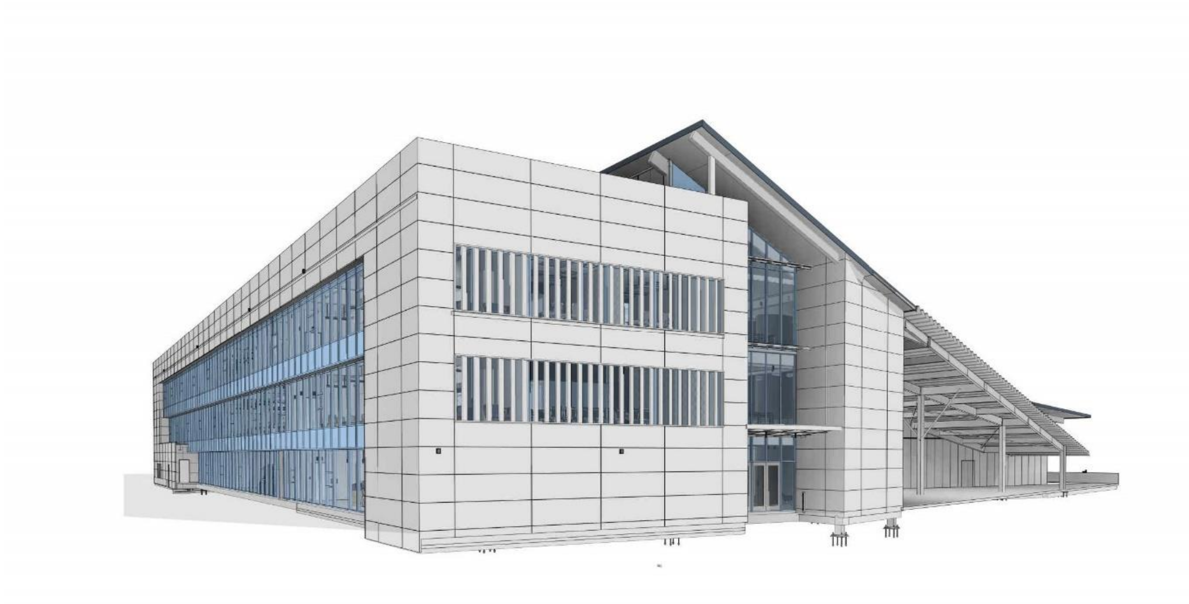
Appendix F

Noise Report



5201 Patrick Henry Drive Addition and Renovation Project

Noise and Vibration Study

prepared for

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August 2023

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1.1 Introduction

This study analyzes the potential noise and vibration impacts of the proposed 5201 Patrick Henry Addition and Renovation Project (herein referred to as "proposed project" or "project") in Santa Clara, California. Rincon Consultants, Inc. (Rincon) prepared this study for Circlepoint for use in support of environmental documentation being prepared for the City of Santa Clara for the project pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the project's noise and vibration impacts related to both temporary construction activity and long-term operation of the project. Table 1 provides a summary of project impacts.

Table 1 Summary of Impacts

Issue	Finding	Applicable Recommendations
Issue 1: 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.	Less Than Significant Impact	None
Issue 2: Generation of excessive ground-borne vibration or ground-borne noise levels.	Less Than Significant Impact	None
Issue 3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.	No Impact	None

1.2 Project Summary

Project Location

The approximately 3.44-acre project site is located at 5201 Patrick Henry Drive (Assessor's Parcel Number104-50-004) within the City of Santa Clara, in the larger San Francisco Bay Area. The project site is approximately 0.3 mile south of US Highway 237 (US-237) and 0.5 mile east of the Lawrence Expressway. General plan land use designations surrounding the project site consist of Low-Intensity Office/R&D to the north, south, and east; and General Industrial to the west. The project site's general plan land use designation is Low-Intensity Office/R&D and the zoning is ML – Light Industrial. The project site is fully developed with a one-story research and development center and parking lot.

The surrounding development consists of one- to three-story buildings with surface parking lots. Nearby uses include manufacturing, research and development buildings, and other energy technology-oriented uses. Buildings in the area, including the project site, are generally set back from the street by landscaped areas, fencing and surface parking. Street-side trees occur intermittently throughout the area, often breaking up views of existing buildings from the street. The project site is bound by Patrick Henry Drive to the west, Betsy Ross Road to the west and Bunker Hill Lane to the south. The closest residential uses are located approximately 1,540 feet southwest of the project site along Tasman Drive. Figure 1 shows the project site's regional location and Figure 2 shows an aerial view of the project site and surrounding area.

Project Description

The project would involve demolishing 58,422 square feet of the existing three-story general office building and adding 7,534 square feet of building space on the first floor. In addition, the mechanical equipment from the roof would be removed, new mechanical equipment would be installed within a fenced enclosure, and renovations would occur in the interior of the building. The interior renovations would include relocating the existing restrooms and modifying and relocating the existing plumbing lines. The project would result in a net decrease of 31,118 square feet of the total building area, resulting in an approximately 113,272 square-foot building, consisting of 67,492 general office building and 45,780 general light industrial building. The project would reduce the existing 457 surface parking spaces to 250 surface parking spaces, including 12 passenger electric vehicle (EV) charging parking spaces and two EV-charging truck spaces. Two new loading docks would be located on the south side of the building. The project would provide bicycle parking spaces at indoor and outdoor locations, consisting of 16 short-term and 14 long-term bicycle parking spaces.

Project construction activities are anticipated to occur over the course of 13 months, from January 2024 through January 2025. Construction would involve demolition, site preparation, grading, building construction, paving, and architectural coating. In addition, project construction would export approximately 1,800 cubic yards of soil during demolition and site preparation. The soil material would be transported to Green Waste Zanker Resource Recovery Facility at 705 Los Esteros Road.

Figure 1 Regional Location

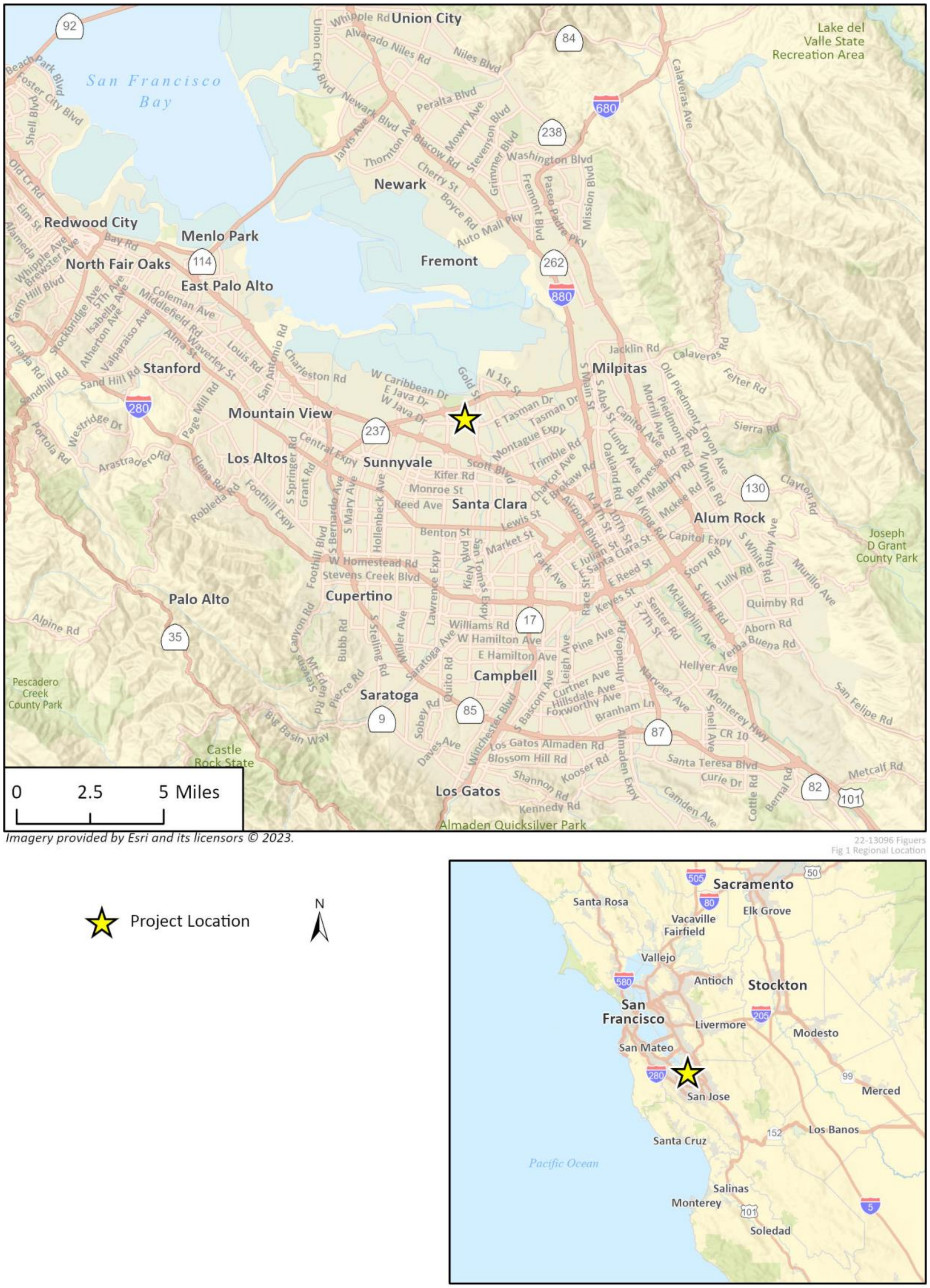

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Figure 2 Project Vicinity

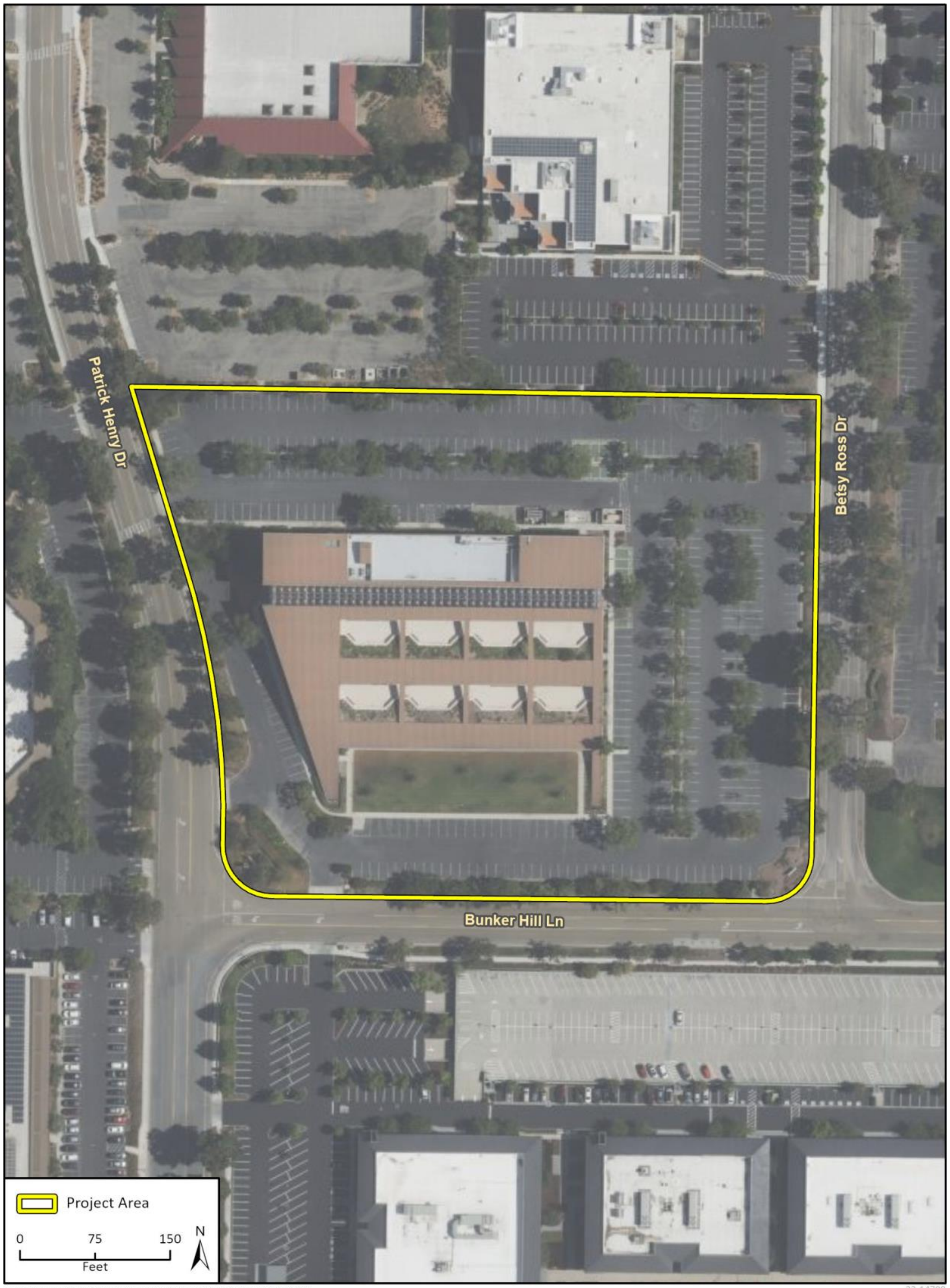

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Fig 2 Project Location

2 Background

2.1 Overview of Sound Measurement

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz and less sensitive to frequencies around and below 100 Hertz (Kinsler, et. al. 1999). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease.

Human perception of noise has no simple correlation with sound energy. The perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not “sound twice as loud” as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible (eight times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (or half) as loud.

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line, the path the sound will travel, site conditions, and obstructions). Noise levels from a point source typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance (e.g., construction, industrial machinery, ventilation units). Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result from simply the geometric spreading of the source. An additional ground attenuation value of 1.5 dBA per doubling of distance applies to a soft site (e.g., soft dirt, grass, or scattered bushes and trees) (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this “shielding” depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, and man-made features such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line-of-sight will provide at least a 5 dBA reduction in noise levels at the receiver. Structures can substantially reduce exposure to noise as well. Modern building construction generally provides an exterior-to-interior noise level reduction of at least 25 dBA with closed windows.

The impact of noise is not a function of loudness alone. The time of day when noise occurs, and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. L_{eq} is defined as the single steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time. Typically, L_{eq} is summed over a one-hour period. L_{max} is the highest root mean square (RMS) sound pressure level within the sampling period, and L_{min} is the lowest RMS sound pressure level within the measuring period.

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (DNL), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours; it is also measured using Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013). Noise levels described by DNL and CNEL usually differ by about 1 dBA. The relationship between the peak-hour L_{eq} value and the DNL/CNEL depends on the distribution of traffic during the day, evening, and night. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 dBA, while areas near arterial streets are in the 50 to 60-plus CNEL range. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

2.2 Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hz. The frequency of a vibrating object describes how rapidly it oscillates. Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020). When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may actually amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in inches per second (in/sec) peak particle velocity (PPV). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration and other construction activity because it is related to the stresses that are experienced by buildings (Caltrans 2020).

2.3 Sensitive Receivers

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. The Santa Clara General Plan Noise Element identifies noise-sensitive land uses as residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas (City of Santa Clara 2014). Noise sensitive receivers near the site include the Light Industrial uses to the north, south and east.

Vibration sensitive receivers are similar to noise sensitive receivers, such as residences, and institutional uses, such as schools, churches, and hospitals. However, vibration sensitive receivers also include buildings where vibrations may interfere with vibration-sensitive equipment, affected by levels that may be well below those associated with human annoyance.

2.4 Project Noise Setting

The most prominent source of noise in the project site vicinity is traffic noise from Patrick Henry Drive and Tasman Drive and distant traffic noise from State Route 237. According to Figure 5 of the Comprehensive Land Use Plan for Norman Y. Mineta San Jose International Airport, the project is not located within noise contours of any airport (Santa Clara County 2011).

2.5 Regulatory Setting

Federal

FTA Transit and Noise Vibration Impact Assessment Manual

The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction in their *Transit and Noise Vibration Impact Assessment Manual* (FTA 2018). For residential uses, the daytime noise threshold is 80 dBA L_{eq}.

Occupational Health and Safety Administration

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the EPA. Noise limitations would apply to the operation of construction equipment and could also apply to operational equipment proposed as part of the project. Noise exposure of this type is dependent on work conditions and is addressed through a facility's Health and Safety Plan, as required under OSHA.

State

The state of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires each county and city to adopt a General Plan that includes a Noise Element prepared per guidelines adopted by the Governor's Office of Planning and Research. The purpose of the Noise Element is to limit the exposure of the community to excessive noise levels. The California Environmental Quality Act requires all known environmental effects of a project be analyzed, including environmental noise impacts.

Local

City of Santa Clara General Plan

The City of Santa Clara General Plan contains goals and policies that are designed to control noise within the city. In addition, the General Plan identifies noise and land use compatibility standards for various land uses. Table 2 includes acceptable noise levels for various land uses. Industrial land uses are considered compatible in noise environments of 73 dBA DNL/CNEL or less. The guidelines state that where the exterior noise levels are greater than 73 dBA DNL/CNEL and less than 83 dBA DNL/CNEL, the design of the project should include measures to reduce noise to acceptable levels. Commercial land uses are considered compatible in noise environments of 73 dBA DNL/CNEL or less. The guidelines state that where the exterior noise levels are greater than 68 dBA DNL/CNEL and less than 77 dBA DNL/CNEL, the design of the project should include measures to reduce noise to acceptable levels.

Table 2 Noise and Land Use Compatibility Standards

Land Use	Compatible (dBA, DNL/CNEL)	Require Design Standard (dBA, DNL/CNEL)[1]	Incompatible (dBA, DNL/CNEL)[2]
Residential	<57	58-73	>73
Educational	<57	58-73	>73
Recreational	<67	68-77	>77
Commercial	<67	68-77	>77
Industrial	<73	73-83	>83
Open Space	<85	N/A	N/A

[1] Requires design standard and insulation to reduce noise levels.

[2] Avoid land use except when entirely indoors and an interior level of 45 DNL can be maintained.

N/A = no applicable noise standard

Source: City of Santa Clara 2014 Table 8.14-1

The City of Santa Clara General Plan also establishes the following goals and policies that would apply to the project:

Goal 5.10.6-G1. Noise sources restricted to minimize impacts in the community.

Goal 5.10.6-G2. Sensitive uses protected from noise intrusion.

Goal 5.10.6-G3. Land use, development and design approval that take noise levels into consideration.

Policy 5.10.6-P1. Review all land use development proposal for consistency with the General Plan compatibility standards and acceptable noise exposure levels defined on Table 2.

Policy 5.10.6-P2. Incorporate noise attenuation measures for all projects that have noise exposure levels greater than General Plan “normally acceptable” levels, as defined on Table 2.

Policy 5.10.6-P3. New development should include noise control techniques to reduce noise to acceptable levels, including site layout (setbacks, separation and shielding), building treatments (mechanical ventilation system, sound-rated windows, solid core doors and baffling) and structural measures (earthen berms and sound walls).

Policy 5.10.6-P4. Encourage the control of noise at the source through site design, building design, landscaping, hours of operation and other techniques.

Policy 5.10.6-P7. Implement measures to reduce interior noise levels and restrict outdoor activities in areas subject to aircraft noise in order to make Office/Research and Development uses compatible with the Norman Y. Mineta International Airport land use restrictions.

City of Santa Clara Municipal Code

The City's noise ordinance is codified in Chapter 9.10, *Regulation of Noise and Vibration,* of the Santa Clara Municipal Code (SCMC). The noise ordinance requires protection from unnecessary, excessive, and unreasonable noise or vibration from fixed sources in the community. Applicable provisions of the City's noise ordinance are discussed below.

SCMC Section 9.10.40 limits exterior noise levels at residences to 55 dBA during daytime hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during nighttime hours of 10:00 p.m. to 7:00 a.m.; noise levels at commercial uses to 65 dBA during daytime hours and 60 dBA during nighttime hours; noise levels at light industrial uses to 70 dBA at any time and noise levels to 75 dBA at heavy industrial uses at any time. Section 9.10.060(c), states that, if the measured ambient noise level differs from those levels set forth in SCMC Section 9.10.040, the allowable noise standard should be "adjusted in five dBA increments in each category as appropriate to encompass or reflect said ambient noise level".

Section 9.10.230 of the SCMC states that construction activities are not permitted within 300 feet of residentially zoned property except within the hours of 7:00 a.m. and 6:00 p.m. on weekdays and 9:00 a.m. and 6:00 p.m. on Saturdays.

Section 9.10.070(a) exempts "emergency generators and pumps or other equipment necessary to provide services during an emergency."

Santa Clara County Airport Land Use Commission Land Use Plan

The Comprehensive Land Use Plan for San José International Airport adopted by the Santa Clara County Airport Land Use Commission (ALUC) contains standards for projects within the vicinity of San José International Airport which are relevant to this project. Noise compatibility for industrial uses located within the vicinity of the San José International Airport are considered generally acceptable when located within the 65 dBA to 70 dBA CNEL airport noise contour and generally unacceptable when located within the 70 dBA CNEL airport noise contour.

3 Methodology

3.1 Construction Noise

Construction noise was estimated using the FHWA Roadway Construction Noise Model (RCNM) (FHWA 2006). RCNM predicts construction noise levels for a variety of construction operations based on empirical data and the application of acoustical propagation formulas. Using RCNM, construction noise levels were estimated at noise sensitive receivers near the project site. RCNM provides reference noise levels for standard construction equipment, with an attenuation of 6 dBA per doubling of distance for stationary equipment.

Variation in power imposes additional complexity in characterizing the noise source level from construction equipment. Power variation is accounted for by describing the noise at a reference distance from the equipment operating at full power and adjusting it based on the duty cycle of the activity to determine the L_{eq} of the operation (FTA 2018). Each phase of construction has a specific equipment mix, depending on the work to be accomplished during that phase. Each phase also has its own noise characteristics; some will have higher continuous noise levels than others, and some have high-impact noise levels. Construction noise would typically be higher during the heavier periods of initial construction (i.e., grading) and would be lower during the later construction phases. Construction equipment would not all operate at the same time or location. In addition, construction equipment would not be in constant use during the 8-hour operating day.

As stated in the City's CEQA Guidelines (2017), construction-related noise is only considered substantial if construction activities are proposed outside normal hours or would occur for an extraordinarily long time. As stated by the client, construction would occur over approximately fifteen months and would take place between 7:00 a.m. to 3:00 p.m. on weekdays, which is within the City's acceptable hours for construction activities to occur.

Over the course of a typical construction day, construction equipment could be located adjacent to the nearest light-industrial/commercial uses but would typically be located at an average distance further away due to the nature of construction where equipment is mobile throughout the site during the day. Table 3, on the following page, identifies the estimated noise levels at the closest sensitive receptors from the center of the site based on the conservatively assumed combined use of all construction equipment during each phase of construction.

Table 3 Estimated Noise Levels by Construction Phase

Construction Phase	L_{eq} dBA				
	RCNM Reference Noise Level[1] 50 feet	Single-Family Residential Area to SW 1,540 feet	Commercial/Light Industrial to N 260 feet	Commercial/Light Industrial to S 305 feet	Commercial/Light Industrial to W 320 feet
Demolition	85	55	71	69	69
Site Preparation	82	52	68	66	66
Grading	81	51	67	65	65
Building Construction	83	53	69	67	67
Paving	78	48	64	62	62
Architectural Coating	73	43	59	57	57

Notes:

[1] RCNM reference noise levels are noise levels generated during each construction phase measured from a point 50 feet from the location of the construction phase. These reference noise levels are then used to calculate noise levels from the construction phase at a distance greater than 50 feet from the construction phase.

Source: Roadway Construction Noise Model (RCNM). See Appendix A for modeling outputs.

3.2 Groundborne Vibration

Operation of the proposed project would not include any substantial vibration sources. Thus, construction activities have the greatest potential to generate ground-borne vibration affecting nearby receptors, especially during paving of the at-grade parking of the project site. The greatest vibratory source during construction would be a vibratory roller. Neither blasting nor pile driving would be required for construction of the proposed project. Construction vibration estimates are based on vibration levels reported by the FTA. Table 4 shows typical vibration levels for various pieces of construction equipment used in the assessment of construction vibration (FTA 2018).

Table 4 Vibration Source Levels for Construction Equipment

Equipment	Approximate Vibration Level (in/sec PPV)		
	25 feet	50 feet	100 feet
Small Bulldozer	0.003	0.001	0.0007
Jackhammer	0.035	0.016	0.008
Loaded Truck	0.076	0.036	0.017
Large Bulldozer	0.089	0.042	0.019
Vibratory Roller	0.210	0.098	0.046

Source: FTA 2018

Vibration limits used in this analysis to determine a potential impact to local land uses from construction activities are based on information contained in FTA 2018. Maximum recommended vibration limits by the FTA are identified in Table 5.

Table 5 Criteria for Vibration Damage Potential

Building Category	PPV (in/sec)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Nonengineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

in/sec = inches per second; PPV = peak particle velocity
Source: FTA 2018

Based on FTA recommendations, limiting vibration levels to below 0.3 in/sec PPV at nearby light industrial/commercial structures would prevent architectural damage. These limits are applicable regardless of the frequency of the source.

3.3 Operational Noise Sources

Operational Mechanical Equipment

The proposed operational noise sources at the project site are those that would be typical of light industrial structures, such as rooftop mechanical equipment (e.g., HVAC equipment), heat pumps/chillers, fans, and two loading docks.

Noise sources associated with operation of the proposed project would consist of primarily rooftop mechanical equipment (e.g., condenser fans and compressors). The project would install four HVAC units with a combined sound power level rated at 67 dBA, three fans with a combined sound power level rated at 81 dBA and three Air Source Heat Pump/Air Cooled Chillers with a combined sound power level rated at 99 dBA. This brings the combined sound power level of the 10 units to 98 dBA, which is a sound pressure level (SPL) of approximately 90 dBA at 3 feet from the sources. To characterize the noise levels from the proposed mechanical equipment, this analysis assumes that all units could run for an entire 24-hour period. The loading dock would be located on the south side of the building and would be operational during business hours, Monday through Friday, not including City holidays. The loading dock would generate noise levels ranging up to 75 dBA L_{max} at 50 feet.

Additional on-site noise sources would include an existing on-site 300kW diesel emergency backup. Noise levels from the backup generator are reduced by an existing masonry wall. Since there are no proposed changes to the existing generator, there would be no noise increase above existing conditions, and noise impacts from the generator are not analyzed further.

The City has adopted noise standards in the Municipal Code regulating operational noise sources in the City. The project would result in a significant impact if noise from on-site stationary operational noise exceeds 70 dBA anytime of day.

Transportation Noise

Based on net project daily trips, off-site traffic noise impacts due to the project were estimated by conservatively adding all net project daily trips (ITE 2017) to existing daily traffic volumes on Patrick Henry Drive and Tasman Drive.

3.4 Significance Thresholds

The following thresholds are based on City noise standards and Appendix G of the CEQA guidelines. Noise impacts would be considered significant if:

- **Issue 1 – Noise in Excess of Established Standards.** The project would result in the 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.
  - **Temporary.** Construction noise would be significant if:
    - Noise levels exceed the FTA criterion of 80 dBA Leq, at residential land uses; or
  - **Permanent.** Stationary operational noise would be significant if:
    - Pursuant to SCMC Section 9.10.40, exterior noise levels at residences exceed 55 dBA during daytime hours of 7:00 a.m. to 10:00 p.m. and 50 dBA during nighttime hours of 10:00 p.m. to 7:00 a.m.; noise levels at commercial uses exceed 65 dBA during daytime hours and 60 dBA during nighttime hours; or noise levels at light industrial uses exceed 70 dBA at any time and noise levels to 75 dBA at heavy industrial uses at any time.
  - Off-site traffic noise would be significant if the traffic noise increase would be:
  - Greater than 1.5 dBA increase for ambient noise environments of 65 dBA CNEL and higher
  - Greater than 3 dBA increase for ambient noise environments of 60-64 CNEL
  - Greater than 5 dBA increase for ambient noise environments of less than 60 dBA CNEL
- **Issue 2 – Vibration.** The project would result in the generation of excessive ground-borne vibration or ground-borne noise levels.
  - This would occur if the project would subject adjacent light industrial/commercial land uses to construction-related ground-borne vibration that exceeds a vibration limit of 0.3 in/sec.
- **Issue 3 – Airport Noise.** For a project located in 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 exposes people residing or working in the project area to excessive noise levels.

4 Impact Analysis

4.1 Issue 1 – Temporary and Permanent Noise Increase

Construction

As discussed above, at a distance of 50 feet, project construction activity is estimated to generate a noise level as high as 85 dBA L_{eq}. The nearest residences are located approximately 1,540 feet southwest of the center of the project site. At this distance, construction noise would attenuate to 55 dBA L_{eq} or less (FHWA 2006). This does not take into account acoustical shielding from buildings, terrain, or other features which would reduce construction noise levels further. Therefore, construction noise levels would not exceed the FTA threshold of 80 dBA L_{eq} at any residential receptors. In addition, construction would occur between 7:00 AM to 3:00 PM, which is within the allowed hours of the City's Municipal Code Section 9.10.230 (SCMC 2014). Impacts would be less than significant.

Operational Mechanical Equipment

As discussed above, the project would include four rooftop HVAC units rated at 67 dBA sound power level, three fans rated at 81 dBA sound power level and three air source heat pump/air cooled chillers rated at 99 dBA sound power level. This brings the combined sound power level of the 10 units to 99 dBA, which is a sound pressure level (SPL) of approximately 91 dBA at 3 feet from the source. Assuming that the units were to run for an entire 24-hour period, the closest light Industrial property line to the north, at a distance of approximately 160 feet from the center of the proposed building rooftop, would be exposed to a noise level of 38 dBA L_{max} accounting for approximately 20 dBA reduction from the rooftop and proposed 14-foot-high parapet wall. Additionally, the loading docks would expose the light industrial use located 215 feet to the south to a noise level of 62 dBA L_{max}, which would not exceed the City standard of 70 dBA anytime for light industrial uses. Therefore, impacts would be less than significant.

Off-site Traffic Noise

The proposed project is estimated to generate 955 net new daily vehicle trips (ITE 2017). Tasman Drive has an existing average daily traffic (ADT) volume of approximately 18,500 west of Patrick Henry Drive and Patrick Henry Drive has an ADT volume of approximately 3,400 north of Tasman Drive. Using the formula of 10 x LOG(future traffic volume/existing traffic volume), project net trips would increase traffic noise by approximately 0.2 dBA over existing conditions on Patrick Henry Drive and by approximately 1.1 dBA over existing conditions on Tasman Drive. Therefore, the project would not cause a traffic noise increase of more than 1.5 dBA, the most stringent threshold. Therefore, off-site traffic noise impacts would be less than significant.

4.2 Issue 2 – Vibration

Construction activities known to generate excessive ground-borne vibration, such as pile driving, would not be conducted by the project. The greatest anticipated source of vibration during general project construction activities would be from vibratory roller, which may be used at a distance of 70 feet or greater from the nearest off-site light industrial building to the south of the project site. A vibratory roller would create approximately 0.210 in/sec PPV at 25 feet (FTA 2018). The vibration level created by a dozer at 25 feet would be 0.089 in/sec PPV (FTA 2018). Construction vibration at a distance of 70 feet would be up to approximately 0.045 in/sec PPV. Therefore, vibration from construction activity would be lower than the threshold of 0.3 in/sec PPV for light industrial/commercial buildings.

4.3 Issue 3 – Airport Noise

The San José International Airport is located approximately 3.2 miles to the southeast of the project site and Moffett Federal Airfield is located approximately 3 miles to the west of the project site. According to the San José International Airport Land Use Compatibility Plan Figure 5, the project is not located within noise contours of any airport (Santa Clara County Airport Land Use Commission 2016). Therefore, the proposed project would not expose people working in the project area to excessive aircraft overflight noise levels.

4.4 Issue 4 – Land Use Compatibility

The California Supreme Court in a December 2015 opinion (BIA v. BAAQMD) confirmed that, in general, CEQA is concerned with the impacts of a project on the environment, not the effects the existing environment may have on a project. Therefore, no significance determination of the noise and land use compatibility of the project site is warranted.

5 Conclusions

Construction noise would generate noise levels of up to 55 dBA L_{eq} at the nearest residences, which would not exceed the FTA construction noise threshold of 80 dBA L_{eq}. In addition, construction would be limited to hours allowed by the City's Municipal Code. Impacts would be less than significant.

The project would introduce sources of operational noise to the site, including mechanical equipment (condenser fans and chillers). Assuming that the units were to run for an entire 24-hour period, the closest light Industrial property line to the north would be exposed to a noise level of 38 dBA, and 62 dBA from loading docks at the light industrial use to the south, which would not exceed the City standard of 70 dBA anytime for light industrial uses. Therefore, impacts would be less than significant.

Project traffic would increase traffic noise by approximately 0.2 dBA over existing conditions on Patrick Henry Drive and by approximately 1.1 dBA over existing conditions on Tasman Drive. Therefore, the project would not cause a traffic noise increase of more than 1.5 dBA, the most stringent threshold. Therefore, off-site traffic noise impacts would be less than significant.

Operation of the project would not include any substantial vibration sources. Groundborne vibration from construction activities would not exceed the applicable vibration thresholds. Therefore, vibration impacts would be less than significant.

The project is not located within the noise contours of any airport. Therefore, the proposed project would not expose people working in the project area to excessive aircraft overflight noise levels.

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Appendix A

RCNM Outputs

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/27/2023
Case Description: Architectural Coating

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Architectural Coating	Industrial	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50.0	0.0
Man Lift	No	20		74.7	50.0	0.0
Man Lift	No	20		74.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.7	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/27/2023
Case Description: Building Construction

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Building Construction	Industrial	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Crane	No	16		80.6	50.0	0.0
Man Lift	No	20		74.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	83.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/26/2023
Case Description: Demolition

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Demolition	Industrial	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Vibrating Hopper	No	50		87.0	50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Vacuum Street Sweeper	No	10		81.6	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Vibrating Hopper	87.0	84.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vacuum Street Sweeper	81.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	87.0	85.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/26/2023
Case Description: Grading

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Grading	Industrial	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/27/2023
Case Description: Paving

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Paving	Industrial	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Roller	No	20		80.0	50.0	0.0
Paver	No	50		77.2	50.0	0.0
Vacuum Street Sweeper	No	10		81.6	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vacuum Street Sweeper	81.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.6	77.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 07/27/2023
Case Description: Site Preparation

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Site Preparation	Industrial	65.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Scraper	No	40		83.6	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	83.6	82.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Construction Noise

Phase	Noise Level @ 50 ft	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W
Distance		1,540	260	305	320
Demolition	85	55.229	70.680	69.293	68.876
Site Preparation	82	52.229	67.680	66.293	65.876
Grading	81	51.229	66.680	65.293	64.876
Building Construction	83	53.229	68.680	67.293	66.876
Paving	78	48.229	63.680	62.293	61.876
Architechtural Coating	73	43.229	58.680	57.293	56.876

Construction Vibration

Distance	Vibration @ 25 ft	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W
		1,280	210	235	145
Vibratory Roller	0.21	0.001	0.009	0.007	0.015
Large Bulldozer	0.089	0.000	0.004	0.003	0.006
Loaded Trucks	0.076	0.000	0.003	0.003	0.005
Small Bulldozer	0.003	0.000	0.000	0.000	0.000

Mechanical Equipment Noise

Mechanical Equipment - Individual	Sound Pressure Level @ 3 ft	Sound Power Level	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W	Commercial/Light Industrial to E
Type			1,640	160	410	330	330
Air Source Heat Pump/Air Cooled Chiller	85	93	54.683	74.897	66.724	68.609	68.609
Air Source Heat Pump/Air Cooled Chiller	87	95	56.683	76.897	68.724	70.609	70.609
Air Source Heat Pump/Air Cooled Chiller	87	95	56.683	76.897	68.724	70.609	70.609
DXO Unit - HVAC	50	58	19.683	39.897	31.724	33.609	33.609
DXO Unit - HVAC	50	58	19.683	39.897	31.724	33.609	33.609
DXO Unit - HVAC	53	61	22.683	42.897	34.724	36.609	36.609
DXO Unit - HVAC	56	64	25.683	45.897	37.724	39.609	39.609
Fan	66	74	35.683	55.897	47.724	49.609	49.609
Fan	69	77	38.683	58.897	50.724	52.609	52.609
Fan	69	77	38.683	58.897	50.724	52.609	52.609
Cumulative	91	99	60.683	80.897	72.724	74.609	74.609

Mechanical Equipment - Cumulative	Sound Pressure Level @ 3 ft	Sound Power Level	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W	Commercial/Light Industrial to E
			1,640	160	410	330	330
Center of Mechanical Equipment Area	91	99	60.683	80.897	72.724	74.609	74.609

Mechanical Equipment - Type	Sound Pressure Level @ 3 ft	Sound Power Level	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W	Commercial/Light Industrial to E
Air Source Heat Pump/Air Cooled Chiller			1,640	160	410	330	330
Air Source Heat Pump/Air Cooled Chiller	85	93	54.683	74.897	66.724	68.609	68.609
Air Source Heat Pump/Air Cooled Chiller	87	95	56.683	76.897	68.724	70.609	70.609
Air Source Heat Pump/Air Cooled Chiller	87	95	56.683	76.897	68.724	70.609	70.609
Cumulative	91	99	60.683	80.897	72.724	74.609	74.609

MTSJ-02	Sound Pressure Level @ 3 ft	Sound Power Level	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W	Commercial/Light Industrial to E
Distance			1,640	160	410	330	330
DXO Unit - HVAC	50	58	19.683	39.897	31.724	33.609	33.609
DXO Unit - HVAC	50	58	19.683	39.897	31.724	33.609	33.609
DXO Unit - HVAC	53	61	22.683	42.897	34.724	36.609	36.609
DXO Unit - HVAC	56	64	25.683	45.897	37.724	39.609	39.609
Cumulative	59	67	28.683	48.897	40.724	42.609	42.609

Mechanical Equipment - Type	Sound Pressure Level @ 3 ft	Sound Power Level	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W	Commercial/Light Industrial to E
Air Source Heat Pump/Air Cooled Chiller			1,640	160	410	330	330
Fan	66	74	35.683	55.897	47.724	49.609	49.609
Fan	69	77	38.683	58.897	50.724	52.609	52.609
Fan	69	77	38.683	58.897	50.724	52.609	52.609
Cumulative	73	81	42.683	62.897	54.724	56.609	56.609

Mechanical Equipment - Type	Sound Pressure Level @ 3 ft	Sound Power Level	Single-Family Residential Area to SW	Commercial/Light Industrial to N	Commercial/Light Industrial to S	Commercial/Light Industrial to W	Commercial/Light Industrial to E
Air Source Heat Pump/Air Cooled Chiller			1,790	120	445	520	270
Generator	90	98	59.683	79.897	71.724	73.609	73.609