

APPENDIX F

Noise and Vibration Assessment

1430 CHAPIN AVENUE NOISE AND VIBRATION ASSESSMENT

Burlingame, California

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Project: 25-120

INTRODUCTION

A new five-story office building is proposed at 1430 Chapin Avenue in Burlingame, California. The project would demolish the existing one-story office building, merge three lots of the 30,327 square foot parcel into a single lot, and construct a new five-story office building with two levels of below-grade parking. The proposed building would include 86,984 square feet of gross floor area, with 3,841 square feet of first-floor retail space and 83,143 square feet of office space on the remaining floors. The two levels of below-grade parking would include 86 parking spaces.

This report evaluates the project's potential to result in significant impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into three sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses ambient noise conditions in the project vicinity; 2) the Plan Consistency Analysis section discusses noise and land use compatibility utilizing the City's General Plan and the State's CALGreen Code; 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 reduce project impacts to a less-than-significant level.

SETTING

Fundamentals of Environmental Noise

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

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement that 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 tenfold 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 across a fairly wide range of intensities. Technical terms are defined in Table 1.

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 and 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 sounds 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 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 the addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after the 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.

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 acoustic 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 ± 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source. Close to the noise source, the models are accurate to within ± 1 -2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level (CNEL)* is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level (L_{dn} or DNL)* 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 CNEL. Typically, the highest steady traffic noise level during the daytime is about equal to the CNEL, 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.¹ Sleep and speech interference is therefore possible when exterior noise levels are about 57 to 62 dBA CNEL with open windows and 65 to 70 dBA CNEL if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials, while 65 to 70

¹ Based on the U.S. Department of Transportation Federal Highway Administration document "Highway Traffic Noise: Analysis and Abatement Guidance" (2010) and data from Illingworth & Rodkin, Inc. noise monitoring projects.

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.

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. To achieve an acceptable interior noise environment, bedrooms facing secondary roadways must be able to have their windows closed; those facing major roadways and freeways typically require 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 CNEL, 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 CNEL. At a CNEL of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the CNEL 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 CNEL of 60 and 70 dBA. Between a CNEL of 70 to 80 dBA, each decibel increase in the CNEL increases the percentage of the population highly annoyed by about 3 percent. People appear to respond more adversely to aircraft noise. When the CNEL 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.²

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.

² Kryter, Karl D. *The Effects of Noise on Man*. Menlo Park, Academic Press, Inc., 1985.

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.

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

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, which 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 of 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 vibrations, 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.

Regulatory Background - Noise

The State of California Environmental Quality Act (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.

Federal

Federal Transit Administration. The Federal Transit Administration (FTA) has identified construction noise thresholds in the *Transit Noise and Vibration Impact Assessment Manual*,³ which limits daytime construction noise to 80 dBA L_{eq} at residential land uses, to 85 dBA L_{eq} at commercial land uses, and to 90 dBA L_{eq} at industrial land uses.

State of California

State CEQA Guidelines. 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; or
- (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.

2025 California Building Cal Green Code. The State of California established exterior sound transmission control standards for new nonresidential buildings as set forth in the 2025 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 or addition envelope or altered 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} /CNEL noise contour of an airport or within the 65 dBA L_{dn} /CNEL noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source, as determined by the Noise Element of the General Plan.

³ Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, FTA Report No. 0123, September 2018.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dBA $L_{eq}(1-hr)$ during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance method. For buildings located, as defined by Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level ($L_{eq}(1-hr)$) 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.

San Mateo County

Airport Land Use Compatibility Plan (ALUCP) for the Environs of San Francisco International Airport 2012. The airport noise compatibility policies described in this section outline compatibility criteria for the proposed land use.

NP-2 Airport Noise/Land Use Compatibility Criteria. The compatibility of proposed land uses located in the Airport noise compatibility zones shall be determined according to the noise/land use compatibility criteria shown in Table IV-1. The criteria indicate the maximum acceptable airport noise levels, described in terms of Community Noise Equivalent Level (CNEL), for the indicated land uses. The compatibility criteria indicate whether a proposed land use is “compatible,” “conditionally compatible,” or “not compatible” within each zone, designated by the identified CNEL ranges.

- “Compatible” means that the proposed land use is compatible with the CNEL level indicated in the table and may be permitted without any special requirements related to the attenuation of aircraft noise.
- “Conditionally compatible” means that the proposed land use is compatible if the conditions described in Table IV-1 are met.
- “Not compatible” means that the proposed land use is incompatible with aircraft noise at the indicated CNEL level.

City of Burlingame

Community Safety Element of the Burlingame General Plan. The Safety Element of the General Plan includes a section on noise, which sets forth noise and land use compatibility standards (see Figure CS-2 below from the General Plan) to guide development and noise goals and policies to protect residents and visitors to Burlingame from excessive noise and disruptive ground vibration. The following goals and policies apply to this project:

Goal CS-4: Protect residents and visitors to Burlingame from excessive noise and disruptive ground vibration.

CS-4.3: Office Noise Level Standards. Require the design of new office developments and similar uses to achieve a maximum interior noise standard of 45 dBA L_{eq} (peak hour).

FIGURE CS-2:
NOISE CRITERIA

Land Use Category	Community Noise Exposure Ldn/CNEL, dB					
	55	60	65	70	75	80
Residential – Low Density Single Family, Duplex, Mobile Homes						
Residential – Multi. Family						
Transient Lodging – Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arenas, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Course, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing Utilities, Agriculture						



NORMALLY ACCEPTABLE

Specified land use is satisfactory based upon the assumption that most buildings involved are of normal conventional construction, without any special noise insulation requirements.



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. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.



NORMALLY UNACCEPTABLE

New construction or development should generally 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.



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken. 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.

CS-4.5: Noise Mitigation and Urban Design. Consider the visual impact of noise mitigation measures; require solutions that do not conflict with urban design goals and policies included in the General Plan.

CS-4.7: Airport and Heliport Noise. Monitor noise impacts from aircraft operations at San Francisco International Airport and Mills-Peninsula Medical Center, and implement applicable noise abatement policies and procedures as outlined in the Airport Noise Ordinance and Airport Land Use Compatibility Plan.

CS-4.10: Construction Noise Study. Require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on those uses consistent with Municipal Code provisions.

CS-4.13: Vibration Impact Assessment. Require a vibration impact assessment for proposed projects in which heavy-duty construction equipment would be used (e.g., pile driving, bulldozing) within 200 feet of an existing structure or sensitive receptor. If applicable, require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures or sensitive receptors would occur.

City of Burlingame Municipal Code. The Building Construction Section of the Municipal Code establishes allowable hours of construction in the City of Burlingame. Chapter 18.07.110 states:

“No person shall erect (including excavation and grading), demolish, alter or repair any building or structure other than between the hours of eight a.m. and seven p.m. on weekdays, and nine a.m. and six p.m. on Saturdays, except in circumstances where continuing work beyond legal hours is necessary to building or site integrity, including (but not limited to) large concrete pours, environmental considerations, state or federal requirements, or in cases where it is in the interest of public health and safety, and then only with written approval from the building official, which shall be granted for no longer than necessary to complete the portion of the project for which the exception was granted. No person shall erect (including excavation and grading), demolish, alter or repair any building or structure on Sundays or on holidays, except in the circumstances described earlier in this paragraph, and then only with written approval from the building official, which shall be granted for no longer than necessary to complete the portion of the project for which the exception was granted. For the purpose of this section, holidays are the days set forth in Section 13.04.100 of this code. The restrictions stated in this section shall not apply to work that does not require a permit under any applicable law or regulation, or to work that takes place inside a completely enclosed building and does not exceed the exterior ambient noise level per the BMC 25.58.050.

In the Bayfront Commercial (BFC), Innovative Industrial (I/I) and Rollins Road Mixed Use (RRMU) zones only, construction work may begin at seven a.m. instead of eight a.m. on weekdays. However, the use of chainsaws, jackhammers, pile-drivers or pneumatic impact wrenches shall be prohibited from seven a.m. to eight a.m., unless written approval is granted by the building official pursuant to an exception listed in the above paragraph.”

Regulatory Background – Vibration

California Department of Transportation. The California Department of Transportation recommends a vibration limit of 0.5 in/sec PPV for buildings structurally sound and designed to modern engineering standards, which typically consist of buildings constructed since the 1990s. A conservative vibration limit of 0.3 in/sec PPV is used for buildings that are found to be structurally sound, but where structural damage is a major concern (see Table 3 above for further explanation). For historical buildings or some older buildings, a vibration limit of 0.25 in/sec PPV would apply.

Existing Noise Environment

The project site is located at 1430 Chapin Avenue in Burlingame, California. The project site is bound by Chapin Avenue to the south, office buildings to the east and west, and residential uses to the north. Additional offices and commercial uses are located south of Chapin Avenue.

The noise environment at the site and in the surrounding area results primarily from vehicular traffic along State Route 82 (El Camino Real) and local traffic along Chapin Avenue and other nearby roadways. Aircraft associated with San Francisco International Airport also contribute to the existing noise environment.

A noise monitoring survey consisting of two long-term (LT-1 and LT-2) and one short-term (ST-1) noise measurements was conducted between Monday, December 15, 2025, and Wednesday, December 17, 2025. All measurement locations are shown in Figure 1.

Long-term noise measurement LT-1 was made in the southeastern corner of the project site, approximately 55 feet from the centerline of Chapin Avenue. Hourly average noise levels at LT-1 typically ranged from 58 to 66 dBA L_{eq} during the day (between 7:00 a.m. and 7:00 p.m.), from 55 to 58 dBA L_{eq} during evening hours (7:00 p.m. to 10:00 p.m.), and from 48 to 64 dBA L_{eq} at night (between 10:00 p.m. and 7:00 a.m.). The community noise equivalent level on Tuesday, December 16, 2025, was 62 dBA CNEL. The daily trend in noise levels at LT-1 is shown in Figures A1 through A3 of Appendix A.

LT-2 measured noise levels in the northwestern corner of the project site, representing the existing noise environment of the existing receptors to the north. LT-2 was set back approximately 190 feet from the centerline of Chapin Avenue. Hourly average noise levels at this location typically ranged from 52 to 60 dBA L_{eq} during the day, from 50 to 54 dBA L_{eq} in the evening, and from 45 to 55 dBA L_{eq} at night. The community noise equivalent level on Tuesday, December 16, 2025, was 58 dBA CNEL. The daily trend in noise levels at LT-2 is shown in Figures A4 through A6 of Appendix A.

ST-1 was made in the southwestern corner of the site, approximately 65 feet from the centerline of Chapin Avenue. Traffic noise from Chapin Avenue was the dominant noise source at ST-1 and consisted of 49 passenger cars (53 to 64 dBA) and one motorcycle (63 dBA). Additional noise contributors included a jet (54 dBA) and parking lot activities, such as car horns (63 to 65 dBA) and car door slamming (68 dBA). The 10-minute average noise level measured at ST-1 was 56 dBA L_{eq} , as summarized in Table 4.

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

Noise Measurement Location	Date, Time	Measured Noise Level, dBA					
		L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
ST-1: ~65 feet from the Chapin Avenue centerline	12/15/2025, 13:20-13:30	68	64	60	54	51	56

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



Source: Google Earth 2025.

PLAN CONSISTENCY ANALYSIS

Noise and Land Use Compatibility

The Noise Element of the General Plan sets forth noise and land use compatibility standards to guide development, and noise goals and policies to protect residents and visitors to Burlingame from excessive noise. Noise levels up to 65 dBA $L_{dn}/CNEL$ are considered normally acceptable with office land uses. Policy CS-4.3 requires that new office interiors meet the performance standard of 45 dBA L_{eq} during the peak hour. Additionally, the CALGreen Code standards specify an interior noise environment attributable to exterior sources not to exceed an hourly equivalent noise level (L_{eq}) of 50 dBA in occupied areas of nonresidential uses during any hour of operation.

The future noise environment at the project site would continue to result primarily from vehicular traffic along nearby State Route 82 and other local roadways surrounding the site.

While a full traffic study was not required for the proposed project, 113 peak hour trips would be expected during the AM and PM peak hours as a result of the project. However, compared with the existing peak-hour traffic volumes along Chapin Avenue, these peak-hour trips would result in a CNEL increase of less than 1 dBA.

To estimate the future permanent noise level increase, a 1% to 2% traffic increase per year through 2046 was estimated. This increase is typical for a built-out area. The increase in noise level by 2046 was calculated to be 2 dBA CNEL. This increase was applied throughout the project site to represent worst-case conditions.

Future Exterior Noise Environment

The site plan shows outdoor seating areas on the ground level at the front and rear of the proposed building. Outdoor terraces are located at the front and rear of the building on Levels 2 through 5.

Each of the outdoor use areas located at the rear of the building would be well shielded from the surrounding traffic noise. Future exterior noise levels at the rear outdoor use areas would be below 65 dBA CNEL.

The centers of each outdoor use area at the front of the proposed building would range from 45 to 75 feet from the centerline of Chapin Avenue. The elevations of the outdoor terraces would provide partial shielding for the outdoor use areas (minimum attenuation of 5 dBA). Future exterior noise levels at the centers of the outdoor use areas at the front of the building would be below 65 dBA CNEL.

All outdoor use areas associated with the proposed project would be compatible with the future exterior noise environment at the project site. No additional noise control measures would be required.

Future Interior Noise Environment

The southern façade of the proposed building would be set back approximately 35 feet from the centerline of Chapin Avenue. At this distance, daytime hourly average noise levels would range from 59 to 69 dBA L_{eq} at the exterior building façades, with community noise equivalent level up to 66 dBA CNEL.

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} .

Spaces where lower noise levels would be desired, such as private offices and conference rooms, may benefit from additional noise control in order to meet a lower, more desirable interior noise level. Additional noise control could be accomplished by selecting higher sound-rated windows (STC 34 or greater along exterior façades).

NOISE IMPACTS AND MITIGATION MEASURES

Significance Criteria

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

- (a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- (b) Generation of excessive groundborne vibration or groundborne noise levels;
- (c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

Impact 1a: Temporary Construction Noise. Project construction would temporarily increase noise levels at the surrounding noise-sensitive land uses above the FTA's thresholds. With the incorporation of Mitigation Measure J-1 from the Burlingame Downtown Specific Plan Initial Study/Mitigated Negative Declaration as a project condition of approval, the temporary construction impact would be reduced to a **less-than-significant** level.

Construction of the proposed project is expected to start at the beginning of July 2026 and would be concluded by the end of August 2027, lasting for a total of about 14 months.

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.

While noise thresholds for temporary construction are not provided in the City's General Plan or Municipal Code, this analysis uses the noise limits established by the Federal Transit Administration (FTA) to identify the potential for impacts due to substantial temporary construction noise. The FTA identifies construction noise limits in the *Transit Noise and Vibration Impact Assessment Manual*.¹ During daytime hours, an exterior threshold of 80 dBA L_{eq} shall be applied at residential land uses, 85 dBA L_{eq} shall be applied at commercial land uses, and 90 dBA L_{eq} shall be applied at industrial land uses.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The hauling of excavated materials and construction materials would generate truck trips on local roadways, as well. For the proposed project, pile driving is not proposed. The typical range of maximum instantaneous noise levels for the proposed project would be 70 to 90 dBA L_{max} at a distance of 50 feet (see Table 5) from the equipment.

TABLE 5 Construction Equipment 50-foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)^{1,2}	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor ³	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous

Equipment Category	L _{max} Level (dBA) ^{1,2}	Impact/Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:

¹ Measured at 50 feet from the construction equipment, with a “slow” (1 sec.) time constant.

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

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

Table 6 shows the hourly average noise level ranges, by construction phase, typical for various types of projects. Hourly average noise levels generated by construction are about 75 to 89 dBA L_{eq} for office 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 results in lower construction noise levels at distant receptors.

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

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

I - All pertinent equipment present at site.

II - Minimum required equipment present at site.

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

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

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

TABLE 7 Construction Noise Levels for the Proposed Project at a Distance of 50 feet

Phase of Construction	Total Number of Workdays	Construction Equipment (Quantity)	Construction Noise Level at 50 feet, dBA L_{eq}
Demolition	10	Concrete/Industrial Saw (1) ^a Rubber-Tired Dozer (1) ^a Excavator (1)	84
Site Preparation	1	Tractor/Loader/Backhoe (1) ^a	80
Grading/Excavation	103	Grader (1) ^a Excavator (1) ^a	82
Trenching/ Foundation	49	Excavator (1) ^a	77
Building – Exterior	110	Crane (1) ^a Forklift (1) Welder (1) ^a	75
Building – Interior	136	Air Compressor (1) ^a Aerial Lift (1) ^a	75
Paving	15	Cement & Mortar Mixer (1) ^a Tractor/Loader/Backhoe (1) ^a	81

^a Denotes two loudest pieces of construction equipment per phase.

To assess construction noise impacts at the receiving property lines of existing noise-sensitive receptors, the worst-case hourly average noise level, which is calculated by combining all pieces of equipment per phase, was propagated from the geometrical center of the project buildings to the nearest property lines of the surrounding land uses. These noise level estimates are shown in Table 8. Noise levels in Table 8 do not assume reductions due to intervening buildings or existing barriers.

TABLE 8 Construction Noise Levels for the Proposed Project at the Property Lines of Receptors Surrounding the Project Site

Phase	Calculated Hourly Average L_{eq} , dBA			
	North Res. (95ft)	East Offices (80ft)	South Offices & Comm. Uses (180ft)	West Offices (80ft)
Demolition	79	81	74	81
Site Preparation	74	76	69	76
Grading/Excavation	80	82	75	82
Trenching	71	73	66	73
Building-Exterior	70	71	64	71
Building-Interior/ Architectural Coating	69	71	64	71
Paving	76	77	70	77

As shown in Table 7, construction noise levels would intermittently range from 75 to 84 dBA L_{eq} when activities occur 50 feet from nearby receptors. When focused near the center of the project buildings, construction noise levels would typically range from 69 to 80 dBA L_{eq} at the

surrounding residential receptors and from 64 to 82 dBA L_{eq} at the surrounding commercial retail uses.

While construction noise levels would not exceed the FTA's 85 dBA L_{eq} threshold at the surrounding commercial uses, construction noise levels would potentially exceed the exterior threshold of 80 dBA L_{eq} at the residential uses adjoining the site to the north by up to 4 dBA when construction activities occur within 50 feet of the shared property line. As the project falls within the Burlingame Downtown Specific Plan Initial Study/Mitigated Negative Declaration,⁴ Mitigation Measure J-1 shall be incorporated into the project as a project condition of approval. Mitigation Measure J-1 states the following:

J-1. Implement Best Management Practices to Reduce Construction Noise. The City shall incorporate the following practices into the construction documents to be implemented by the project contractor.

- Maximize the physical separation between noise generators and noise receptors. Such separation includes, but is not limited to, the following measures:
 - Use heavy-duty mufflers for stationary equipment and barriers around particularly noisy areas of the site or around the entire site;
 - Use shields, impervious fences, or other physical sound barriers to inhibit transmission of noise to sensitive receptors;
 - Locate stationary equipment to minimize noise impacts on the community; and
 - Minimize backing movements of equipment.
- Use quiet construction equipment whenever possible.
- Impact equipment (e.g., jack hammers and pavement breakers) shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically-powered tools. Compressed air exhaust silencers shall be used on other equipment. Other quieter procedures, such as drilling rather than using impact equipment, shall be used whenever feasible.
- Prohibit unnecessary idling of internal combustion engines.
- Select routes for movement of construction-related vehicles and equipment in conjunction with the Burlingame Community Development Department so that noise-sensitive areas, including residences and schools, are avoided as much as possible.
- The project sponsor shall designate a “disturbance coordinator” for construction activities. The coordinator would be responsible for responding to any local complaints regarding

⁴ PBS&J, “Burlingame Downtown Specific Plan Initial Study/Mitigated Negative Declaration,” May 27 2010.

construction noise and vibration. The coordinator would determine the cause of the noise or vibration complaint and would implement reasonable measures to correct the problem.

- The construction contractor shall send advance notice to neighborhood residents within 50 feet of the project site regarding the construction schedule and including the telephone number for the disturbance coordinator at the construction site.

Implementing the above measures would reduce construction noise from the site, limit construction hours, and minimize disruption and annoyance. By incorporating these measures as project conditions of approval and recognizing that construction-related noise will occur for a temporary period, the temporary increase in ambient noise levels would be reduced to a less-than-significant level.

Mitigation Measure 1a: No further mitigation required.

Impact 1b: Permanent Noise Level Increase/Exceed Applicable Standards. The proposed project would not result in a substantial permanent noise level increase at receptors in the project vicinity. Operational noise levels generated by the proposed project would not exceed the City's Municipal Code thresholds. This is a **less-than-significant** impact.

A significant impact would occur if the permanent noise level increase due to project-generated traffic was 3 dBA CNEL or greater for future ambient noise levels exceeding 60 dBA CNEL or was 5 dBA CNEL or greater for future ambient noise levels at or below 60 dBA CNEL. Existing ambient measurements made in the project site vicinity indicate that existing and future ambient noise levels at the noise-sensitive receptors in the project site vicinity would result in noise levels over 60 dBA CNEL. Therefore, a significant impact would occur if project-generated traffic and operations increased levels by 3 dBA CNEL or more.

The City of Burlingame does not establish hourly average noise level performance standards (L_{eq}) for on-site operations. While the City's General Plan includes 24-hour average noise criteria (CNEL) for designing new projects (i.e., Figure CS-2), hourly average noise performance standards are more conservative, as they account for short-term noise variations that CNEL would mask. Therefore, on-site project-generated operations producing noise levels exceeding existing ambient conditions by 3 dBA L_{eq} or more would result in a significant impact.

For receptors located along Chapin Avenue (including the east offices, south offices and commercial uses, and west offices), existing hourly average noise levels range from 58 to 66 dBA L_{eq} (average of 61 dBA L_{eq}) during daytime hours, from 55 to 58 dBA L_{eq} (average of 57 dBA L_{eq}) during evening hours, and from 48 to 64 dBA L_{eq} (average of 54 dBA L_{eq}) during nighttime hours. Conservatively, a significant impact would occur if project-generated operations produced noise levels of 64 dBA L_{eq} between 7:00 a.m. and 7:00 p.m., 60 dBA L_{eq} between 7:00 p.m. and 10:00 p.m., or 57 dBA L_{eq} between 10:00 p.m. and 7:00 a.m. at these receptors.

For the north residential uses, which are set back approximately 225 feet from the centerline of Chapin Avenue, existing hourly average noise levels range from 52 to 60 dBA L_{eq} (average of 55 dBA L_{eq}) during daytime hours, from 50 to 54 dBA L_{eq} (average of 52 dBA L_{eq}) during evening

hours, and from 45 to 55 dBA L_{eq} (average of 50 dBA L_{eq}) during nighttime hours. A significant impact would occur if project-generated operations produced noise levels of 58 dBA L_{eq} between 7:00 a.m. and 7:00 p.m., 55 dBA L_{eq} between 7:00 p.m. and 10:00 p.m., or 53 dBA L_{eq} between 10:00 p.m. and 7:00 a.m. at the north residences.

Project Traffic Increase

A traffic study was not required for the proposed project; however, peak hour trips generated by the proposed project would be 113 during both peak AM and peak PM hours. Compared to the existing volumes along Chapin Avenue and the existing noise environment at the project site, these peak hour trips would result in a noise level increase of less than 1 dBA CNEL. This impact is a less-than-significant impact.

Mechanical Equipment

The site plan shows a transformer located on the exterior of the proposed building in the southwestern corner of the project site. Additionally, the roof shows a mechanical equipment area, which likely includes condensing units, though the exact number of units and the specific manufacturer of the units is unknown at this time.

Typically, transformers up to 1,000 kVA generate noise levels up to 64 dB, as measured at 1 meter (about 3 feet). Due to the location of the transformer, receptors to the north and east would be well shielded from transformer noise at the project site. No attenuation is assumed for the south and west receptors.

Typical condensing units for office buildings would generate noise levels ranging from 56 to 66 dBA at a distance of 3 feet. Assuming up to 5 condensing units running continuously in the same general vicinity of the rooftop, hourly average noise levels would range from 63 to 73 dBA L_{eq} at a distance of 3 feet, and the community noise equivalent level would be up to 80 dBA CNEL at 3 feet. Due to the height of the rooftop being about 74.5 feet above the ground and the units being 10 to 60 feet from the edge of the rooftop, minimum attenuations would be 15 dBA at the surrounding offsite receptors, including the elevated receptors located on the second and third floors of the surrounding buildings.

Table 9 summarizes the operational mechanical equipment noise generated at the project site and propagated to the surrounding land uses.

Based on the estimated noise levels in Table 9, hourly average noise levels generated by mechanical equipment at the project site would not exceed the City's daytime, evening, or nighttime ambient noise levels by 3 dBA L_{eq} or more at the surrounding land uses. For the nearby noise-sensitive receptors, the noise level increase due to mechanical equipment noise would not be measurable or detectable (0 dBA CNEL increase). This would not exceed the conservative 3 dBA CNEL threshold.

TABLE 9 Operational Noise Levels for Mechanical Equipment Generated at the Proposed Project Site

Receptor	Transformer		Rooftop Equipment		Total Combined		
	Distance from Center of the Transformer Pad, feet	L _{eq} , dBA	Distance from Center of Nearest Equipment, feet	L _{eq} , dBA	L _{eq} , dBA	CNEL, dBA	Noise Level Increase, dBA CNEL
North Residential Uses	--		90	28 ^a	28	35	0
East Offices	--		25	40 ^a	40	46	0
South Offices & Commercial Uses	95	34	185	22 ^a	34	41	0
West Offices	10	54	30	38 ^a	54	60	0

^a Minimum 15 dBA attenuation applied to noise levels due to rooftop elevation and setbacks of 10 to 60 feet.

Total Combined Project-Generated Noise

The operational noise levels produced by the proposed project combined (i.e., traffic and mechanical equipment) would not result in a measurable noise level increase (i.e., 0 dBA CNEL) at all existing noise-sensitive receptors in the project vicinity. Therefore, the proposed project would not result in a substantial increase over ambient noise levels in the project vicinity.

Operational noise levels due to mechanical equipment would not exceed the City's ambient noise levels by 3 dBA L_{eq} or more. This is a less-than-significant impact.

Mitigation Measure 1b: None required.

Impact 2: Exposure to Excessive Groundborne Vibration. Construction-related vibration levels would potentially exceed applicable vibration thresholds at the nearest office buildings adjoining the site. With the incorporation of Mitigation Measure J-2 as project condition of approval, the groundborne vibration impact would be reduced to 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 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.

The California Department of Transportation (Caltrans) recommends a vibration limit of 0.5 in/sec PPV for new residential and modern commercial/industrial structures, which typically consist of buildings constructed since the 1990s. A vibration limit of 0.3 in/sec PPV is used for older residential structures, which would apply to most structures built since the 1940s. For historical buildings or some older buildings, a vibration limit of 0.25 in/sec PPV would apply. These vibration limits are conservative and designed to provide protection for existing buildings in California. 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.

The office building adjoining the site to the west of the project site is considered to be a structure built to modern construction standards, and the 0.5 in/sec PPV threshold would apply to vibration generated by project construction at this building. Conservatively, the 0.3 in/sec PPV threshold would be applied to the remaining buildings surrounding the site. There are no known historic buildings located within 200 feet of the project site.

Table 10 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. 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 10 also summarizes the distances to the 0.3 in/sec PPV threshold for older conventional buildings and to the 0.5 in/sec PPV threshold for newer buildings constructed to modern standards.

TABLE 10 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft. (in/sec)	Minimum Distance to Meet 0.3 in/sec PPV (feet)	Minimum Distance to Meet 0.5 in/sec PPV (feet)
Clam shovel drop		0.202	18	11
Hydromill (slurry wall)	in soil	0.008	1	<1
	in rock	0.017	2	2
Vibratory Roller		0.210	19	12
Hoe Ram		0.089	9	6
Large bulldozer		0.089	9	6
Caisson drilling		0.089	9	6
Loaded trucks		0.076	8	5
Jackhammer		0.035	4	4
Small bulldozer		0.003	<1	<1

Source: Transit Noise and Vibration Impact Assessment Manual, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, September 2018, as modified by Illingworth & Rodkin, Inc., November 2025.

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 the potential for damage to buildings on receiving land uses, not at receptors at the nearest property lines.

The residential buildings to the north would be approximately 20 feet from the nearest project site boundary and would be exposed to vibration levels below 0.27 in/sec PPV. Additionally, the nearest building south of Chapin Avenue would be approximately 95 feet from the nearest project site boundary and would be exposed to vibration levels below 0.05 in/sec PPV.

The office buildings to the east and west are 15 and 5 feet, respectively, from the shared property lines. Table 11 summarizes the vibration levels expected at these buildings. Note that the vibration levels in Table 11 represent the worst-case scenario when each piece of equipment would operate along the shared property lines.

TABLE 11 Construction Vibration Levels at the Nearest Office Buildings Adjoining the Project Site

Phase	Equipment	PPV at 25 ft., in/sec	Vibration Levels at the Nearest Adjoining Buildings	
			East Office Building (15ft)	West Office Building (5ft)
Demolition	Concrete/Industrial Saw	0.035	0.061	0.206
	Excavator	0.089	0.156	0.523
	Rubber-Tired Dozer	0.089	0.156	0.523
Site Preparation	Tractor/Loader/Backhoe	0.003	0.005	0.018
Grading/Excavation	Excavator	0.089	0.156	0.523
	Grader	0.089	0.156	0.523
Trenching/Foundation	Excavator	0.089	0.156	0.523
Building – Exterior	Crane	0.003	0.005	0.018
	Forklift	0.003	0.005	0.018
	Welder	0.003	0.005	0.018
Building – Interior/Architectural Coating	Air Compressor	0.003	0.005	0.018
	Aerial Lift	0.003	0.005	0.018
Paving	Cement & Mortar Mixer	0.003	0.005	0.018
	Tractor/Loader/Backhoe	0.003	0.005	0.018

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., January 2026.

Project construction activities may generate vibration levels up to 0.5 in/sec PPV at the nearest west office building adjacent to the site when excavators, dozers, and graders are used along the shared property line. A study completed by the US Bureau of Mines analyzed the effects of blast-induced vibration on buildings in USBM RI 8507.⁵ The findings of this study have been applied to buildings affected by construction-generated vibrations.⁶ As reported in USBM RI 8507⁵ and reproduced by Dowding,⁶ Figure 2 presents the damage probability, in terms of “threshold damage” (described above as cosmetic damage), “minor damage,” and “major damage,” at varying vibration levels.

Neither cosmetic, minor, nor major damage would occur at the conventional (i.e., non-historic) buildings located 15 feet or more from the project site, as well as buildings farther than 200 feet from the site, during use of typical construction activities. 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

⁵ Siskind, D.E., M.S. Stagg, J.W. Kopp, and C.H. Dowding, Structure Response and Damage Produced by Ground Vibration from Surface Mine Blasting, RI 8507, Bureau of Mines Report of Investigations, U.S. Department of the Interior Bureau of Mines, Washington, D.C., 1980.

⁶ Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

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.

As shown in Figure 2, no minor or major damage would be expected at the buildings immediately adjoining the project site to the south. However, Figure 2 also indicates that maximum vibration levels of 0.5 in/sec PPV or lower would result in about 5% chance of cosmetic damage. Although pile driving is not expected to be used during construction of the project, the use of excavators, dozers, and graders during construction of the project would potentially generate vibration levels exceeding the 0.5 in/sec PPV due to the close proximity of the adjacent office building to the project site.

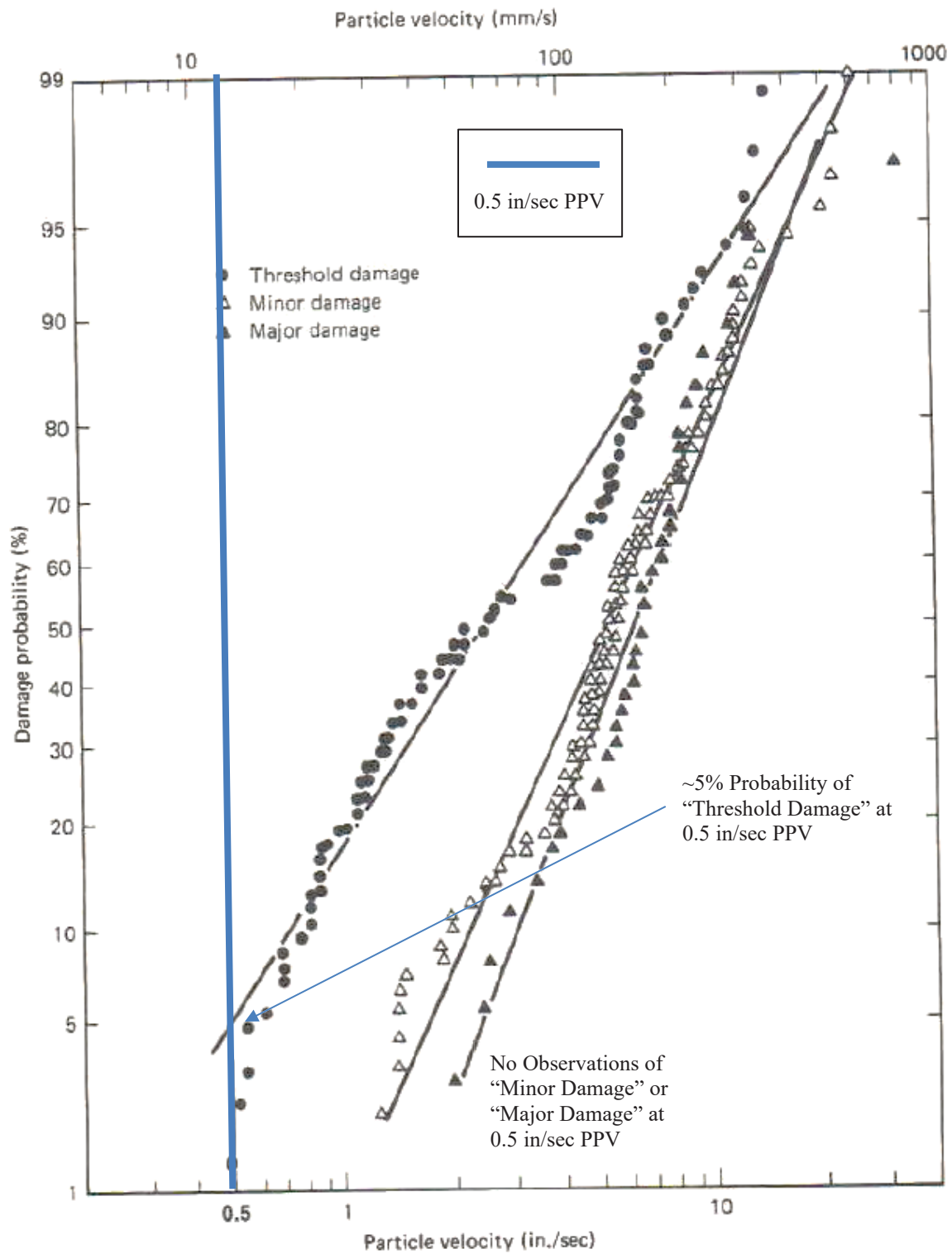
The Burlingame Downtown Specific Plan included Mitigation Measure J-2 for construction vibration, which shall be incorporated into the proposed project as a condition of approval. Mitigation Measure J-2 states the following:

J-2 Implement Measures to Reduce Construction Vibration. The City shall require project sponsors to incorporate the following practice into the construction documents to be implemented by construction contractors:

The project sponsors shall require that loaded trucks and other vibration-generating equipment avoid areas of the project site that are located near existing residential uses to the maximum extent compatible with project construction goals.

For the 1430 Chapin Avenue Project, Mitigation Measure J-2 shall apply to all adjoining buildings. Specifically, the use of large excavators, dozers, and graders shall be avoided within 20 feet of the west office buildings. The required setback for this equipment will be marked on site, and all relevant contractors shall be notified of these exclusion zones. The use of mini excavators and skid steers is not expected to generate vibration levels exceeding thresholds at any location on the project site. Such equipment shall be substituted for equipment producing vibration levels above the thresholds. With the incorporation of this mitigation measure as a project condition of approval, the impact would be reduced to a less-than-significant level.

FIGURE 2 Probability of Cracking and Fatigue from Repetitive Loading



Source: Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

Impact 3: Excessive Aircraft Noise. The project site is located over 2.2 miles from San Francisco International Airport, and the noise environment attributable to aircraft would be compatible under the ALUC. This would be a **less-than-significant** impact.

San Francisco International Airport is a public-use airport located over 2.2 miles north of the project site. Based on the results of the noise monitoring survey (see Setting Section), aircraft-related noise is noticeable at the project site; however, the project site lies outside the 65 dBA CNEL noise contour shown in the Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport⁷ (see Figure 3) and the 65 dBA CNEL noise contour shown in the San Francisco International Airport 14 CFR Part 150 Study⁸ (see Figure 4). Aircraft noise levels less than 70 dBA CNEL would be considered compatible at exterior use areas proposed by the project.

Mitigation Measure 3: None required.

⁷ Ricondo & Associates, Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport, November 2012.

⁸ ESA, San Francisco International Airport 14 Code of Federal Regulations (CFR) Part 150 Study Update Noise Compatibility Program, July 2018.

FIGURE 3 Forecast 2015 and 2020 Noise Exposure for SFO Relative to Project Site

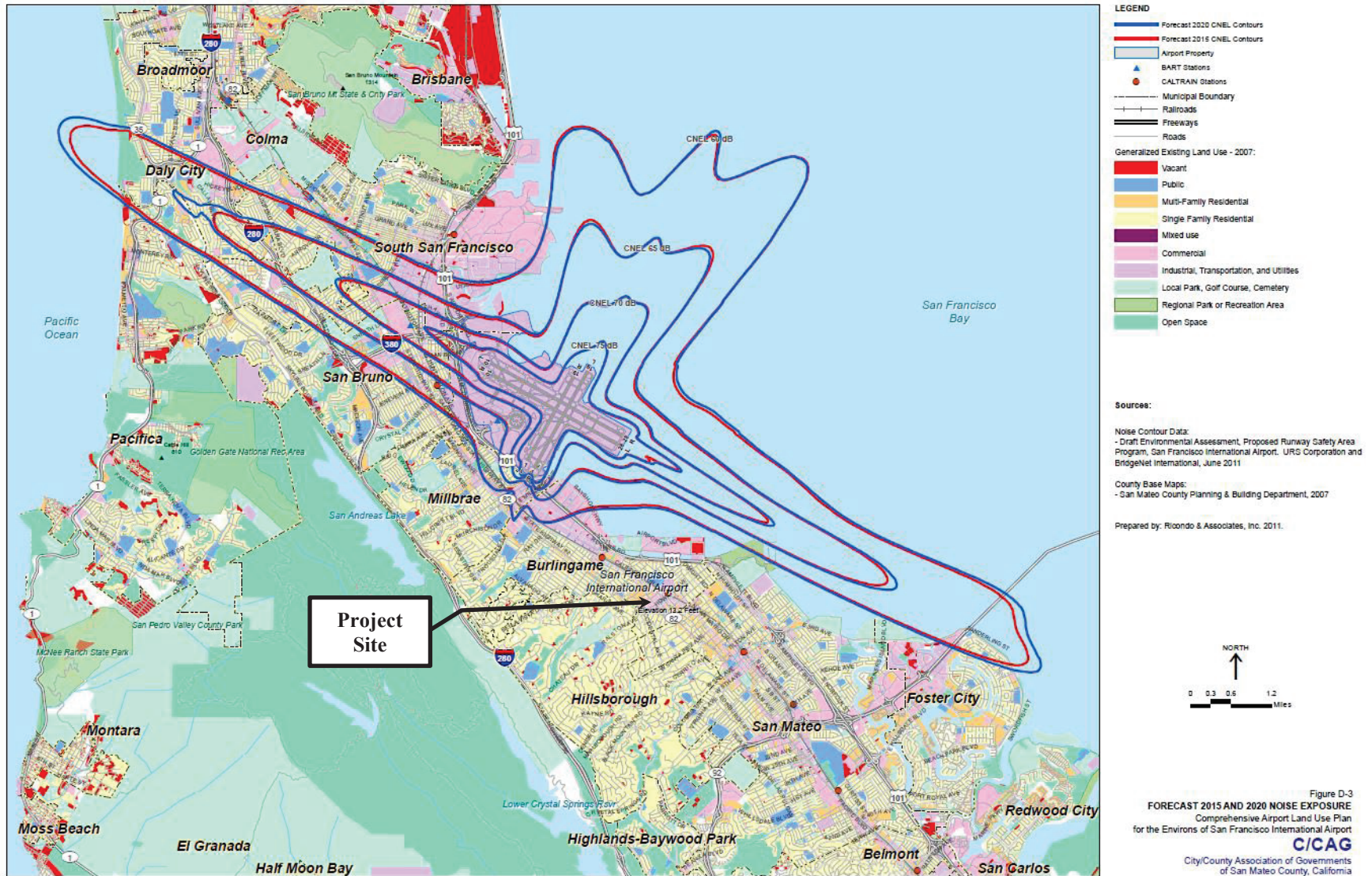
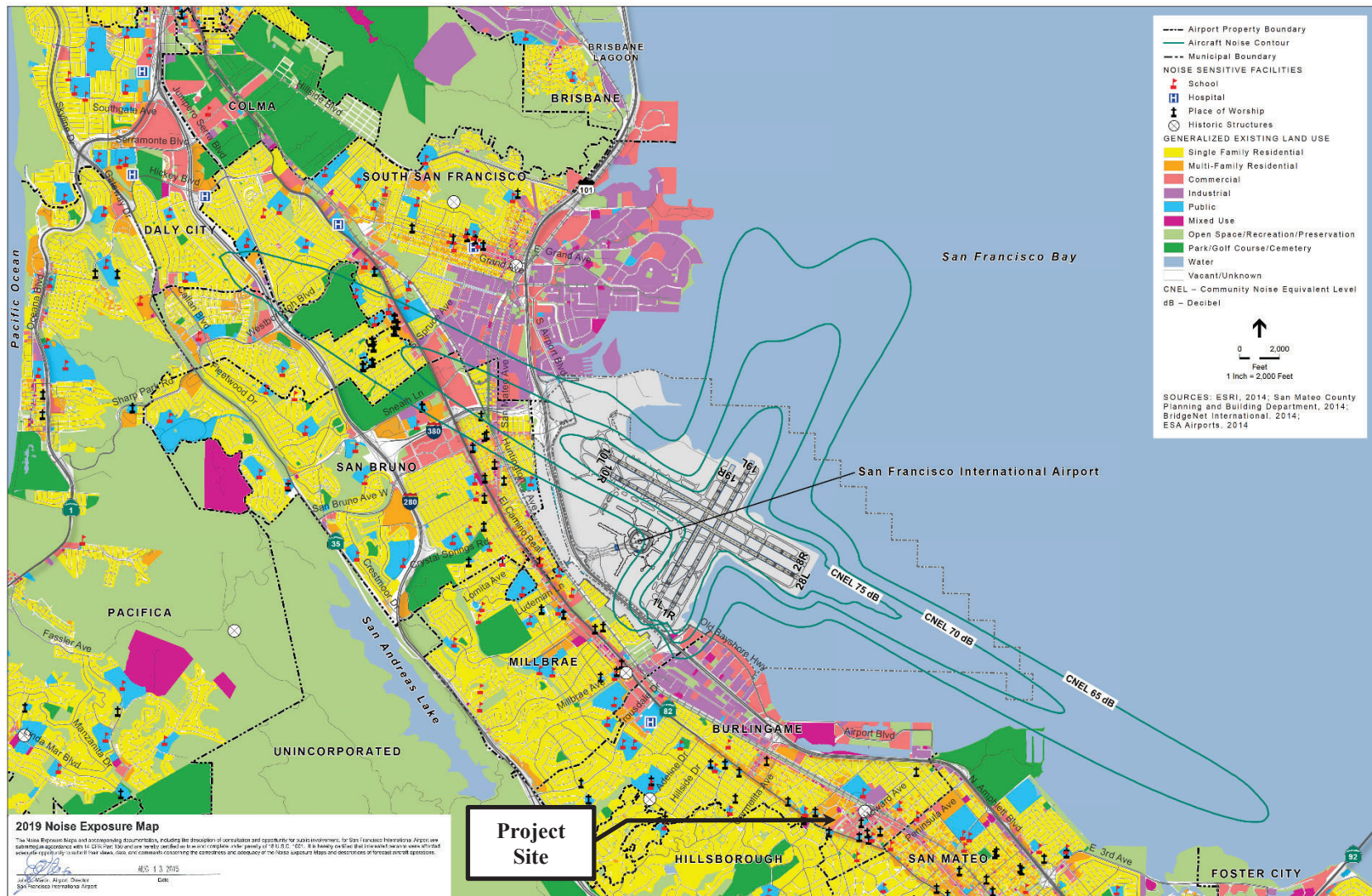


FIGURE 4 2019 Noise Exposure for SFO Relative to Project Site



Cumulative Impacts

Cumulative noise impacts would include either cumulative increases in traffic noise under future conditions or temporary construction noise from cumulative construction projects.

A significant cumulative traffic noise increase would occur if two criteria are met: 1) if the cumulative traffic noise level increase was 3 dBA CNEL or greater for future levels exceeding 60 dBA CNEL or was 5 dBA CNEL or greater for future levels at or below 60 dBA CNEL; and 2) if the project would make a “cumulatively considerable” contribution to the overall traffic noise increase. A “cumulatively considerable” contribution would be defined as an increase of 1 dBA CNEL or more attributable solely to the proposed project.

The traffic study did not include peak hour turning movements for the cumulative (no project) or cumulative plus project scenarios. However, given that the peak hour trips generated by the proposed project would range from 109 to 117 during both peak AM and peak PM hours, these trips are insignificant relative to existing volumes. It is assumed that these peak hour trips would be insignificant under future cumulative conditions, as well. Therefore, the project is not expected to result in a significant increase in cumulative traffic noise. This is a less-than-significant impact.

From the City’s website,⁹ the following planned or approved projects are located within 1,000 feet of the project site:

- **556 El Camino Real** – this approved project is located about 950 feet west of the project site and would include a new five-story, 21-unit residential condominium building. These two project sites would not share noise-sensitive receptors with direct exposure to construction noise. This would not result in a cumulative construction impact.
- **123-135 Primrose Road** – this approved project is located about 895 feet southeast of the project site and would include a new five-story, 21-unit residential condominium building. These two project sites would not share noise-sensitive receptors with direct exposure to construction noise. This would not result in a cumulative construction impact.

Since neither project located within 1,000 feet of the proposed project site would share noise-sensitive receptors with 1430 Chapin Avenue, there would not be a cumulative construction impact.

⁹ <https://missioncity.maps.arcgis.com/apps/MapTour/index.html?appid=5afdbed13fad458cb6288c46a0bad060>

APPENDIX A

FIGURE A1 Daily Trend in Noise Levels for LT-1, Monday, December 15, 2025

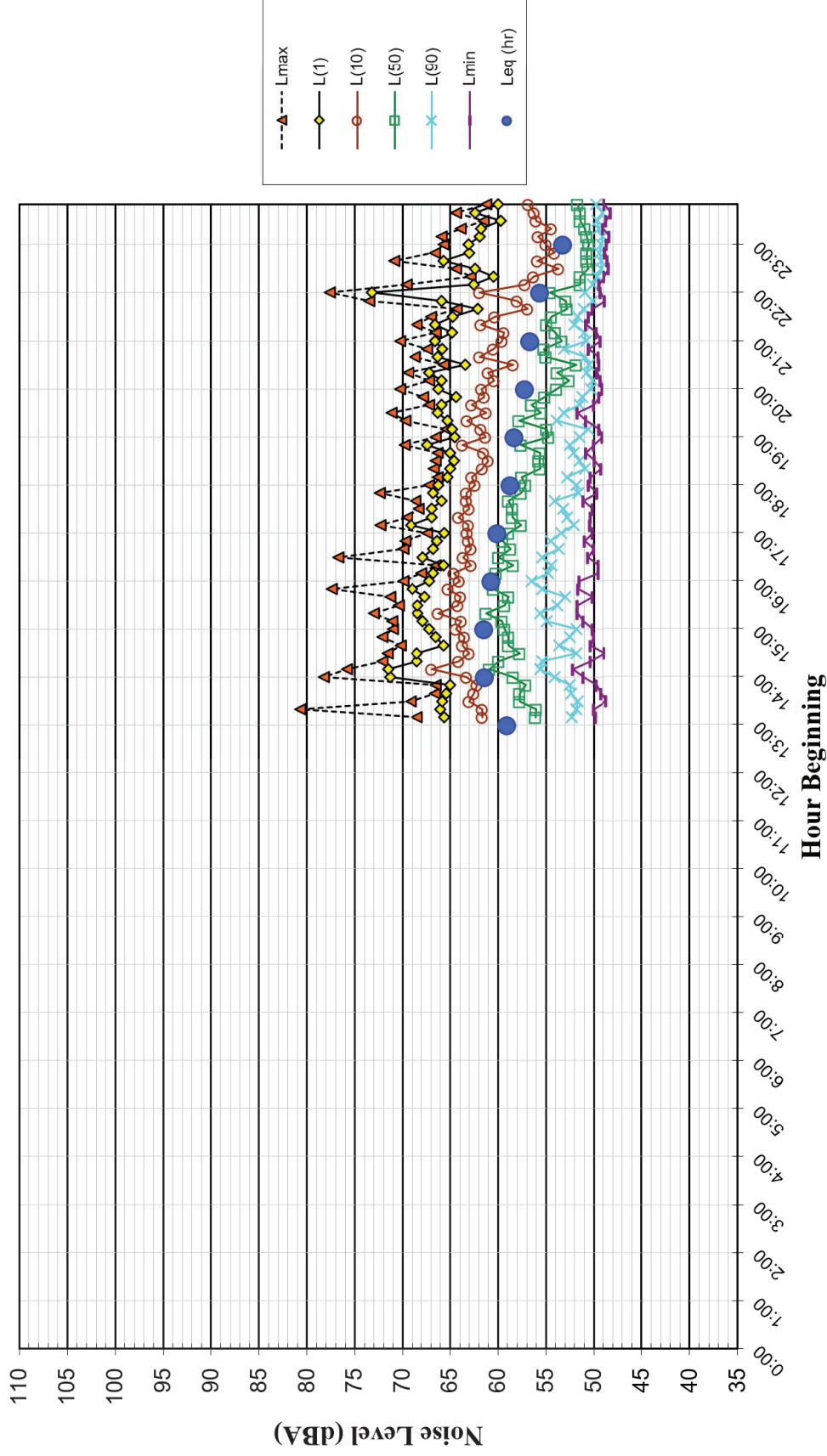


FIGURE A2 Daily Trend in Noise Levels for LT-1, Tuesday, December 16, 2025

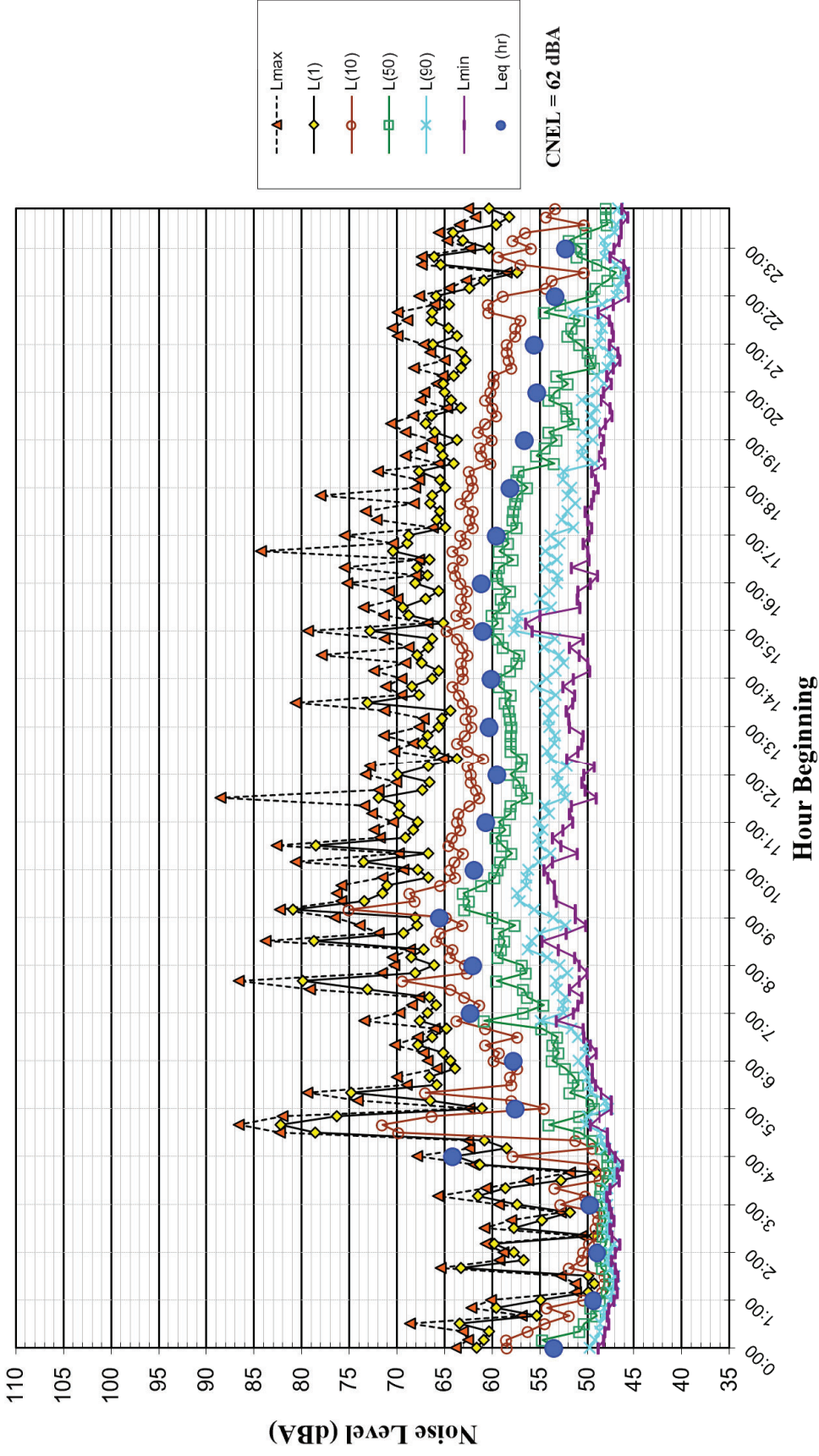


FIGURE A3 Daily Trend in Noise Levels for LT-1, Wednesday, December 17, 2025

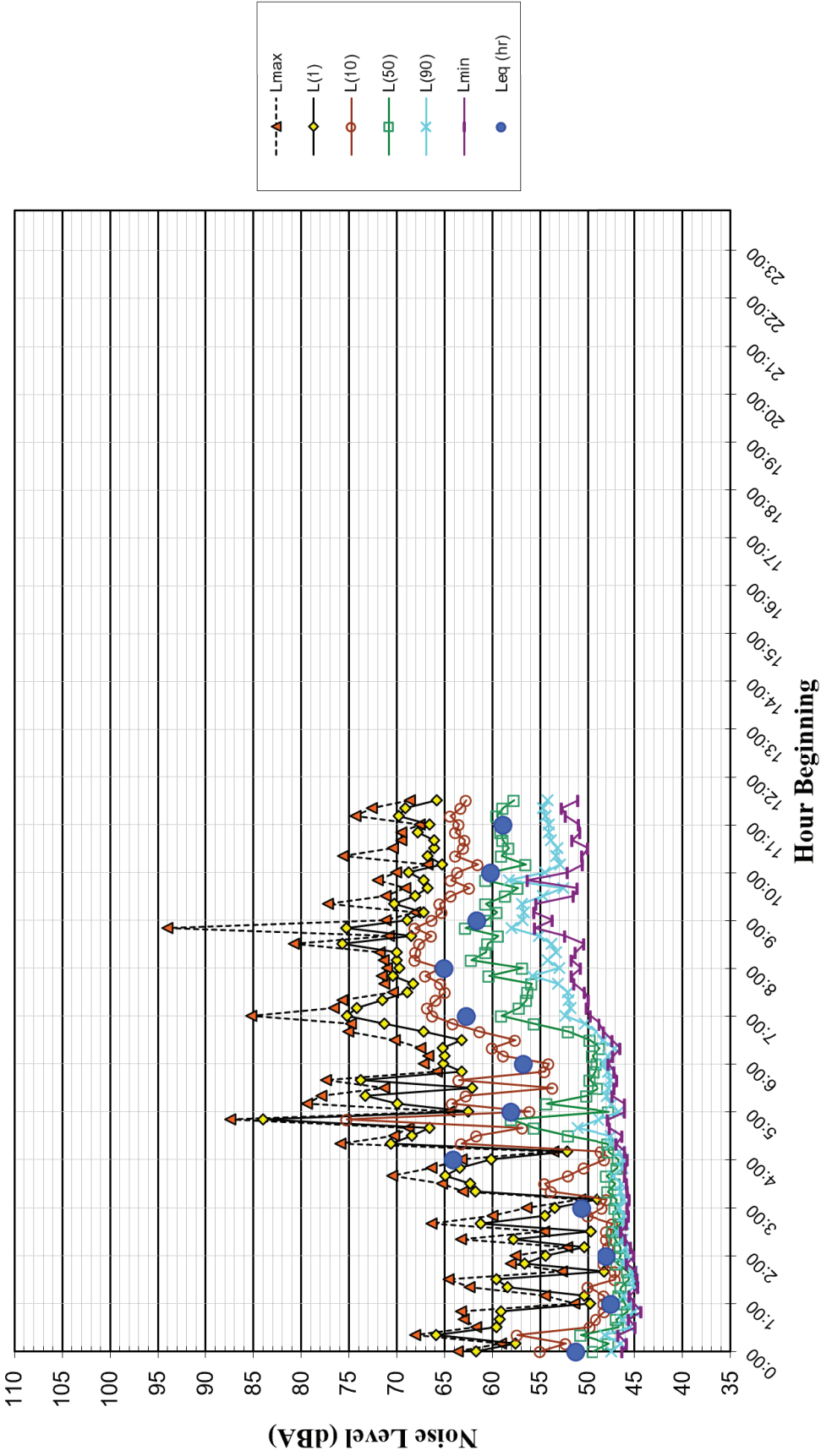


FIGURE A4 Daily Trend in Noise Levels for LT-2, Monday, December 15, 2025

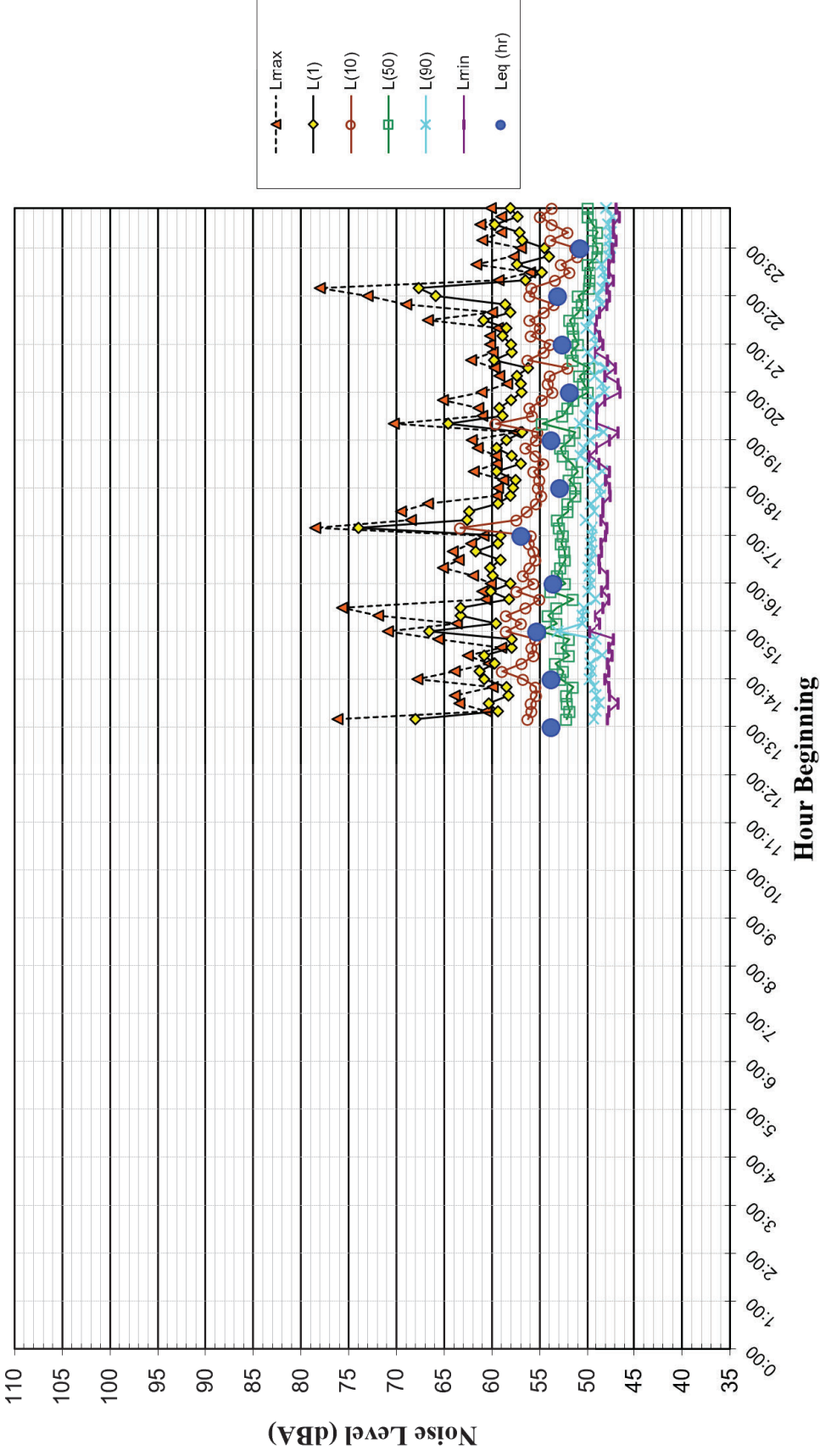


FIGURE A5 Daily Trend in Noise Levels for LT-2, Tuesday, December 16, 2025

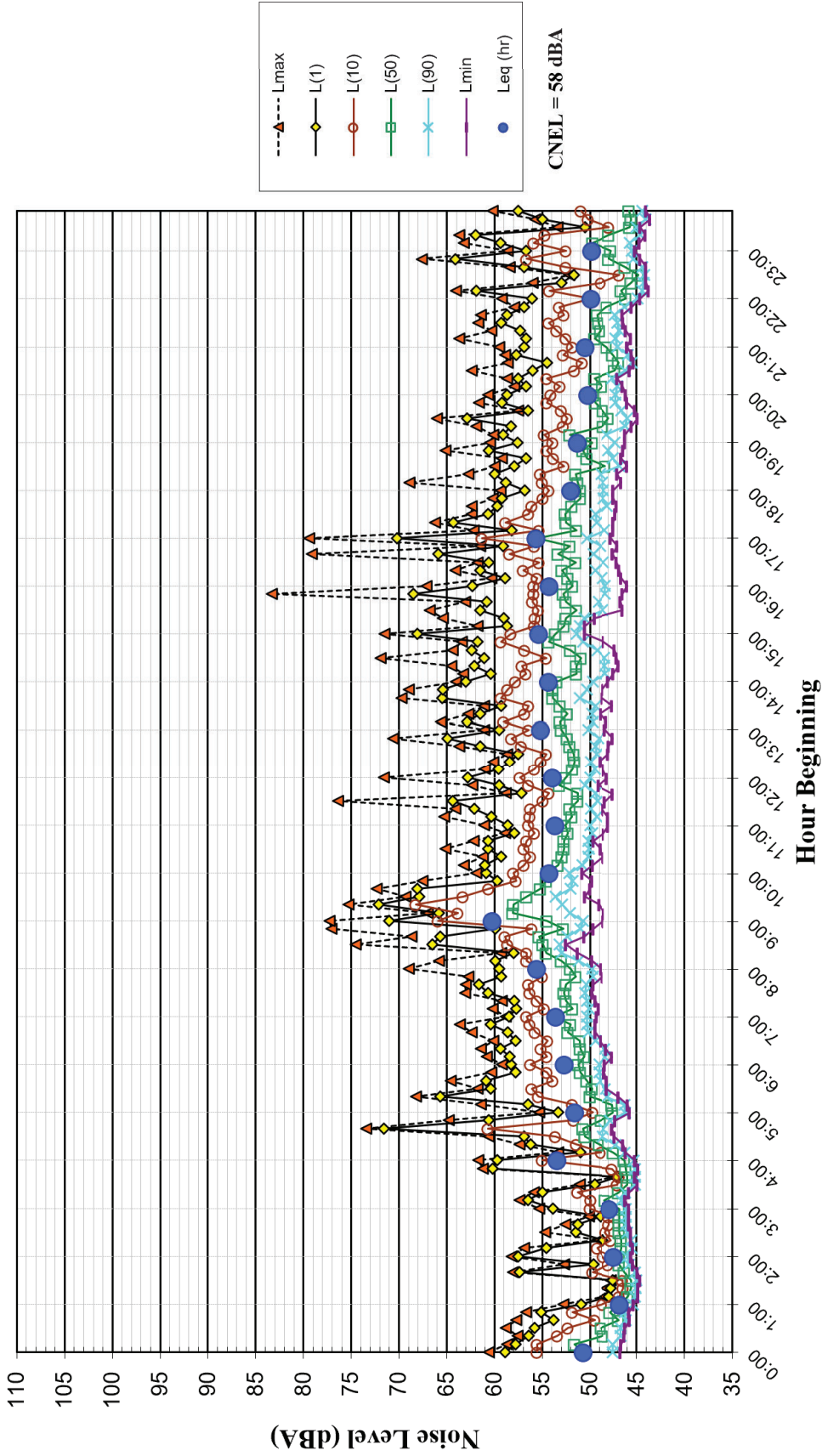


FIGURE A6 Daily Trend in Noise Levels for LT-2, Wednesday, December 17, 2025

