DIRIDON-DUPONT RESIDENTIAL PROJECT NOISE AND VIBRATION ASSESSMENT

San José, California

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INTRODUCTION

The project proposes the construction of two apartment buildings, totaling 689 units, on a 5-acre site located at the southeast corner of the McEvoy Street/Dupont Street intersection in San José, California. Proposed Building A would be a seven-story, 314-unit apartment building on the northern portion of the site, with approximately 4,000 square feet of commercial use on the ground floor. Proposed Building B would be a six-story, 375-unit affordable housing apartment building on the southern portion of the project site. As part of the project, five existing industrial buildings and associated parking located on the site would be demolished. The project site is designated Transit Residential and Mixed-Use Commercial under the General Plan and zoned Industrial Park (IP), Light Industrial (LI), and Heavy Industrial (HI). The project proposes to rezone the site to R-M (Planned Development Multiple Residence).

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/vibration 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 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 about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends 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 p.m. to 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. to 7:00 a.m.) 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 to 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.

Railroad and light rail operations are potential sources of substantial ground vibration depending on distance, the type and the speed of trains, and the type of railroad track. People’s response to ground vibration from rail vehicles has been correlated best with the average, root mean square

(RMS) velocity of the ground. The velocity of the ground is expressed on the decibel scale. The reference velocity is 1 x 10-6 in/sec RMS, which equals 0 VdB, and 1 in/sec equals 120 VdB. Although not a universally accepted notation, the abbreviation "VdB" is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.

Typical background vibration levels in residential areas are usually 50 VdB or lower, well below the threshold of perception for most humans. Perceptible vibration levels inside residences are attributed to the operation of heating and air conditioning systems, door slams and foot traffic. Construction activities, train operations, and street traffic are some of the most common external sources of vibration that can be perceptible inside residences. Table 4 illustrates some common sources of vibration and the association to human perception or the potential for 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.

TABLE 4 Typical Levels of Groundborne Vibration

Human/Structural Response	Velocity Level, VdB	Typical Events (50-foot setback)
Threshold, minor cosmetic damage	100	Blasting, pile driving, vibratory compaction equipment
		Heavy tracked vehicles (Bulldozers, cranes, drill rigs)
Difficulty with tasks such as reading a video or computer screen	90	
		Commuter rail, upper range
Residential annoyance, infrequent events	80	Rapid transit, upper range
Residential annoyance, occasional events		Commuter rail, typical Bus or truck over bump or on rough roads
Residential annoyance, frequent events	70	Rapid transit, typical
Approximate human threshold of perception to vibration		Buses, trucks and heavy street traffic
	60	
		Background vibration in residential settings in the absence of activity
Lower limit for equipment ultra-sensitive to vibration	50	

Source: Transit Noise and Vibration Impact Assessment, US Department of Transportation Federal Transit Administration, September 2018.

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, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

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:

(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.

2019 California Building Code, Title 24, Part 2. The current version of the California Building Code (CBC) requires interior noise levels in multi-family residential units attributable to exterior environmental noise sources to be limited to a level not exceeding 45 dBA DNL/CNEL in any habitable room.

2019 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 2019 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.

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-1.1 Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, state, and City noise standards and guidelines as a part of new development review. Applicable standards and guidelines for land uses in San José include:

Interior Noise Levels

- The City's standard for interior noise levels in residences, hotels, motels, residential care facilities, and hospitals is 45 dBA DNL. Include appropriate site and building design, building construction and noise attenuation techniques in new development to meet this standard. For sites with exterior noise levels of 60 dBA DNL or more, an acoustical analysis following protocols in the City-adopted California Building Code is required to demonstrate that development projects can meet this standard. The acoustical analysis shall base required noise attenuation techniques on expected Envision General Plan traffic volumes to ensure land use compatibility and General Plan consistency over the life of this plan.

Exterior Noise Levels

- The City's acceptable exterior noise level objective is 60 dBA DNL or less for residential and most institutional land uses (Table EC-1). The acceptable exterior noise level objective is established for the City, except in the environs of the San José International Airport and the Downtown, as described below:

    - For new multi-family residential projects and for the residential component of mixed-use development, use a standard of 60 dBA DNL in usable outdoor activity areas, excluding balconies and residential stoops and porches facing existing roadways. Some common use areas that meet the 60 dBA DNL exterior standard will be available to all residents. Use noise attenuation techniques such as shielding by buildings and structures for outdoor common use areas. On sites subject to aircraft overflights or adjacent to elevated roadways, use noise attenuation

techniques to achieve the 60 dBA DNL standard for noise from sources other than aircraft and elevated roadway segments.

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.

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.

Table EC-1: Land Use Compatibility Guidelines for Community Noise in San José

LAND USE CATEGORY	EXTERIOR NOISE EXPOSURE (DNL IN DECIBELS (DBA)) 55	60	65	70	75	80
1. Residential, Hotels and Motels, Hospitals and Residential Care[1]						
2. Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds						
3. Schools, Libraries, Museums, Meeting Halls, Churches						
4. Office Buildings, Business Commercial, and Professional Offices						
5. Sports Arena, Outdoor Spectator Sports						
6. Public and Quasi-Public Auditoriums, Concert Halls, Amphitheaters						

[1]Noise mitigation to reduce interior noise levels pursuant to Policy EC-1.1 is required.

Normally 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.

Conditionally Acceptable:

- Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.

Unacceptable:

- New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

Source: Envision San José 2040 General Plan, Adopted November 1, 2011, As Amended on May 16, 2019.

Regulatory Background – Vibration

Federal Government

Federal Transit Administration. The Federal Transit Administration (FTA) has identified vibration impact criteria for sensitive buildings, residences, and institutional land uses near rail transit and railroads. These criteria are shown in Table 5. The thresholds for residences and buildings where people normally sleep (e.g., nearby residences) are 72 VdB for frequent events (more than 70 events of the same source per day), 75 VdB for occasional events (30 to 70 vibration events of the same source per day), and 80 VdB for infrequent events (less than 30 vibration events of the same source per day).

TABLE 5 Groundborne Vibration Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 µinch/sec, RMS)		
	Frequent Events[1]	**Occasional Events[2]**	**Infrequent Events[3]**
Category 1 Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]
Category 2 Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3 Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Notes:

1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research should always require detailed evaluation to define the acceptable vibration levels. Ensuring low vibration levels in a building requires special design of HVAC systems and stiffened floors.

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-2.1 Near light and heavy rail lines or other sources of ground-borne vibration, minimize vibration impacts on people, residences, and businesses through the use of setbacks and/or structural design features that reduce vibration to levels at or below the guidelines of the Federal Transit Administration. Require new development within 100 feet of rail lines to demonstrate prior to project approval that vibration experienced by residents and vibration sensitive uses would not exceed these guidelines.

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 building 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 205 through 214 Dupont Street and 226, 244, and 254 McEvoy Street in the City of San José. The project site is surrounded by light industrial and commercial uses to the west, opposite McEvoy Street, and to the east, opposite the train tracks. To the north, opposite Park Avenue, is an existing multi-family residential building, and to the south, opposite West San Carlos Street, are light industrial and residential uses.

The noise environment at the site and in the surrounding area results primarily from vehicular traffic along Park Avenue and West San Carlos Street, as well as light-rail train pass-bys along the VTA rail line and heavy rail train pass-bys along the Union Pacific Railroad. Local traffic along surrounding roadways and occasional aircraft flyovers associated with San José International Airport have some contribution to the noise environment, as well.

A noise monitoring survey consisting of two long-term (LT-2 and LT-3) and one short-term (ST-1) noise measurements was made at the site between Monday, July 26, 2021 and Thursday, July 29, 2021. Additionally, I&R had made a long-term measurement along the VTA tracks in February 2018 (LT-1), which were used in this study to estimate existing noise levels generated by train pass-bys. All measurement locations are shown in Figure 1.

Long-term noise measurement LT-1 was made from February 21, 2018, through February 23, 2018, approximately 20 feet west of the nearest VTA tracks. Hourly average noise levels at LT-1 typically ranged from 64 to 77 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 48 to 68 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise level on Thursday, February 22, 2018 was 71 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 20 feet east of the centerline of McEvoy Street. Hourly average noise levels at LT-2 typically ranged from 51 to 61 dBA L_{eq} during daytime hours and from 44 to 63 dBA L_{eq} during nighttime hours. The day-night average noise levels from Tuesday, July 27, 2021, through Wednesday, July 28, 2021, ranged from 58 to 60 dBA DNL. The daily trend in

noise levels at LT-2 is shown in Figures A4 through A7 of Appendix A. Note, around 9:00 a.m. on Tuesday, July 27, 2021, there was some abnormal activity in the vicinity of LT-2, which resulted in elevated noise levels that were not typical for this area. For estimating the day-night average noise level on this day, this hour of data was not included in the calculation.

LT-3 was made approximately 50 feet south of the centerline of Park Avenue. Hourly average noise levels at LT-3 typically ranged from 59 to 68 dBA L_{eq} during daytime hours and from 46 to 62 dBA L_{eq} during nighttime hours. The day-night average noise levels from Tuesday, July 27, 2021, through Wednesday, July 28, 2021, was 65 dBA DNL. The daily trend in noise levels at LT-3 is shown in Figures A8 through A11 of Appendix A.

Short-term noise measurement ST-1 was made on Monday, July 26, 2021, at 8:50 a.m. ST-1 was made at the same location as LT-3 in a 10-minute interval, and the results of the measurements are summarized in Table 6. Typical traffic noise levels along Park Avenue ranged from 58 to 72 dBA, with one noisy vehicle pass-by generating noise levels up to 83 dBA. Jet flyovers produced noise levels of about 58 dBA at ST-1, and a train passing by the project site during this 10-minute period generated noise levels of 60 dBA at ST-1. The 10-minute L_{eq} measured at ST-1 was 64 dBA.

TABLE 6 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: made ~50 feet south of the centerline of Park Avenue	7/26/2021, 8:50-9:00	83	72	67	60	51	64

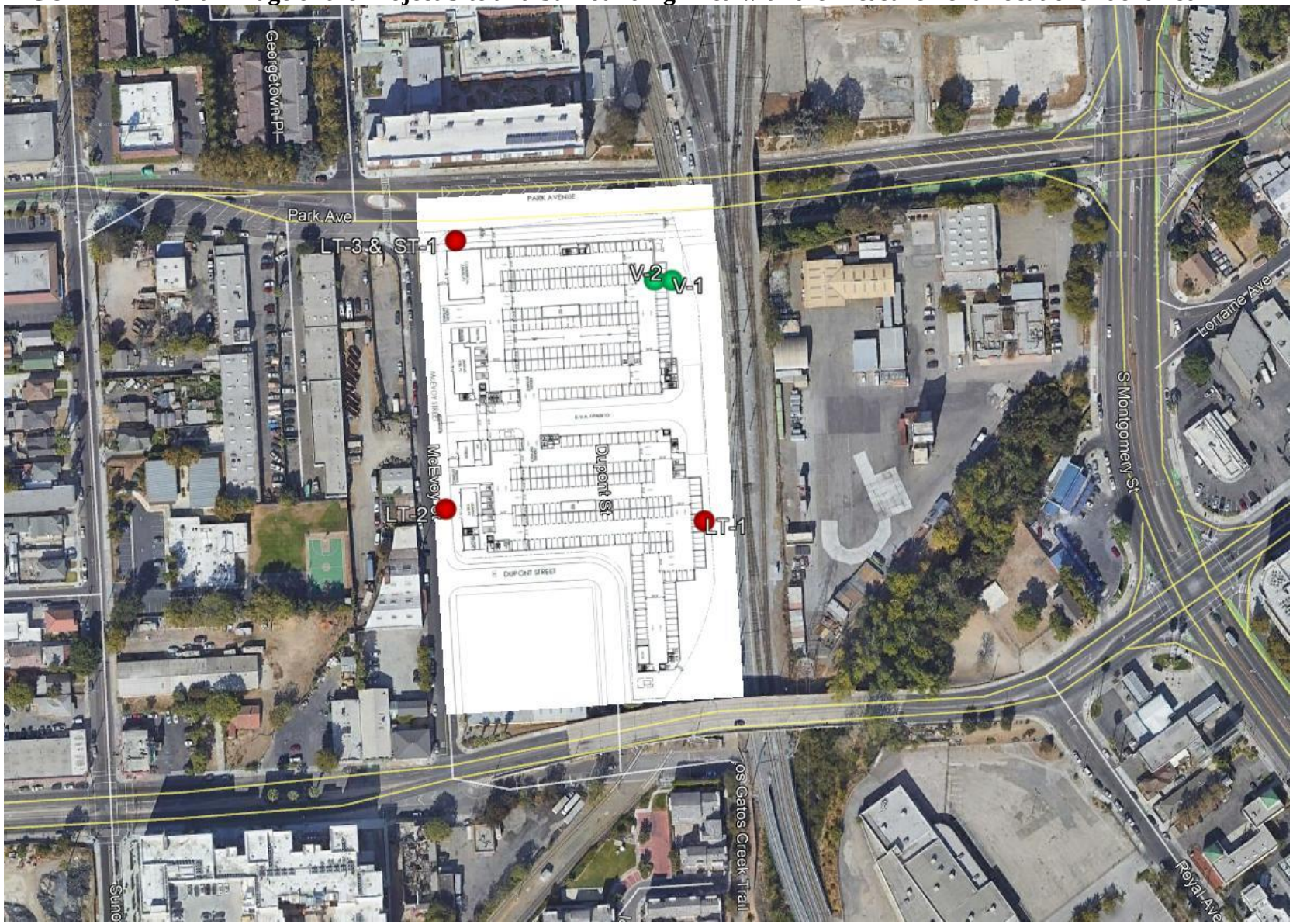
Existing Vibration Environment

Observed and recorded vibration measurements of individual train activity near the San José Diridon Station were conducted on Friday, February 23, 2018.[1] The instrumentation used to conduct the measurements included a Roland model R-05 solid state recorder and seismic grade, low noise accelerometers firmly fixed to the ground. This system was capable of accurately measuring very low vibration levels. Vibration levels at location V-1 were measured at ground level and were set back at a distance of 30 feet from the nearest light rail track and 85 feet from the nearest heavy rail track. Levels at V-2 were made at distances of 60 feet from the nearest light rail track and 110 feet from the nearest heavy rail track.

A total of four (4) individual heavy rail pass-bys (Ace and Caltrain) and twenty-three (23) individual light rail train pass-bys (VTA) were observed and recorded at two locations within the plan area (V-1 and V-2). All measurements were made in the corner parking lot of 214 Dupont Street in San José. Vibration levels were measured in the vertical axis because ground vibration is typically most dominant on this axis. Noise and vibration monitoring locations are shown in Figure 1. Vibration levels measured at each measurement position during train pass-by events can be seen in Figures A12 through A15 of Appendix A.

[1] Illingworth & Rodkin, Inc., "Dupont Street General Plan Amendment Project Environmental Noise and Vibration Report," December 14, 2018.

FIGURE 1 Aerial Image of the Project Site and Surrounding Area with the Measurement Locations Identified



Source: Google Earth, 2021.

PLAN CONSISTENCY ANALYSIS

Noise and Land Use Compatibility

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 applicable General Plan policies were presented in detail in the Regulatory Background section and are summarized below for the proposed project:

- The City's acceptable exterior noise level standard is 60 dBA DNL or less for the proposed residential land uses.

- The City's acceptable interior noise level standard is 45 dBA DNL or less for the proposed residential land uses.

- The City's acceptable exterior noise level standard is 65 dBA DNL or less for the proposed neighborhood parks.

- 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 roadways. According to the traffic study completed for the *Diridon Station Area Plan Draft EIR* (DSAP DEIR),[2] the traffic noise level increase along Park Avenue at the project site would be 4 dBA DNL by the year 2040 under full buildout conditions, and the increase along West San Carlos Street would be 5 dBA DNL under future buildout conditions. Additionally, the traffic study provided for the proposed project included project trips along McEvoy Street, which would result in a 4 dBA DNL increase over existing conditions. Train activity along the adjacent tracks is not expected to change under future conditions; therefore, noise levels along the tracks by the year 2040 are not expected to increase over existing ambient conditions.

Future Exterior Noise Environment

Residential Land Uses

The site plan shows courtyards located at each building. These courtyards would be completely surrounded by the buildings and, therefore, shielded from vehicular noise and train noise. The future exterior noise levels at these interior courtyards would be less than 60 dBA DNL.

Building A shows two level 7 roof decks facing Park Avenue. One of the roof decks would be located in the northwestern corner of Building A, with direct line-of-sight to Park Avenue and McEvoy Street. The center 100 feet south of the centerline of Park Avenue and approximately 55

[2] *Diridon Station Area Plan Draft EIR*, prepared by Skidmore, Owings & Merrill and SWA Group, prepared for the City of San José, October 2020.

feet east of the centerline of McEvoy Street. Due to the height of the roof deck being about 68 feet above the ground, the elevation would provide partial shielding, as would the building façades. While the future exterior noise levels along the edge of the roof deck may be up to 63 dBA DNL, future exterior noise levels at the center of the roof deck would be below 60 dBA DNL. The roof deck located along the northern building edge would be surrounded by the building on three sides, which would provide partial shielding along with the elevation of the roof deck. Future exterior noise levels at the northern roof deck would be at or below 60 dBA DNL at the edge and at the center of the space.

The City's normally acceptable threshold for residential uses would be below the City's normally acceptable threshold at the center of all courtyards and roof decks. No additional noise controls are recommended for these outdoor areas.

Open Space Areas

The site plan shows open space along the eastern façade of the proposed building. These outdoor use areas would be mostly shielded from vehicular traffic in the project vicinity; however, they would have direct line-of-sight to the train tracks. With centers of the open space area set back 20 to 30 feet from the nearest tracks, unmitigated future exterior noise levels would be 69 to 71 dBA DNL.

While the site plan does indicate a sound wall along the eastern boundary of the project site, details pertaining to the height and material of the sound wall are not provided. To meet the City's 65 dBA DNL threshold, the minimum height would need to be six feet. To optimize noise level reduction, one solid wall, continuous from grade to top, with no cracks or gaps, would be recommended at each terrace level. Each barrier would consist of a minimum surface density of three lbs/ft^2.

Future Interior Noise Environment

Residential Land Uses

Standard residential construction provides approximately 15 dBA of exterior-to-interior noise reduction, assuming the windows are partially open for ventilation. Standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. Where exterior noise levels range from 60 to 65 dBA DNL, the inclusion of adequate forced-air mechanical ventilation is often the method selected to reduce interior noise levels to acceptable levels by closing the windows to control noise. Where noise levels exceed 65 dBA DNL, forced-air mechanical ventilation systems and sound-rated construction methods are normally required. Such methods or materials may include a combination of smaller window and door sizes as a percentage of the total building façade facing the noise source, sound-rated windows and doors, sound rated exterior wall assemblies, and mechanical ventilation so windows may be kept closed at the occupant's discretion.

Residential units located along the northern façade of Building A would be set back approximately 60 to 65 feet from the centerline of Park Avenue. At these distances, the units along this façade would be exposed to future exterior noise levels up to 69 dBA DNL. Assuming windows to be partially open, future interior noise levels in these units would be up to 54 dBA DNL.

Units located on the eastern façades of Buildings A and B would have direct line-of-sight to the train tracks, with setbacks of approximately 20 to 45 feet from the edge of the nearest tracks. Units located along the eastern façades would be exposed to future exterior noise levels ranging from 67 to 71 dBA DNL. Assuming windows to be partially open, future interior noise levels in these units would range from 52 to 56 dBA DNL.

Units located on the western façades of Buildings A and B would have direct line-of-sight to McEvoy Street, with setbacks of approximately 30 feet from the centerline of the roadway. These units would be exposed to future exterior noise levels ranging from 60 to 62 dBA DNL. Assuming windows to be partially open, future interior noise levels in these units would range from 45 to 47 dBA DNL.

Units located on the southern façade of Building B would have direct line-of-sight to West San Carlos Street, with setbacks of approximately 50 to 75 feet from the centerline of the roadway. These units would be exposed to future exterior noise levels ranging from 66 to 68 dBA DNL, based on noise levels from the DSAP DEIR.[2] Assuming windows to be partially open, future interior noise levels in these units would range from 51 to 53 dBA DNL.

To meet the interior noise requirements set forth by the City of San José of 45 dBA DNL, implementation of noise insulation features would be required.

Commercial Uses

Ground-level commercial uses would be subject to the State's Cal Green Code. With setbacks of 60 to 65 feet from the centerline of Park Avenue and of 30 feet from the centerline of McEvoy Street, daytime hourly average noise levels would be up to 72 dBA L_{eq} at the building façades, with day-night average noise levels up to 69 dBA DNL.

Standard construction materials for commercial 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 Insulation Features to Reduce Future Interior Noise Levels

The following noise insulation features shall be incorporated into the proposed project to reduce interior noise levels to 45 dBA DNL or less at residential interiors:

- Provide a suitable form of forced-air mechanical ventilation, as determined by the local building official, for all residential units on the project site, so that windows can be kept closed at the occupant's discretion to control interior noise and achieve the interior noise standards.

- Preliminary calculations indicate that residential units along the northern and eastern building façades would require windows and doors with a minimum rating of 31 to 35 STC

with adequate forced-air mechanical ventilation to meet the interior noise threshold of 45 dBA DNL.

- Preliminary calculations indicate that residential units along the southern building façade would require windows and doors with a minimum rating of 28 STC with adequate forced-air mechanical ventilation to meet the interior noise threshold of 45 dBA DNL.

The implementation of these noise insulation features would reduce interior noise levels to 45 dBA DNL or less at residential uses.

Conditions of Approval

A qualified acoustical specialist shall prepare a detailed analysis of interior residential noise levels resulting from all exterior sources during the design phase pursuant to requirements set forth in the State Building Code. The study will also establish appropriate criteria for noise levels inside the commercial spaces affected by environmental noise. The study will review the final site plan, building elevations, and floor plans prior to construction and recommend building treatments to reduce residential interior noise levels to 45 dBA DNL or lower and to reduce commercial interiors to 50 $L_{eq(1\text{-}hr)}$ or below. Treatments would include, but are not limited to, sound-rated windows and doors, sound-rated wall and window constructions, acoustical caulking, protected ventilation openings, etc. The specific determination of what noise insulation treatments are necessary shall be conducted on a unit-by-unit basis during final design of the project. Results of the analysis, including the description of the necessary noise control treatments, shall be submitted to the City, along with the building plans and approved design, prior to issuance of a building permit.

LRT Vibration and Land Use Compatibility

The Environmental Leadership Chapter in the Envision San José 2040 General Plan sets forth policies with the goal of minimizing the impact of heavy and light rail vibration on people through appropriate land use policies in the City of San José. Policy EC-2.1 requires new development within 100 feet of light and heavy rail lines or other sources of groundborne vibration, to use setbacks and/or structural design features that reduce vibration to levels at or below the guidelines of the FTA.

The FTA vibration impact assessment criteria (summarized in Table 5) were used to evaluate vibration levels produced by trains passing the project area. The FTA vibration impact criteria are based on maximum overall levels for a single event. The impact criteria in Table 5 provide thresholds based on the number of train pass-bys in a given day: frequent events (more than 70 events of the same source per day), occasional events (30 to 70 vibration events of the same source per day), and infrequent events (less than 30 vibration events of the same source per day).

Future Vibration Environment

Heavy rail train events from Diridon Station produced vibration levels up to 79 VdB at a distance of 85 feet from the tracks. Light rail train events at Diridon Station produced vibration levels up to 67 VdB at a distance of 30 feet from the tracks. According to Table 5, light rail train vibration

levels would not exceed the 72 VdB vibration limit for frequent events, while some heavy rail trains would exceed the 72 VdB vibration limit for frequent events.

Measures to Consider to Ensure General Plan Consistency

The proposed project shall implement General Plan policy EC-2.1 when siting vibration-sensitive land uses near the VTA light rail and UPRR heavy rail tracks:

EC-2.1 Near light and heavy rail lines or other sources of ground-borne vibration, minimize vibration impacts on people, residences, and businesses through the use of setbacks and/or structural design features that reduce vibration to levels at or below the guidelines of the Federal Transit Administration. Require new development within 100 feet of rail lines to demonstrate prior to project approval that vibration experienced by residents and vibration sensitive uses would not exceed these guidelines.

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 significant noise impact would be identified if the project would generate a substantial temporary or permanent noise level increase over ambient noise levels at existing noise-sensitive receptors surrounding the project site and that would exceed applicable noise standards presented in the General Plan at existing noise-sensitive receptors surrounding the project site.

    - A significant noise impact would be identified if construction-related noise would temporarily increase ambient noise levels at sensitive receptors. The City of San José considers large or complex projects involving substantial noise-generating activities and lasting more than 12 months significant when within 500 feet of residential land uses or within 200 feet of commercial land uses or offices.

    - A significant permanent noise level increase would occur if the project would result in: a) a noise level increase of 5 dBA DNL or greater, with a future noise level of less than 60 dBA DNL, or b) a noise level increase of 3 dBA DNL or greater, with a future noise level of 60 dBA DNL or greater.

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the General Plan.

- A significant impact would be identified if the construction of the project would generate excessive vibration levels surrounding receptors. Groundborne vibration levels exceeding 0.08 in/sec PPV would have the potential to result in cosmetic damage to historic buildings, and groundborne vibration levels exceeding 0.2 in/sec PPV would have the potential to result in cosmetic damage to normal buildings.

- A significant noise impact would be identified if the project would expose people residing or working in the project area to excessive aircraft noise levels.

Impact 1a: **Temporary Construction Noise.** Existing noise-sensitive land uses would be exposed to a temporary increase in ambient noise levels due to project construction activities. **This is a significant impact.**

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 that 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.

Project construction will occur from 7:00 a.m. to 10:00 p.m. While no construction is expected to occur during nighttime hours, a permit from the City would be required to operate outside the allowable hours since the project site is located within 500 feet of residences and within 200 feet of commercial or office uses.

Existing residences located north of Park Avenue would have existing ambient noise levels represented by LT-3 of the monitoring survey, which ranged from 59 to 68 dBA L_{eq} during daytime hours. The existing residences to the south of the project site and industrial and commercial uses east of the site, both of which are located along the train tracks, would have ambient noise levels represented by LT-1, which ranged from 64 to 77 dBA L_{eq} during daytime hours. Additional noise-sensitive receptors would be located to west of the McEvoy Street industrial uses. These residences would have existing ambient noise levels represented by LT-2, which ranged from 51 to 66 dBA L_{eq} during daytime hours.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The construction of the proposed project would involve demolition of the existing structures located at the site, excavation, trenching, and building construction. The hauling of excavated materials and construction materials would generate truck trips on local roadways, as well. For the proposed project, pile driving, which generates excessive noise levels, is not expected.

Construction activities for individual projects 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 7) from the equipment. Table 8 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 65 to 88 dBA L_{eq} for residential 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.

Building A and Building B are expected to be built consecutively. A detailed list of equipment expected to be used during each phase of both buildings was provided for this analysis and is summarized in Tables 9 and 10. 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 every piece of equipment would operate simultaneously, which would represent the worst-case scenario. 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.

For each phase, the worst-case hourly average noise levels were estimated at the property line of each surrounding land use. Multiple pieces of equipment used simultaneously would add together creating a collective noise source. While every piece of equipment per phase would likely be scattered throughout the site, the noise-sensitive receptors surrounding the site would be subject to the collective noise source generated by all equipment operating at once. Therefore, to assess construction noise impacts at the receiving property lines of existing noise-sensitive receptors, the collective worst-case hourly average noise level for each phase was positioned at the geometrical center of the site and propagated to the nearest property line or building façades of the surrounding land uses. These noise level estimates are also shown in Tables 9 and 10. Noise levels in Tables 9 and 10 do not assume reductions due to intervening buildings or existing barriers. Note that Building A occupants could reside on-site during the construction of Building B; however, these noise-sensitive receptors would be considered intra-project receptors not subject to CEQA impacts and are not treated as noise-sensitive receptors in this study.

TABLE 7 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 8 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.

TABLE 9 Estimated Construction Noise Levels for Building A at Nearby Land Uses

Phase of Construction	Time Duration	Construction Equipment (Quantity)	Calculated Hourly Average Noise Levels, L_{eq} (dBA)									
			Ambient Noise Levels = 59-68 dBA L_{eq}		Ambient Noise Levels = 64-77 dBA L_{eq}				Ambient Noise Levels = 51-66 dBA L_{eq}			
			North Res. (235ft)		South Res. (390ft)		East Comm. & Ind. (310ft)		West Res. (340ft)		West Comm. & Ind. (240ft)	
			L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?
Demolition	20 days	Concrete/Industrial Saw (1) Excavator (3) Rubber-Tired Dozer (2)	73	Yes	69	No	71	No	70	No	73	Yes
Site Preparation	10 days	Rubber-Tired Dozer (3) Tractor/Loader/Backhoe (4)	74	Yes	70	No	72	No	71	Yes	74	Yes
Grading/ Excavation	30 days	Excavator (2) Grader (1) Rubber-Tired Dozer (1) Scraper (2) Tractor/Loader/Backhoe (2)	75	Yes	70	No	72	No	72	Yes	75	Yes
Building – Exterior	300 days	Crane (1) Forklift (3) Generator Set (1) Tractor/Loader/Backhoe (3) Welder (1)	73	Yes	68	No	70	No	69	No	72	Yes
Building – Interior/ Architectural Coating	20 days	Air Compressor (1)	60	No	56	No	58	No	57	No	60	No
Paving	20 days	Paver (2) Paving Equipment (2) Roller (2)	73	Yes	69	No	71	No	70	No	73	Yes

TABLE 10 Estimated Construction Noise Levels for Building B at Nearby Land Uses

Phase of Construction	Time Duration	Construction Equipment (Quantity)	Calculated Hourly Average Noise Levels, L_{eq} (dBA)									
			Ambient Noise Levels = 59-68 dBA L_{eq}		Ambient Noise Levels = 64-77 dBA L_{eq}				Ambient Noise Levels = 51-66 dBA L_{eq}			
			North Res. (500ft)		South Res. (135ft)		East Comm. & Ind. (310ft)		West Res. (340ft)		West Comm. & Ind. (240ft)	
			L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?	L_{eq}, dBA	Exceeds Amb. by 5+ dBA?
Demolition	20 days	Concrete/Industrial Saw (1) Excavator (3) Rubber-Tired Dozer (2)	66	No	78	No	71	No	70	No	73	Yes
Site Preparation	10 days	Rubber-Tired Dozer (3) Tractor/Loader/Backhoe (4)	68	No	79	No	72	No	71	Yes	74	Yes
Grading/ Excavation	30 days	Excavator (2) Grader (1) Rubber-Tired Dozer (1) Scraper (2) Tractor/Loader/Backhoe (2)	68	No	80	No	72	No	72	Yes	75	Yes
Building – Exterior	300 days	Crane (1) Forklift (3) Generator Set (1) Tractor/Loader/Backhoe (3) Welder (1)	66	No	77	No	70	No	69	No	72	Yes
Building – Interior/ Architectural Coating	20 days	Air Compressor (1)	54	No	65	No	58	No	57	No	60	No
Paving	20 days	Paver (2) Paving Equipment (2) Roller (2)	67	No	78	No	71	No	70	No	73	Yes

As shown in Tables 9 and 10, ambient levels at the surrounding uses would potentially be exceeded by 5 dBA L_{eq} or more at various times throughout construction. Project construction is expected to last for a period of approximately 19 months for each proposed building. Since project construction would last for a period of more than one year and considering that the project site is within 500 feet of existing residential uses and within 200 feet of existing commercial uses, this temporary construction impact would be considered significant in accordance with Policy EC-1.7 of the City's General Plan.

The proposed project falls within the *Downtown San José Strategy Plan 2040 EIR* and the *Diridon Station Area Plan Draft EIR* plan areas, which included mitigation measures to reduce temporary construction noise levels at noise-sensitive receptors. The *Downtown San José Strategy Plan 2040 EIR* and the *Diridon Station Area Plan Draft EIR* would enforce Policy EC-1.7 of the City's General Plan, which states the following:

> Construction operations within the City will be required to use available noise suppression devices and techniques and continue to 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.

Additionally, the City requires that reasonable noise reduction measures be incorporated into the construction plan and implemented during all phases of construction activity. Accordingly, the *Downtown San José Strategy Plan 2040 EIR* and the *Diridon Station Area Plan Draft EIR* requires that all projects shall implement the following standard noise control measures:

- Construction will be limited 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.

- The contractor shall use "new technology" power construction equipment with state-of-the-art noise shielding and muffling devices. All internal combustion engines used on the project site shall be equipped with adequate mufflers and shall be in good

mechanical condition to minimize noise created by faulty or poorly maintained engines or other components.

- The unnecessary idling of internal combustion engines shall be prohibited. Staging areas and stationary noise-generating equipment shall be located as far as possible from noise-sensitive receptors such as residential uses (a minimum of 200 feet, where feasible).

- Staging areas and stationary noise-generating equipment shall be located as far as possible from noise-sensitive receptors such as residential uses (a minimum of 200 feet, where feasible).

- The surrounding neighborhood within 500 feet shall be notified early and frequently of the construction activities.

- A "noise disturbance coordinator" shall be designated to respond to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaints (e.g., beginning work too early, bad muffler, etc.) and institute reasonable measures warranted to correct the problem. A telephone number for the disturbance coordinator would be conspicuously posted at the construction site.

Adherence to the Municipal Code requirements would minimize impacts to neighboring properties from temporary increases in ambient noise levels resulting from future construction activities. Larger projects within the *Downtown San José Strategy Plan 2040 EIR* and the *Diridon Station Area Plan Draft EIR* plan areas that are expected to last over one year in duration, such as the proposed project, may result in a substantial temporary noise increase at adjacent land uses and would require a "construction noise logistics plan," in accordance with GP Policy EC-1.7. As stated in the *Downtown San José Strategy Plan 2040 EIR* and the *Diridon Station Area Plan Draft EIR*, typical construction noise logistics plan would include, but not be limited to, the following measures to reduce construction noise levels as low as practical:

- Utilize 'quiet' models of air compressors and other stationary noise sources where technology exists;

- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;

- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses;

- Locate staging areas and construction material areas as far away as possible from adjacent land uses;

- Prohibit all unnecessary idling of internal combustion engines;

- If impact driving is proposed, multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced; *(not applicable)*

- If impact pile driving is proposed, temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected; *(not applicable)*

- If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. Notify all adjacent land uses of the construction schedule in writing; *(not applicable)*

- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented. 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.

With the implementation of GP Policy EC-1.7, Municipal Code requirements, and the above measures included in the *Downtown San José Strategy Plan 2040 EIR* and the *Diridon Station Area Plan Draft EIR*, the temporary construction noise impact would be reduced to a less-than-significant level.

Mitigation Measure 1a: No further mitigation required.

Impact 1b: Permanent Noise Level Increase. The proposed project is not expected to cause a substantial permanent traffic noise level increase at the existing noise-sensitive land uses in the project vicinity. **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 traffic due to the proposed project would permanently increase ambient levels by 3 dBA DNL. For reference, a 3 dBA DNL noise increase would be expected if the project would double existing traffic volumes along a roadway.

The traffic study included peak hour turning movements for the existing traffic volumes and project trips at 21 intersections in the vicinity of the project site. The peak hour project trips were added to the existing traffic volumes to establish the existing plus project traffic scenario. By comparing the existing plus project traffic scenario to the existing scenario, the project would result in a noise level increase of 3 dBA DNL or more along McEvoy Street between Park Avenue and West San Carlos Street and south of West San Carlos Street. However, existing receptors along these roadway segments are either commercial or light industrial and would not be considered sensitive receptors for permanent noise level increase. Therefore, this would not be considered a significant impact. All other roadway segments would result in a noise level increase of less than 1 dBA DNL attributable to the proposed project. The project would not result in a permanent noise increase of 3 dBA DNL or more at noise-sensitive receptors in the project vicinity. This is a less-than-significant impact.

Mitigation Measure 1b: None required.

Impact 1c: Noise Levels in Excess of Standards. The proposed project is not expected to generate noise in excess of standards established in the City's General Plan at the nearby residential receptors. This is a **less-than-significant impact**.

While the City's Noise Element does not include thresholds for mostly residential buildings, the City's Municipal Code has noise limits of 55 dBA at receiving residential uses and 60 dBA at receiving commercial uses. Exceeding these limits would not be considered a significant impact under CEQA; however, it is recommended that these limits be considered for design features in the proposed building.

Mechanical Equipment

The site plan shows mechanical equipment located on the rooftop. All rooftop equipment would be concealed from exterior view by perimeter parapet walls. The site plan shows the screens to be a minimum of 5 feet in height for equipment of a minimum height of 3 feet set back about 3 feet from the screens.

The rooftop equipment would likely be heating, ventilation, and air condition (HVAC) units. Assuming worst case conditions, typical residential HVAC units generate noise levels ranging from 53 to 63 dBA at 3 feet. HVAC units typically cycle on and off continuously over a 24-hour period. Assuming up to eight units would be running simultaneously at any given time, hourly average noise levels would be up to 72 dBA L_{eq} at a distance of 3 feet.

The nearest residential uses would be the future residential development adjacent to the project site, approximately 75 feet from the southern building façade. With the proposed parapet walls surrounding the rooftop equipment, noise levels would be below 40 dBA L_{eq} and below 46 dBA DNL at the nearest residential property plane, assuming a conservative 5 dBA reduction from the parapet walls. This would adequately shield all rooftop HVAC units expected at the proposed buildings. This would be a less-than-significant impact.

Truck Loading and Unloading

The site plan does not show truck loading and unloading activities; however, this would likely occur within the parking structure or along McEvoy Street, which currently has considerable truck activity from the existing light industrial and commercial uses. The proposed commercial use is approximately 4,000 square feet, which would likely require a maximum of one vender truck delivery a day. This would not result in a measurable noise level increase over ambient noise levels measured at LT-2. Truck deliveries occurring at the proposed project site are not expected to generate levels exceeding 55 dBA DNL or existing ambient conditions at the nearby noise-sensitive land uses. This would be a less-than-significant impact.

Mitigation Measure 1c: No further mitigation required.

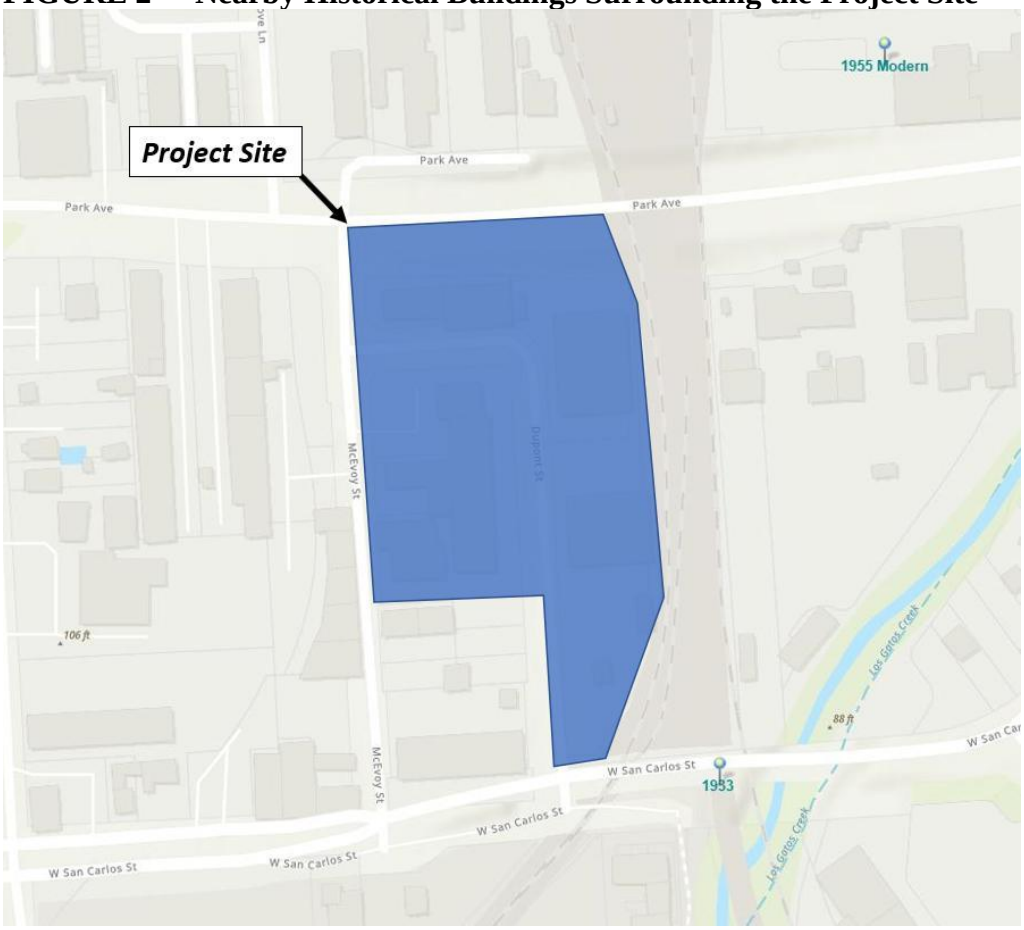
Impact 2: Exposure to Excessive Groundborne Vibration. Construction-related vibration levels would not exceed applicable vibration thresholds at nearby sensitive land uses. **This is a less-than-significant impact.**

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 the City's Historic Resource Inventory,[3] two historical structures are located in the project vicinity, as shown in Figure 2. To the northeast, approximately 400 feet from the project boundary, there's a historical building located at 645 Park Avenue, and approximately 150 feet southeast of the project site is the San Carlos Street viaduct from 1933.

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

FIGURE 2 Nearby Historical Buildings Surrounding the Project Site



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 11 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 11 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.

TABLE 11 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., August 2021.

Both historical structures shown in Figure 2 would be more than 61 feet from the project site, and therefore, the conservative 0.08 in/sec PPV threshold for historical structures would not be exceeded by construction activities for the proposed project. The remainder of this analysis will focus solely on normal conventional construction buildings subject to the 0.2 in/sec PPV threshold.

Table 12 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 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 12), which are different than the distances used to propagate construction noise levels (as shown in Tables 9 and 10), were estimated under the assumption that each piece of equipment from Table 11 was operating along the nearest boundary of the project site, which would represent the worst-case scenario.

Project construction activities would not generate vibration levels exceeding 0.11 in/sec PPV at any buildings in the immediate vicinity of the project site, including the future residential building southwest of the project site, opposite the future Dupont Street alignment. Neither cosmetic, minor, or major damage would occur at conventional buildings located 60 feet or more from 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.

In summary, the construction of the project would not generate vibration levels exceeding the General Plan threshold of 0.08 in/sec PPV at historic properties or 0.2 in/sec PPV at nonhistorical properties in the project vicinity. This would be a less-than-significant impact.

TABLE 12 Vibration Source Levels for Construction Equipment

Equipment		PPV (in/sec)				
		Future Residential Building SW (45ft)	**East Industrial Buildings (100ft)**	**West Industrial & Commercial Buildings (50ft)**	**North Residential Building (110ft)**	**South Residential & Commercial Buildings (145ft)**
Clam shovel drop		0.106	0.044	0.094	0.040	0.029
Hydromill (slurry wall)	in soil	0.004	0.002	0.004	0.002	0.001
	in rock	0.009	0.004	0.008	0.003	0.002
Vibratory Roller		0.110	0.046	0.098	0.041	0.030
Hoe Ram		0.047	0.019	0.042	0.017	0.013
Large bulldozer		0.047	0.019	0.042	0.017	0.013
Caisson drilling		0.047	0.019	0.042	0.017	0.013
Loaded trucks		0.040	0.017	0.042	0.015	0.011
Jackhammer		0.018	0.008	0.035	0.007	0.005
Small bulldozer		0.002	0.001	0.001	0.001	0.0004

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., August 2021.

Mitigation Measure 2: **None required.**

Impact 3: **Excessive Aircraft Noise.** The project site is located less than 2 miles from Norman Y. Mineta International Airport, but the noise environment attributable to aircraft is considered normally acceptable under the Santa Clara County ALUC noise compatibility policies for residential land uses. This is a **less-than-significant** impact.

Norman Y. Mineta San José International Airport is a public-use airport located approximately 1.9 miles north of the project site. According to the City's new Airport Master Plan Environmental Impact Report,[4] the project site lies outside the 60 dBA CNEL/DNL contour line (see Figure 3). According to Policy EC-1.11 of the City's General Plan, the required safe and compatible threshold for exterior noise levels would be at or below 65 dBA CNEL/DNL for aircrafts. Therefore, the proposed project would be compatible with the City's exterior noise standards for aircraft noise.

Assuming standard construction materials for aircraft noise below 60 dBA DNL, the future interior noise levels resulting from aircraft would below 45 dBA DNL. Therefore, future interior noise at the proposed building would be compatible with aircraft noise. This would be a less-than-significant impact.

Mitigation Measure 3: **None required.**

[4] 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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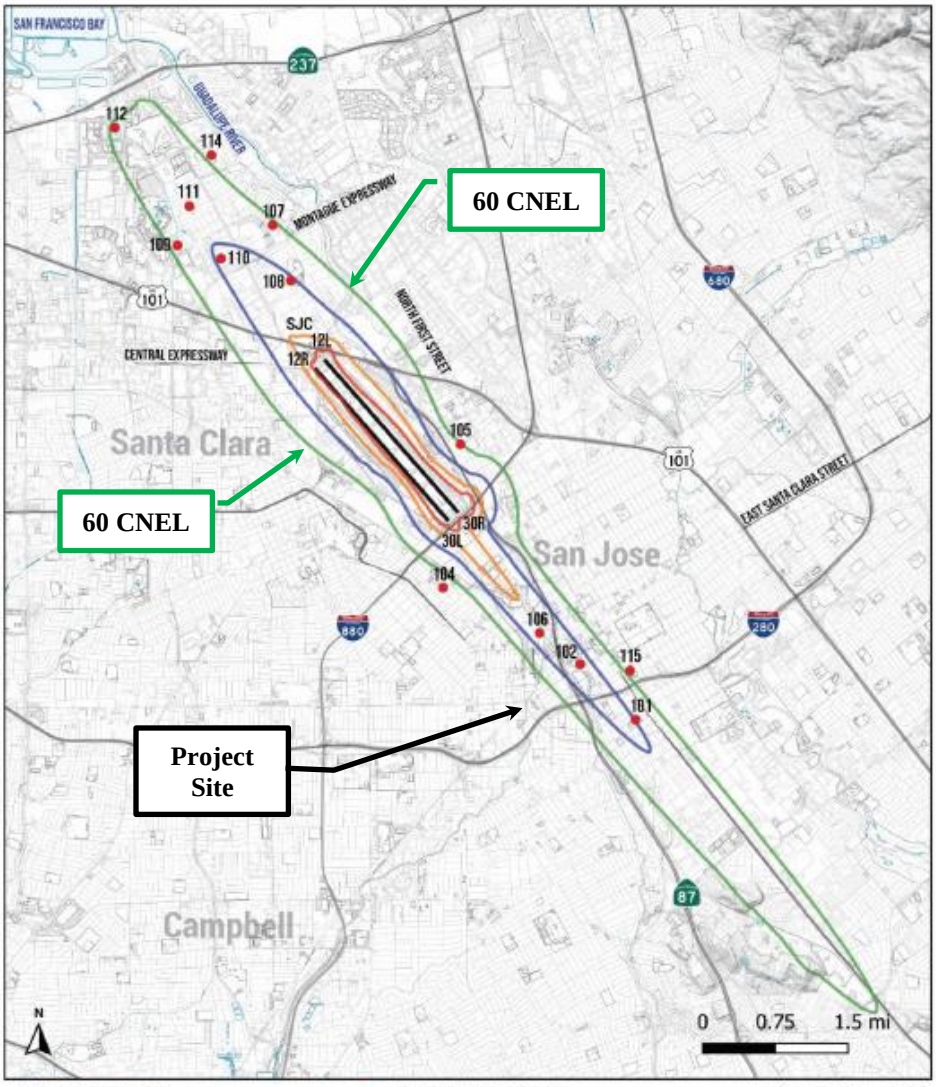

Figure 5 Scenario 2: With Project 2037 Noise Contour Map

Source: BridgeNet International 2019

Cumulative Impacts

Cumulative noise impacts would include temporary construction noise from cumulative construction projects. Cumulative traffic noise increases due to the proposed project was studied in the *Diridon Station Area Plan EIR.* Therefore, no further cumulative traffic noise increases would occur due to the proposed project.

From the City's website,[5] the following planned or approved projects are located within 1,000 feet of the proposed project:

- **McEvoy Residences** – this project is located at 0 McEvoy Street, adjacent to the project site in the southwestern corner. This residential development would consist of 12-stories of 358 affordable housing units. This project is currently in the pre-construction review process, and construction is expected to start in Spring 2022. While most of the receptors directly impacted by construction at both sites would be the light industrial uses west of McEvoy Street, there are existing residences south of West San Carlos Street and the train tracks that would also have direct line-of-sight to both sites. Depending on the construction schedule for the Diridon-Dupont project, a cumulative construction impact may occur.

- **West San Carlos Supportive Housing** – this project is located at 750 West San Carlos Street, approximately 450 feet southwest of the Diridon-Dupont project site. This seven-story residential building would include 80 units. This project is in the planning review phase. Noise-sensitive receptors directly impacted by construction at this site would not be shared receptors at the Diridon-Dupont site. Cumulative construction is therefore not assumed.

- **Ohlone Blocks** – this project is located in the southwest corner of the West San Carlos Street/Sunol Street intersection, which is about 870 feet southwest of the project site. This project is in the planning review phase. It consists of a 12-story residential building. Noise-sensitive receptors directly impacted by construction at this site would not be shared receptors at the Diridon-Dupont site. Cumulative construction is therefore not assumed.

- **Montgomery 7** – this project is located at 282 South Montgomery Street, which is about 715 feet east of the project site. This project is in the pre-construction phase and includes the construction of a 10-story building with 54 residential units and 1,856 square feet of ground-floor retail. The construction schedule for this project is unavailable at this time; however, noise-sensitive receptors directly impacted by construction at this site would not be shared receptors at the Diridon-Dupont site. Cumulative construction is therefore not assumed.

While existing receptors located west and south of the project site would be considered shared receptors during construction activities at Diridon-Dupont and McEvoy Residences project sites, it is unknown at this time if the construction schedules for both projects would overlap or occur consecutively. Each individual project includes measures to further reduce noise and vibration levels emanating from the individual sites. With the implementation of construction noise and

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

vibration mitigation measures included in the individual projects, construction noise and vibration levels would be reduced as much as possible at all surrounding sensitive receptors during construction of each individual project. Therefore, potential cumulative construction impacts would be less-than-significant.

APPENDIX A

FIGURE A1 Daily Trend in Noise Levels for LT-1 on Wednesday, February 21, 2018

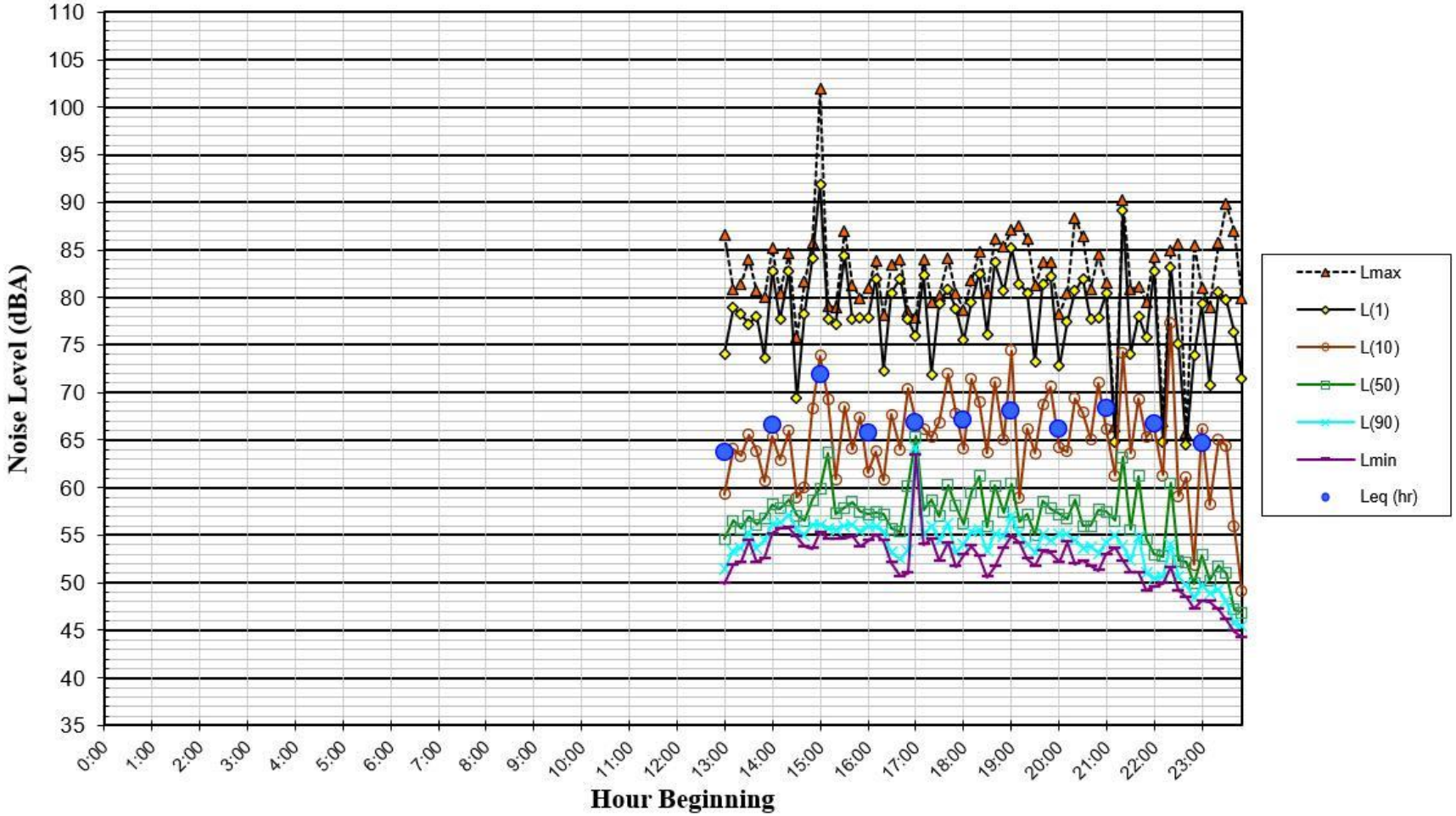

FIGURE A2 Daily Trend in Noise Levels for LT-1 on Thursday, February 22, 2018

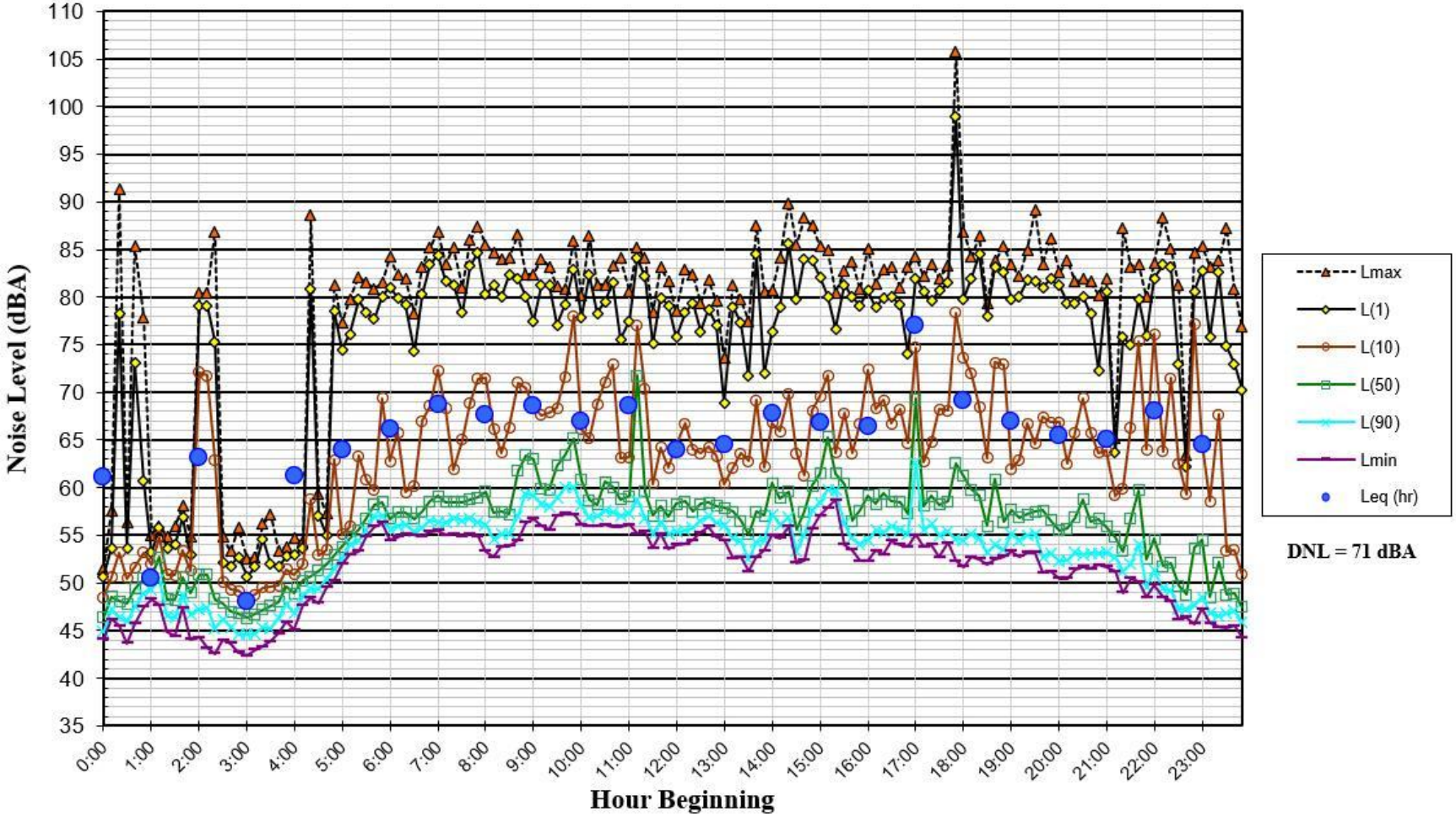

FIGURE A3 Daily Trend in Noise Levels for LT-1 on Friday, February 23, 2018

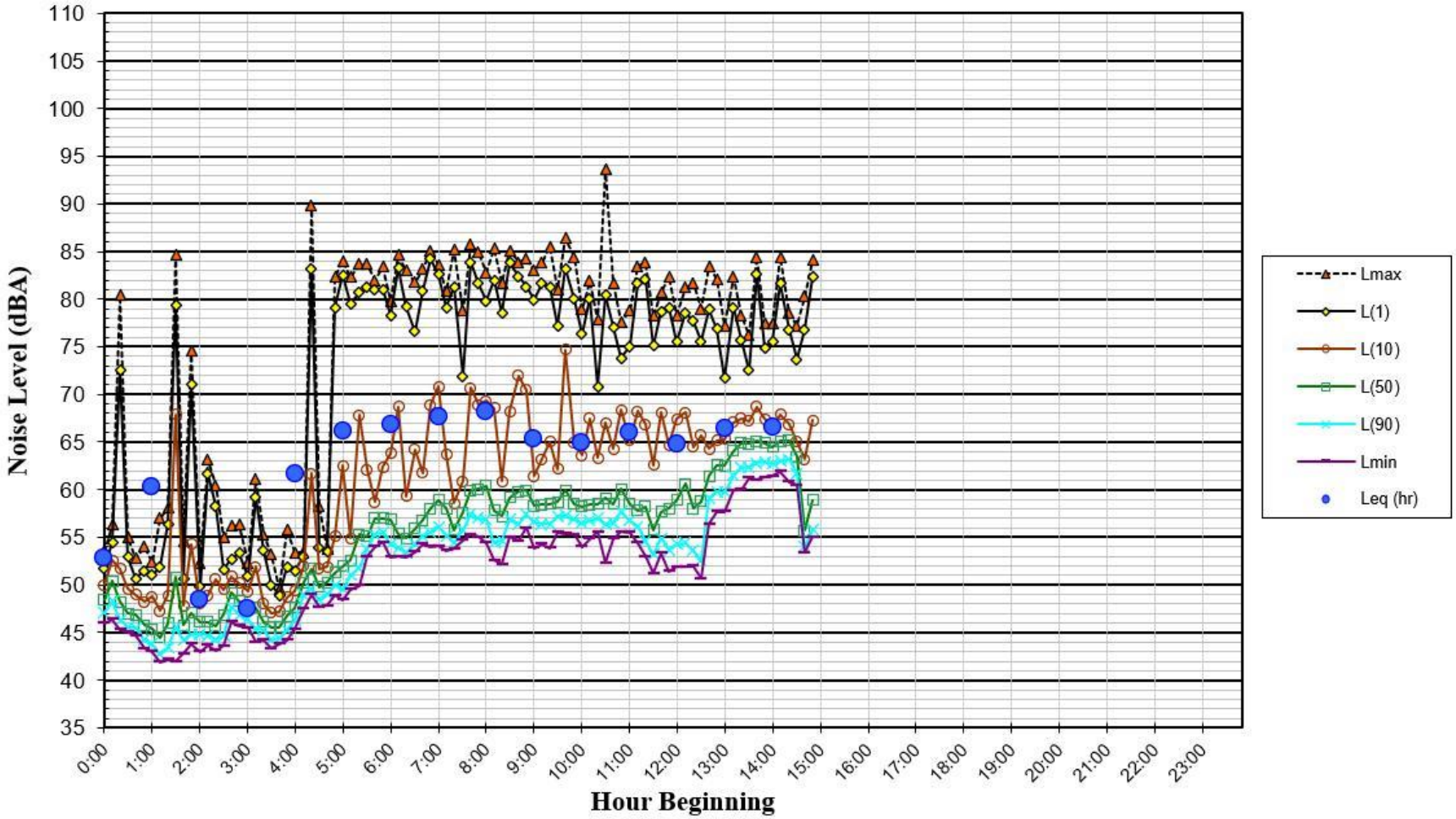

FIGURE A4 Daily Trend in Noise Levels for LT-2 on Monday, July 26, 2021

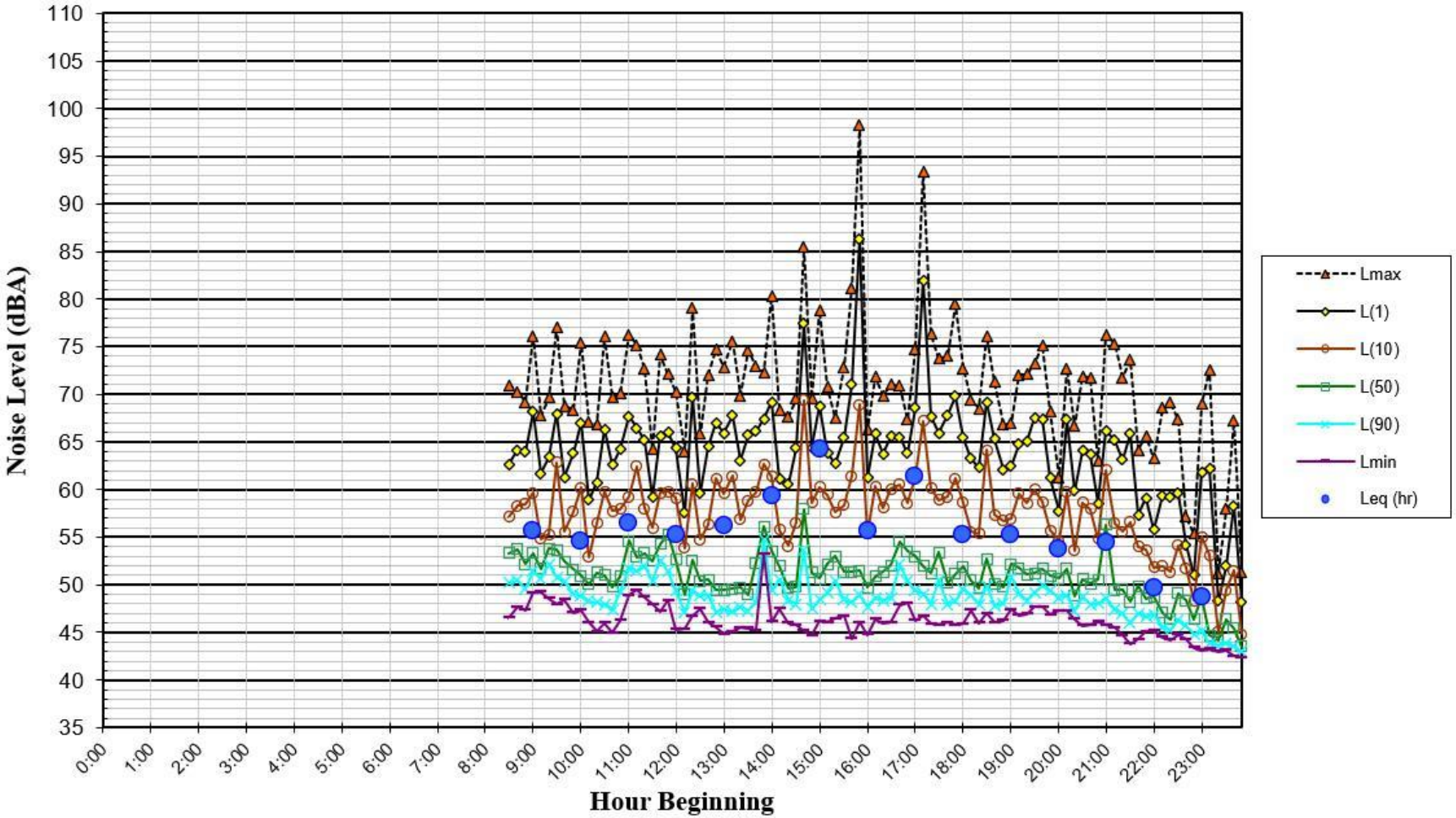

FIGURE A5 Daily Trend in Noise Levels for LT-2 on Tuesday, July 27, 2021

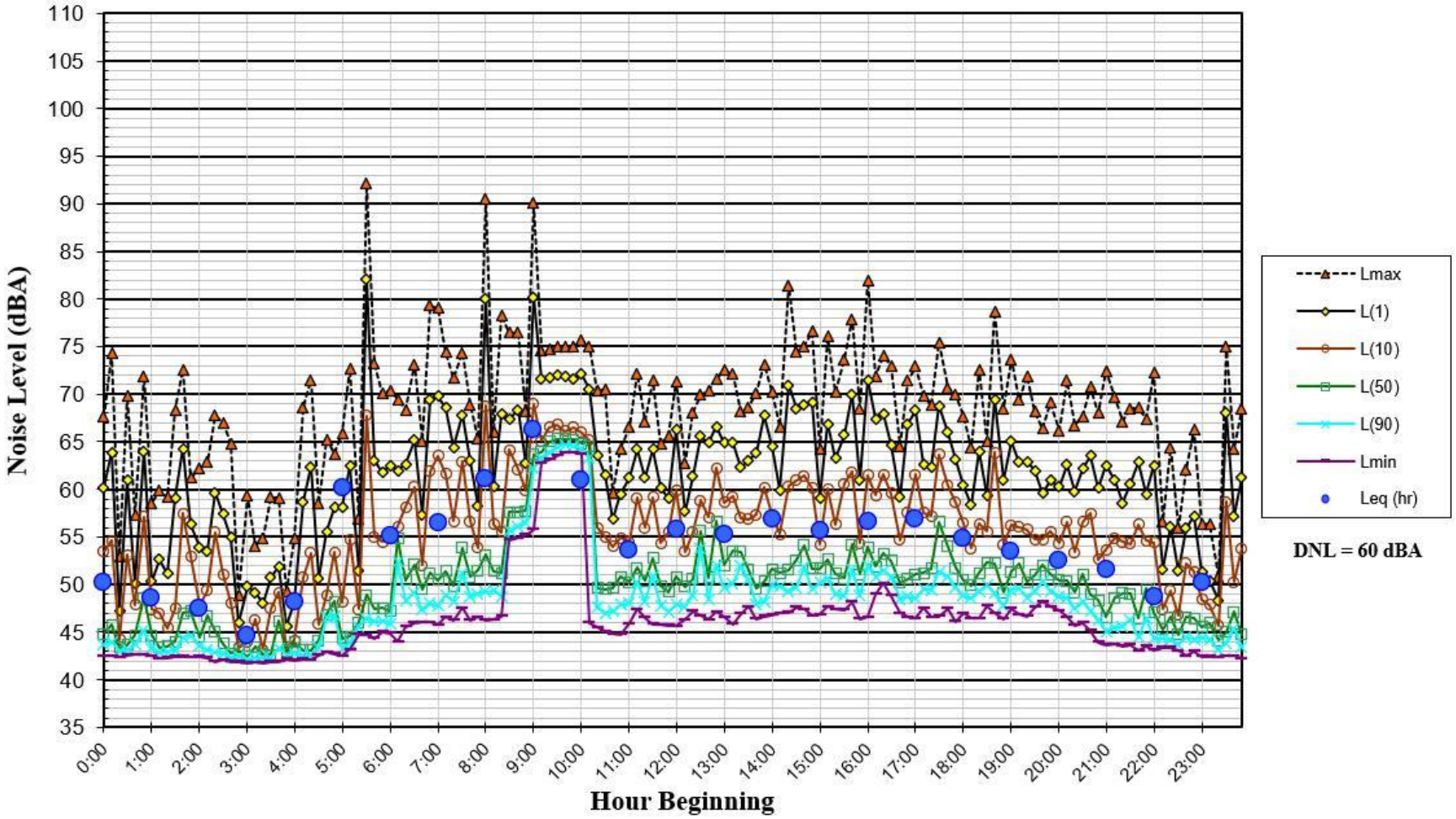

FIGURE A6 Daily Trend in Noise Levels for LT-2 on Wednesday, July 28, 2021

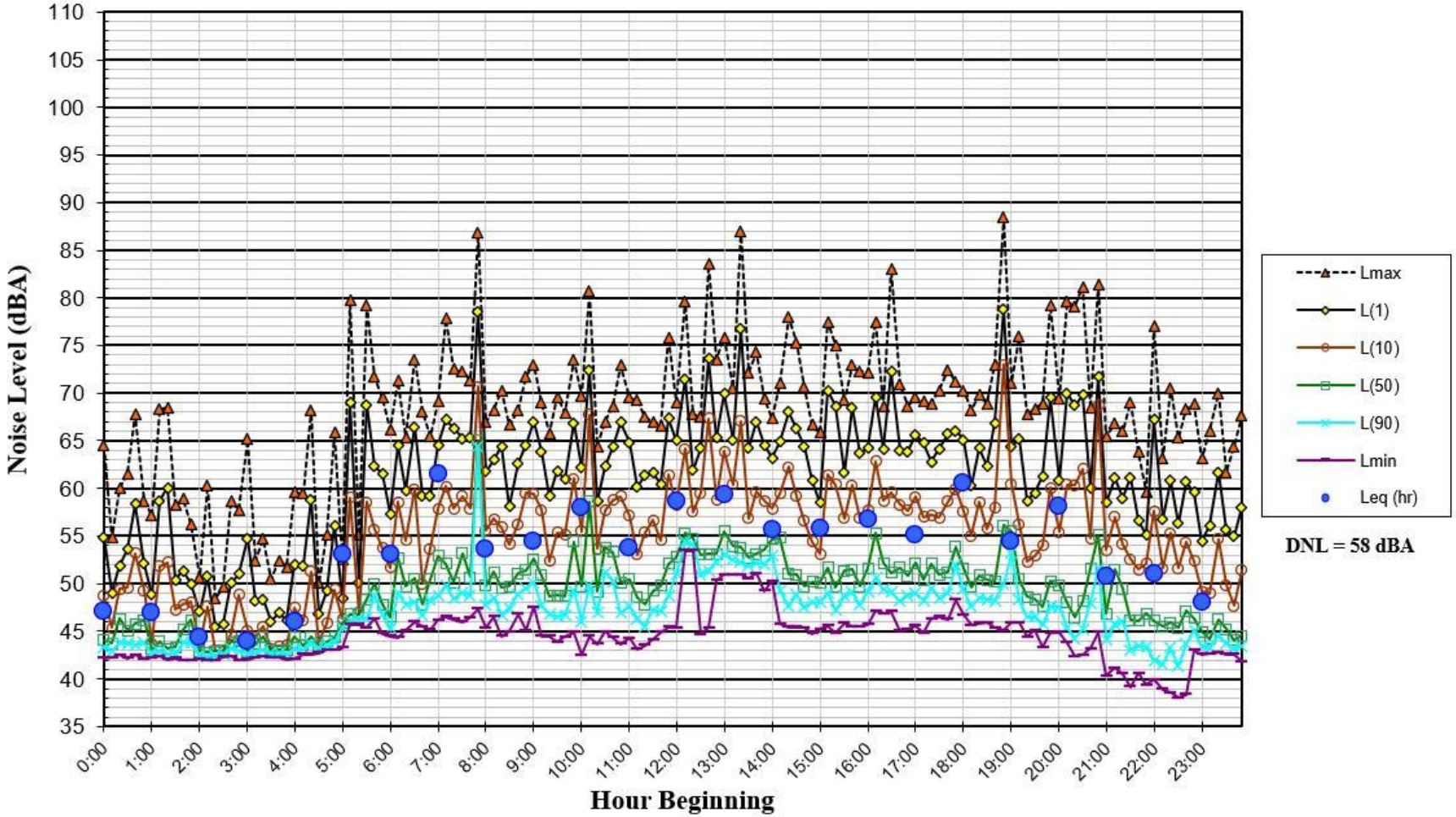

FIGURE A7 Daily Trend in Noise Levels for LT-2 on Thursday, July 29, 2021

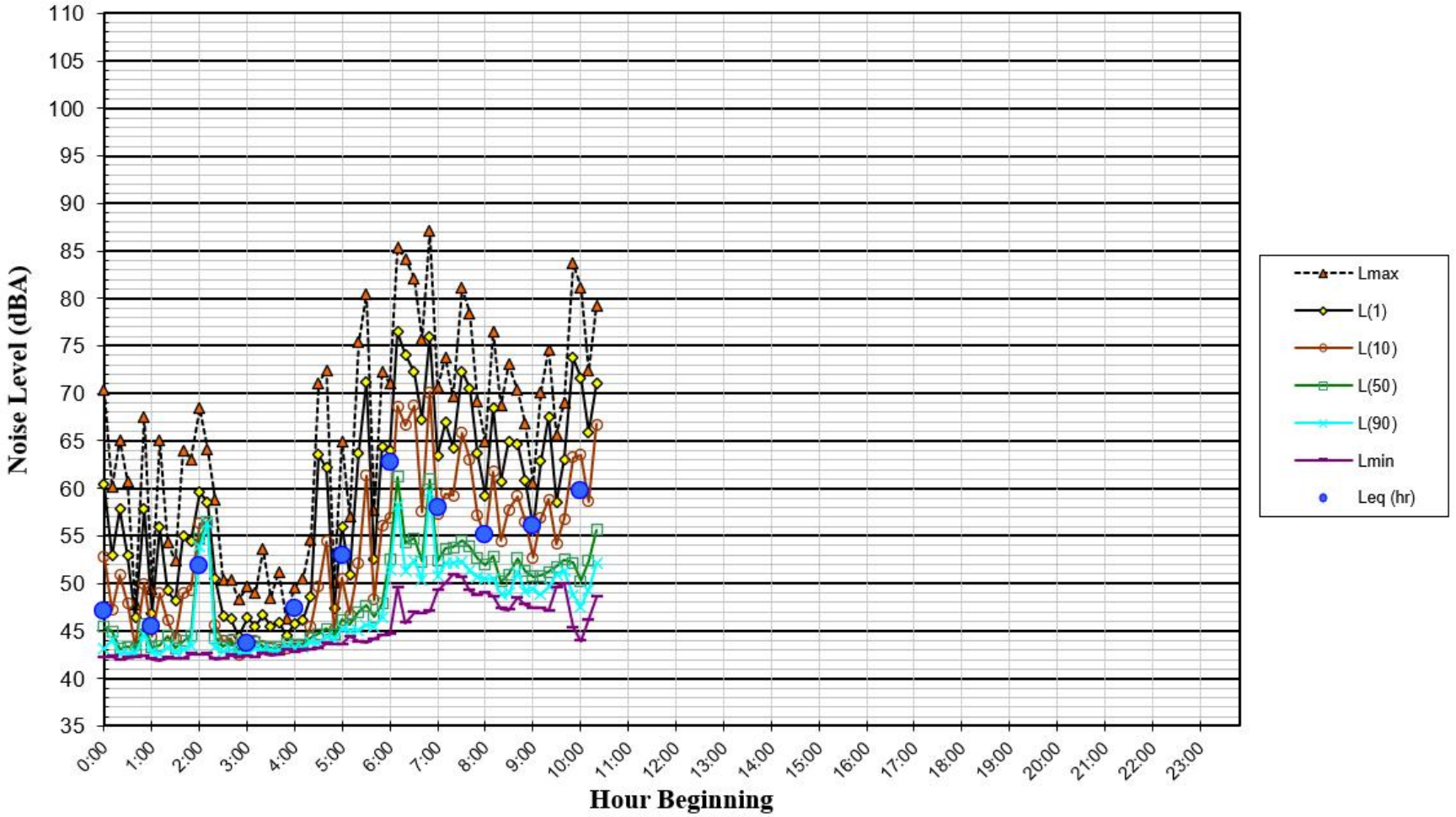

FIGURE A8 Daily Trend in Noise Levels for LT-3 on Monday, July 26, 2021

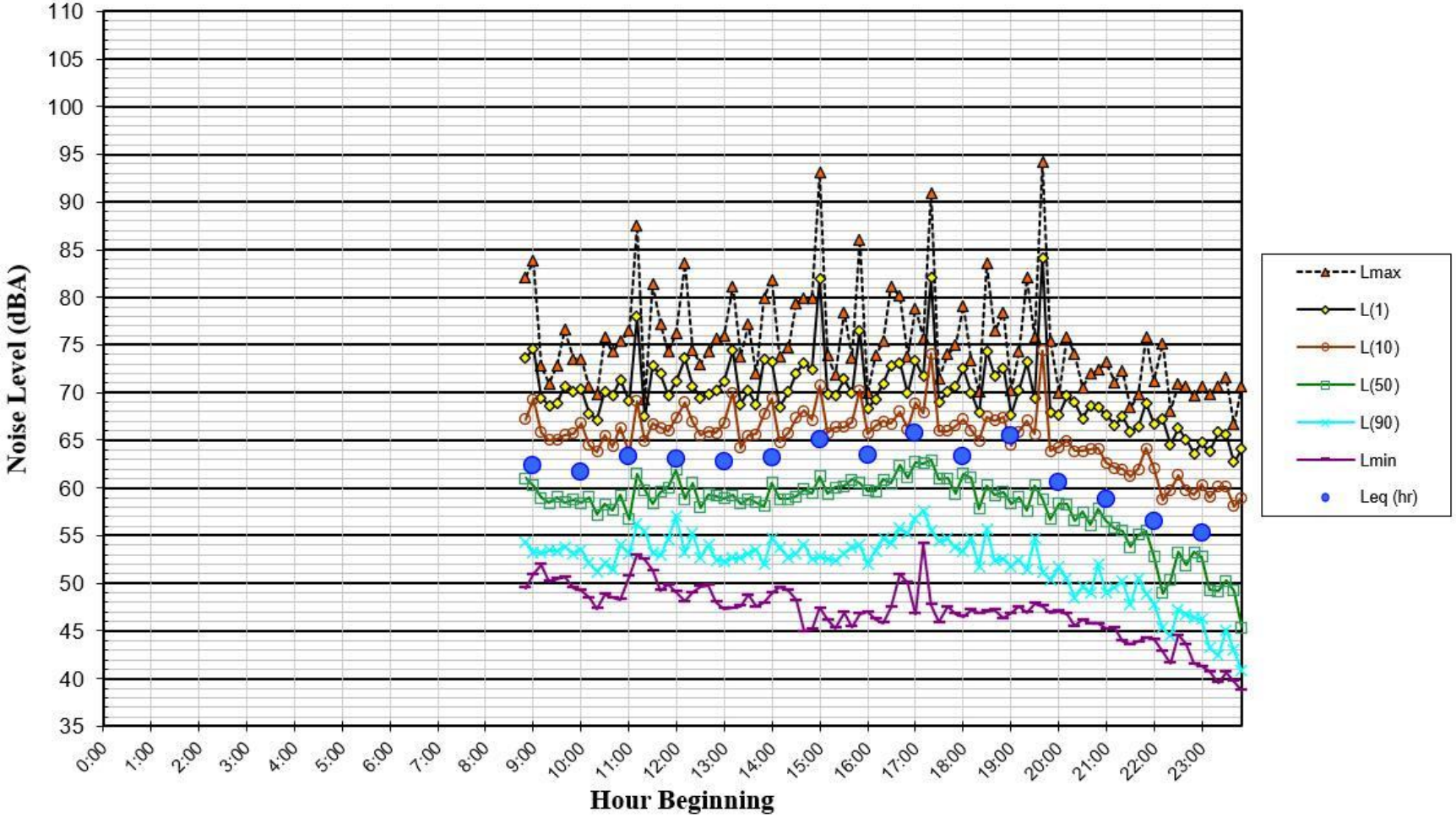

FIGURE A9 Daily Trend in Noise Levels for LT-3 on Tuesday, July 27, 2021

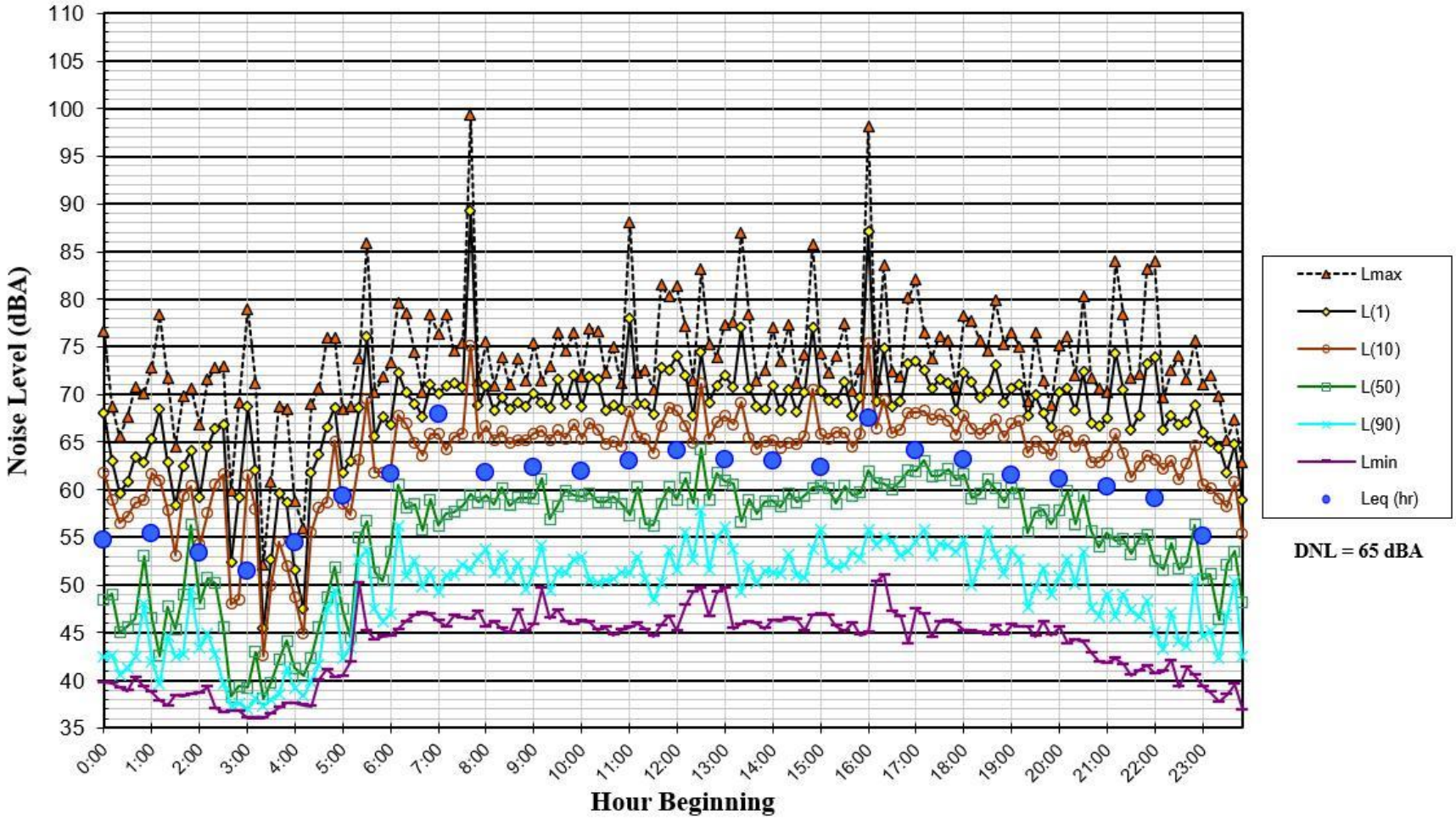

FIGURE A10 Daily Trend in Noise Levels for LT-3 on Wednesday, July 28, 2021

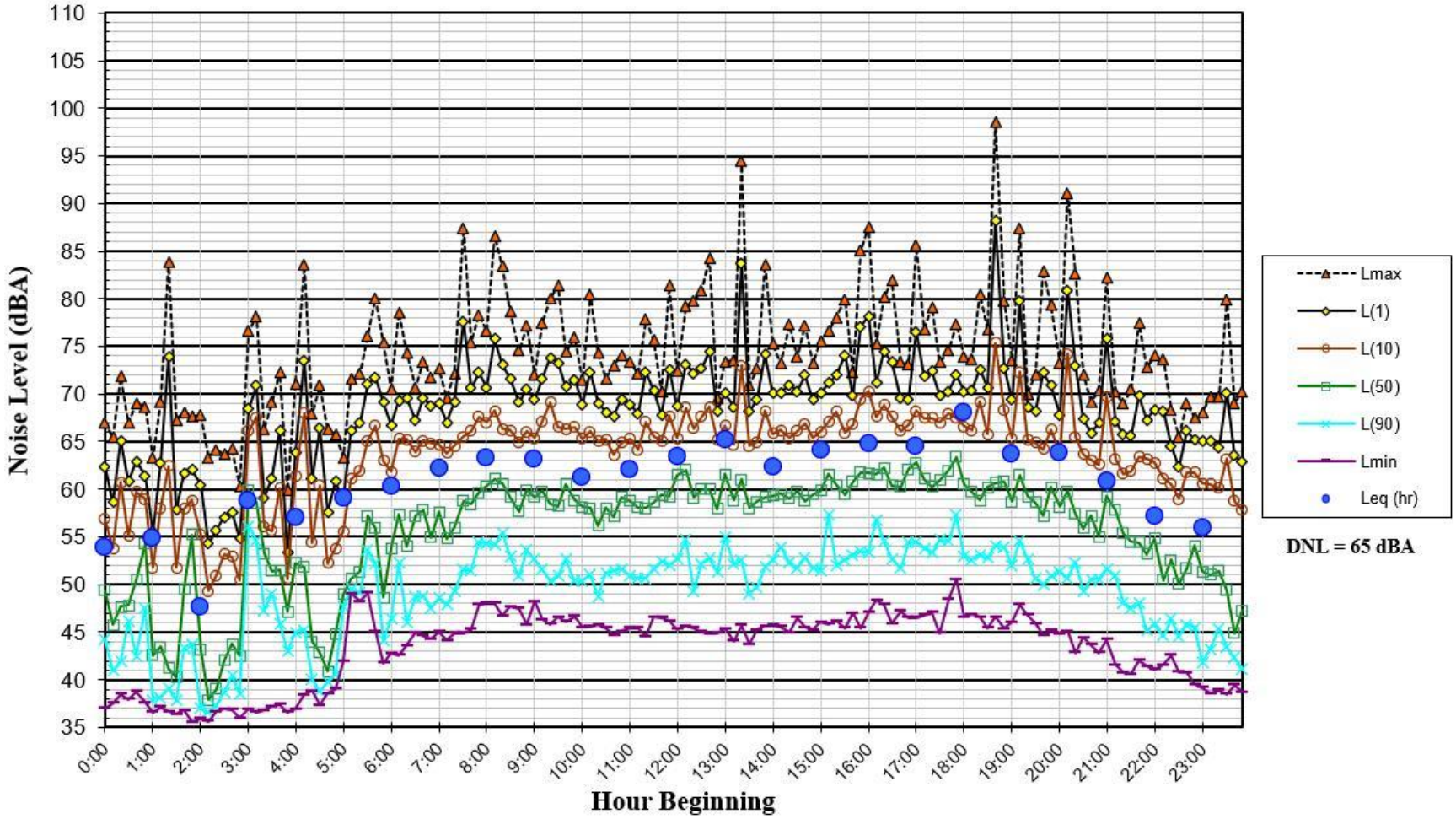

FIGURE A11 Daily Trend in Noise Levels for LT-3 on Thursday, July 29, 2021

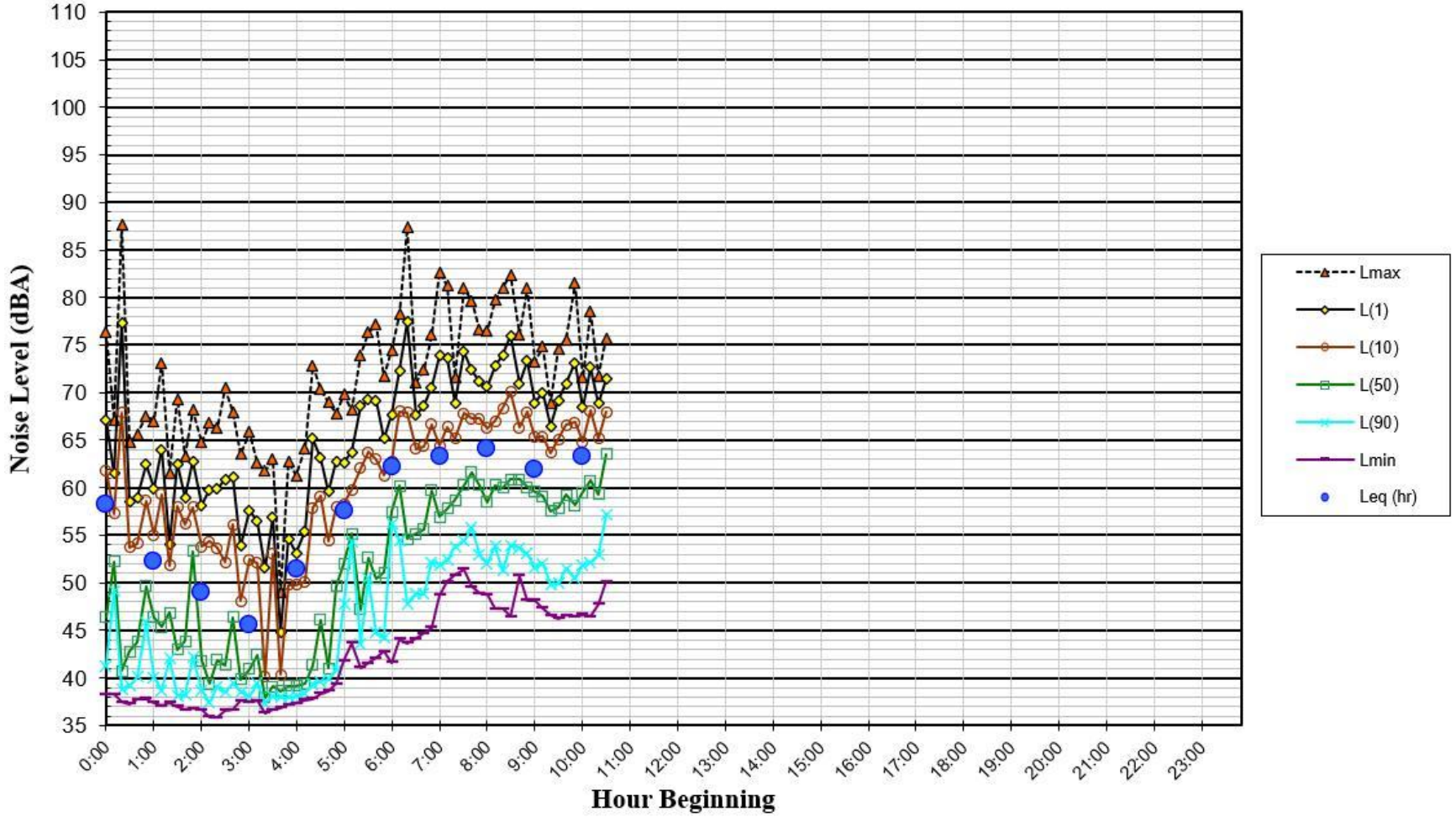

FIGURE 5 VTA Light Rail Train Vibration Levels at V-1

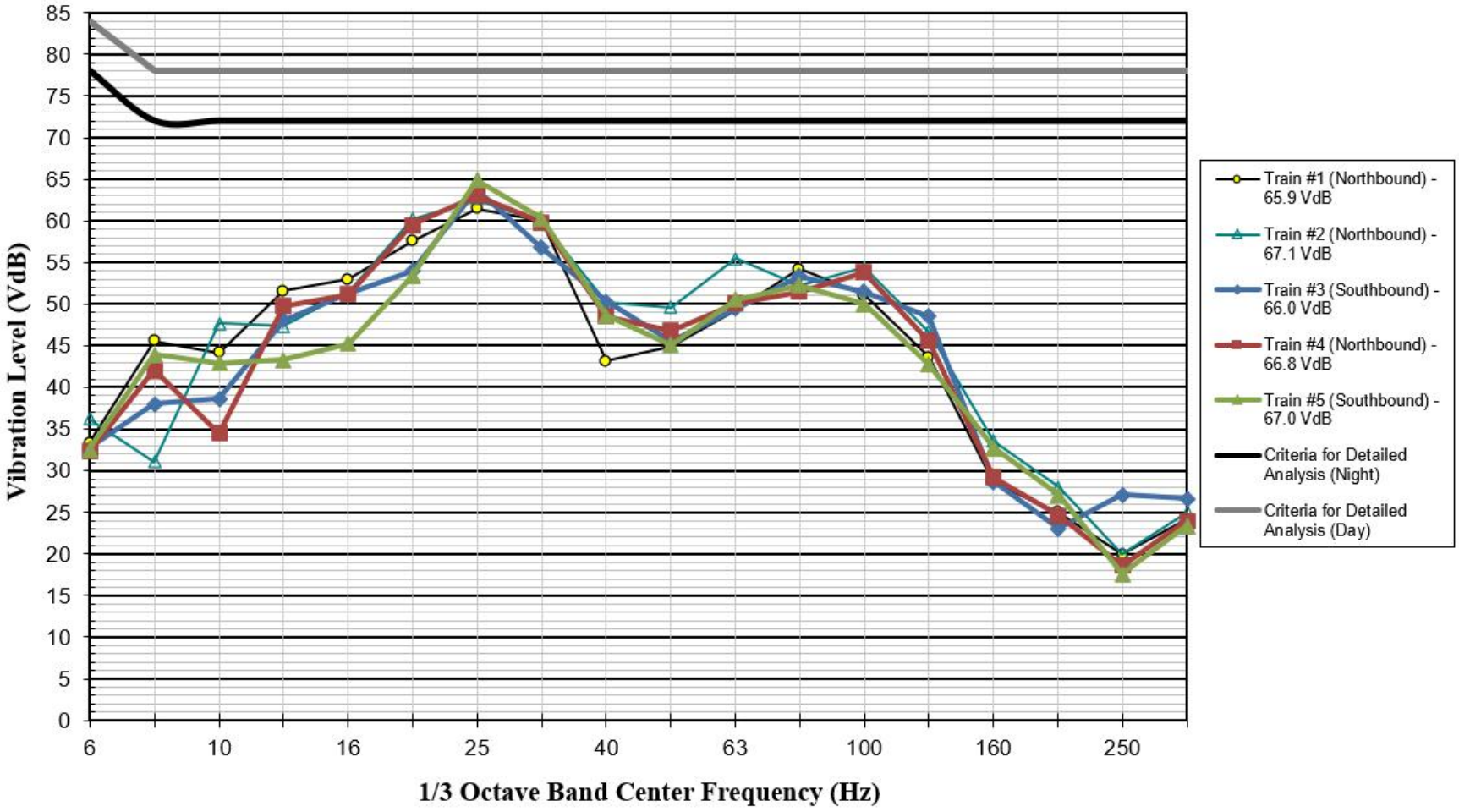

FIGURE 6 VTA Light Rail Train Vibration Levels at V-2

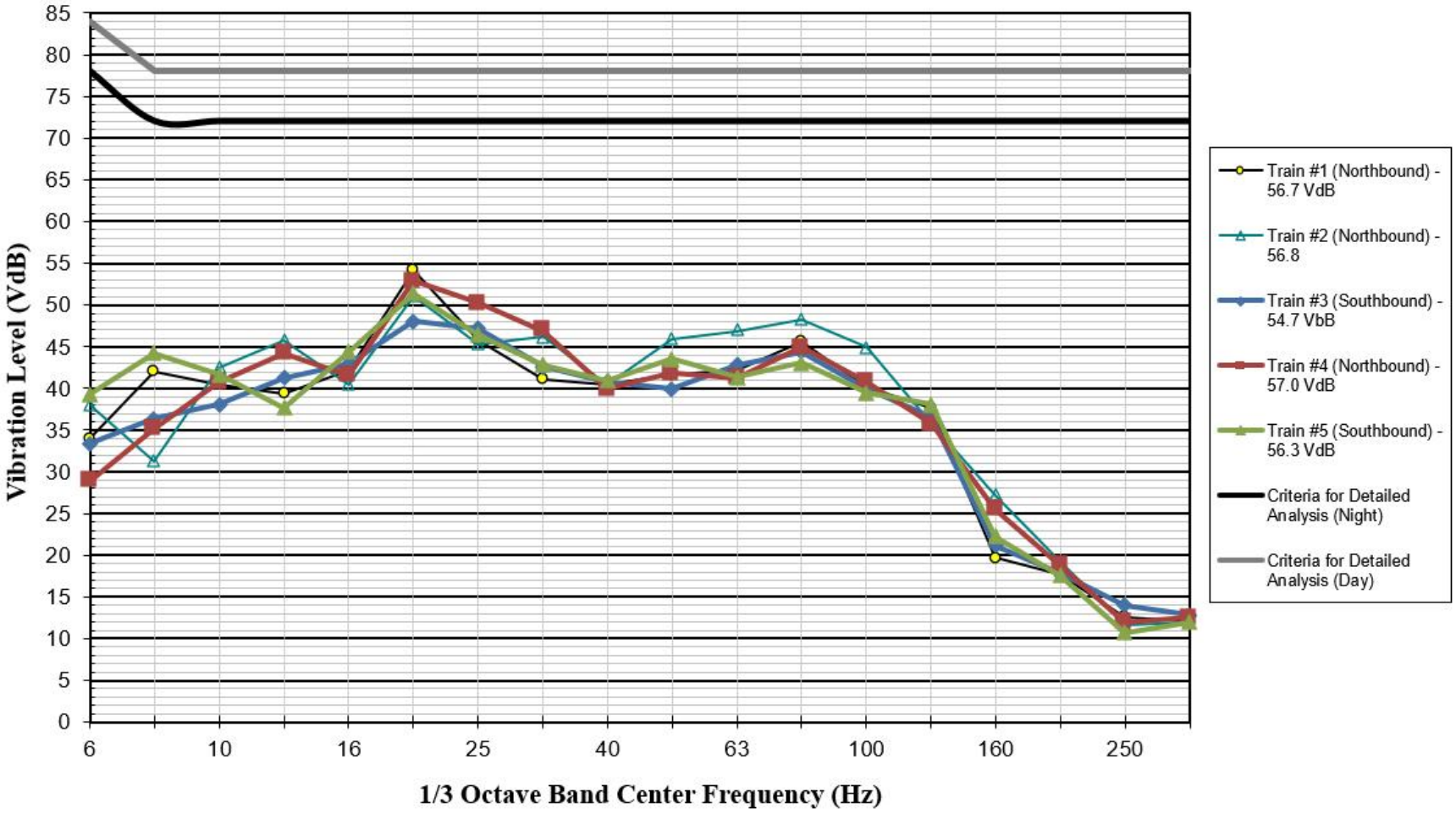

FIGURE 7 UPRR Heavy Rail Train Vibration Levels at V-1

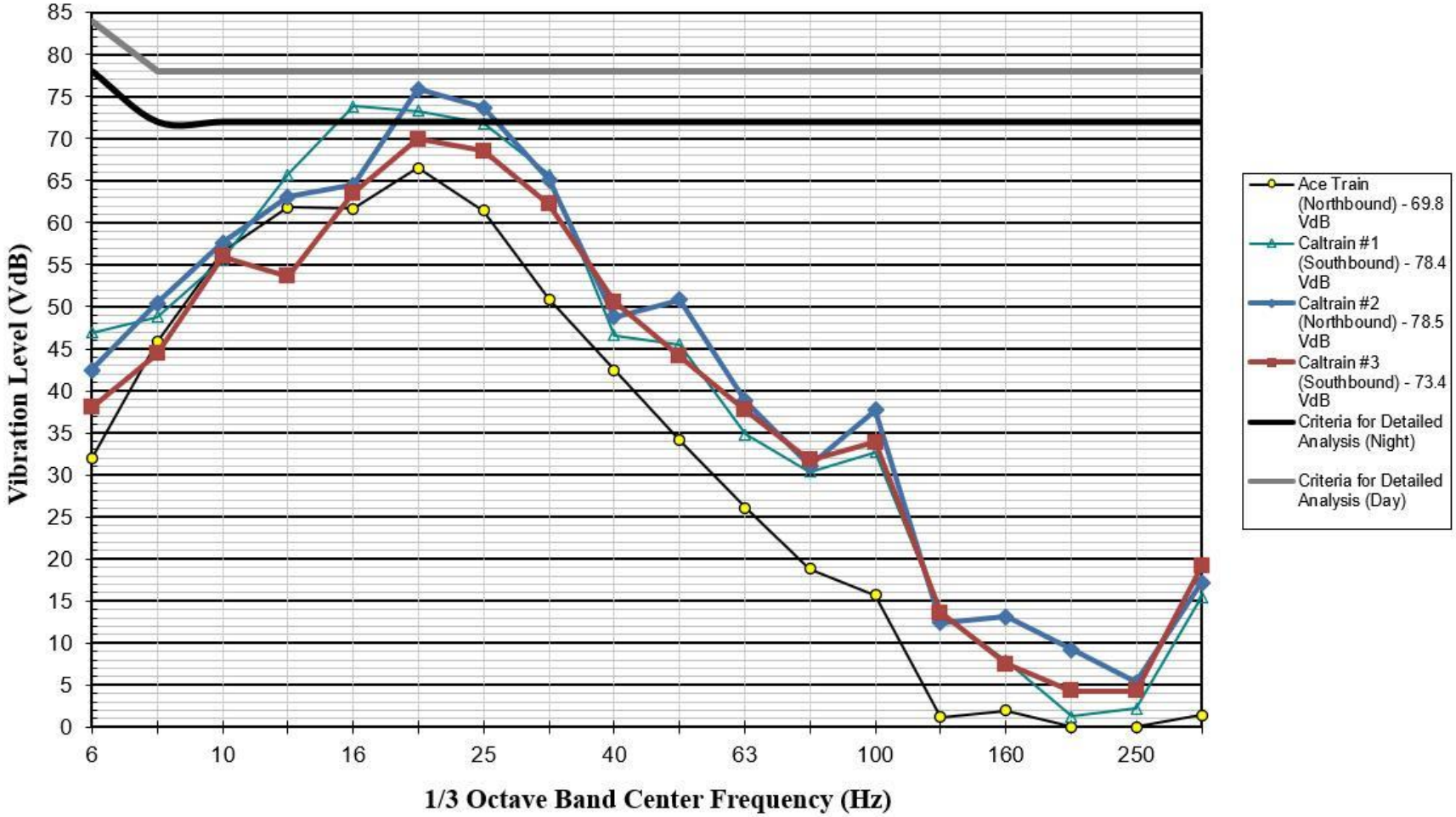

FIGURE 8 UPRR Heavy Rail Train Vibration Levels at V-2