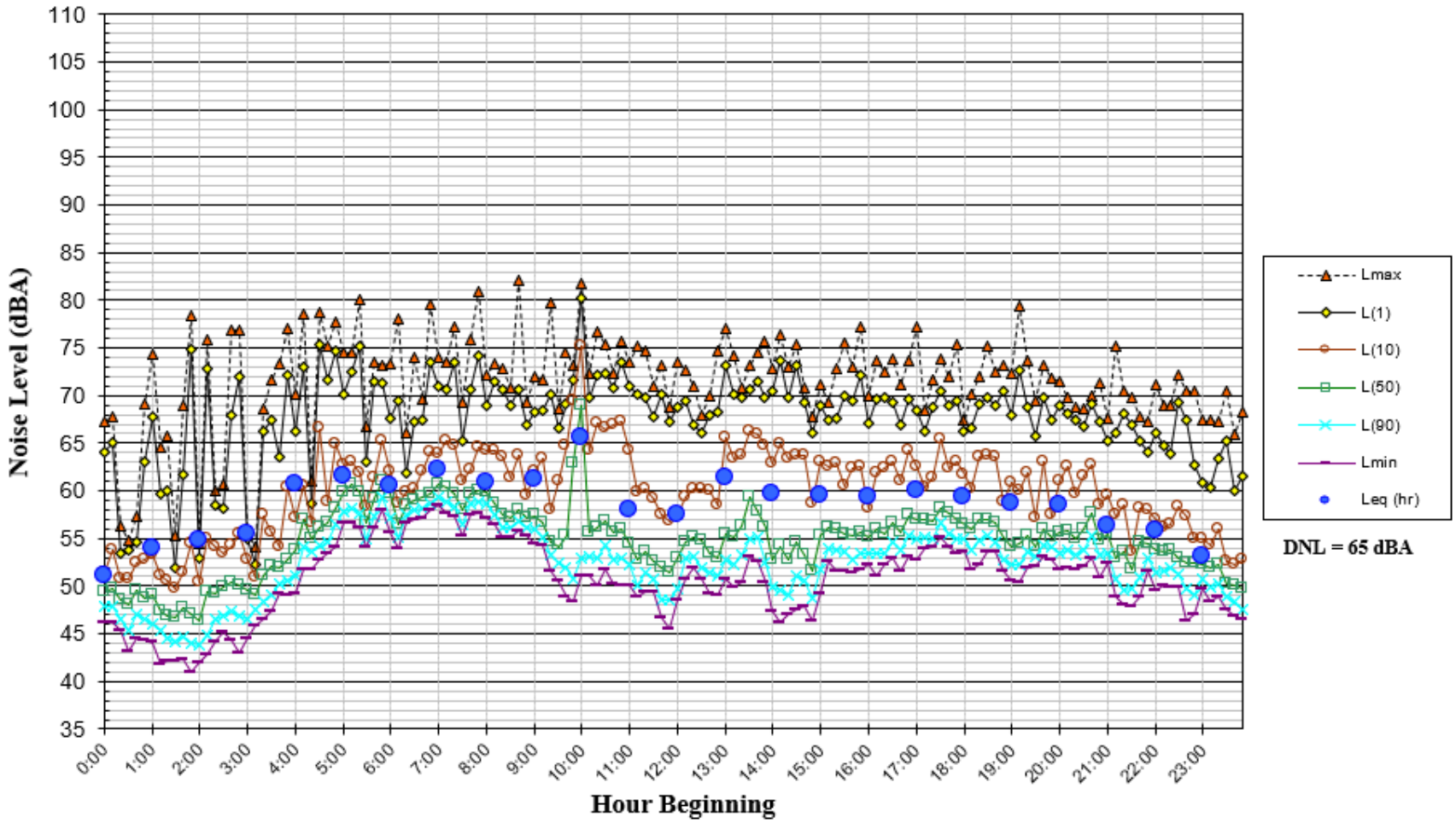

FIGURE A6 Daily Trend in Noise Levels for LT-2, Thursday, January 26, 2023