Appendix G

Noise Report

5200 Patrick Henry Drive Data Center

Noise and Vibration Study

prepared for

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Table of Contents

1 Project Description and Impact Summary 1
- 1.1 Introduction 1
- 1.2 Project Summary 1

2 Background 5
- 2.1 Overview of Sound Measurement 5
- 2.2 Vibration 6
- 2.3 Sensitive Receivers 6
- 2.4 Project Noise Setting 7
- 2.5 Regulatory Setting 7

3 Methodology 10
- 3.1 Construction Noise 10
- 3.2 Groundborne Vibration 10
- 3.3 Operational Noise Sources 11
- 3.4 Significance Thresholds 12

4 Impact Analysis 13
- 4.1 Issue 1 – Temporary and Permanent Noise Increase 13
- 4.2 Issue 2 – Vibration 13
- 4.3 Issue 3 – Airport Noise 14
- 4.4 Issue 4 – Land Use Compatibility 14

5 Conclusions 15

6 References 16

Tables

Table 1 Summary of Impacts 1

Table 2 Noise and Land Use Compatibility Standards 8

Table 3 Vibration Source Levels for Construction Equipment 11

Table 4 Criteria for Vibration Damage Potential 11

Figures

Figure 1 Regional Location 3

Figure 2 Project Vicinity 4

1 Project Description and Impact Summary

1.1 Introduction

This study analyzes the potential noise and vibration impacts of the proposed 5200 Patrick Henry Data Center 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 5.63-acre project site is located at 5200 Patrick Henry Drive (Assessor's Parcel Number104-50-011) 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 east and Calabazas Creek Trail to the west. The nearest data center, QTS Data, is approximately one mile southeast of the project site at 2805

Mission College Boulevard. The closest residential uses are located approximately 925 feet southeast of the project site along Tasman Drive. **Error! Reference source not found.** shows the project site's regional location and **Error! Reference source not found.** shows an aerial view of the project site and surrounding area.

Project Description

The project would involve demolishing the existing 95,573-square-foot research and development center and constructing a four-story building with a subterranean parking garage and surface-level parking. The sub-level parking garage would include 235 parking spaces, including 71 electric vehicle charging stations and seven accessible parking spaces. In addition, the project would provide 406 surface-level parking spaces and 34 bicycle parking spaces, which include a bicycle storage room on the sub-level floor. The data center is approximately 226,668 gross square feet and would be located throughout the first floor. The laboratory space is approximately 52,839 gross square feet and would be located on the sub-level floor, first floor, and second floor. Lastly, the research and development center is approximately 169,386 gross square feet and would be located throughout floors one to four. The proposed project's power supply would require 9 megawatts (MW) of peak power with closed-loop cooling supplied by Silicon Valley Power (SVP). In addition, the project would consume green power from SVP, and emergency power generators are not included onsite. The proposed data center is for research and development only, is not mission-critical, and does not require standby power.

Project construction activities are anticipated to occur over the course of 23 months from October 2023 through September 2025. Construction would involve demolition, site preparation, grading, building construction, paving, and architectural coating. In addition, project construction would export approximately 67,789 cubic yards of soil during demolition, and soil material would be transported to Green Waste Zanker Resource Recovery Facility at 705 Los Esteros Road.

Figure 1 Regional Location

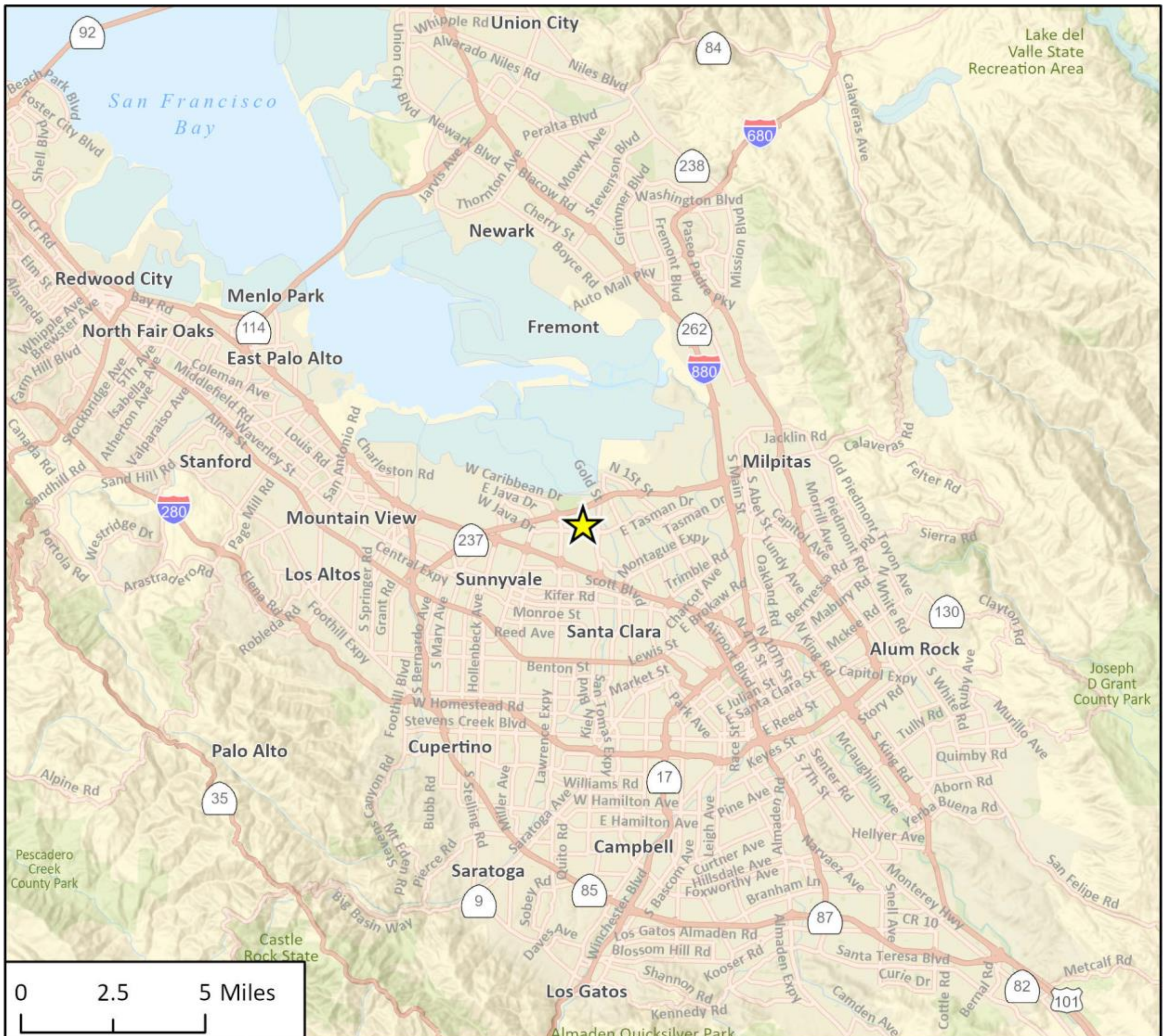

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Fig 1 Regional Location

Project Location

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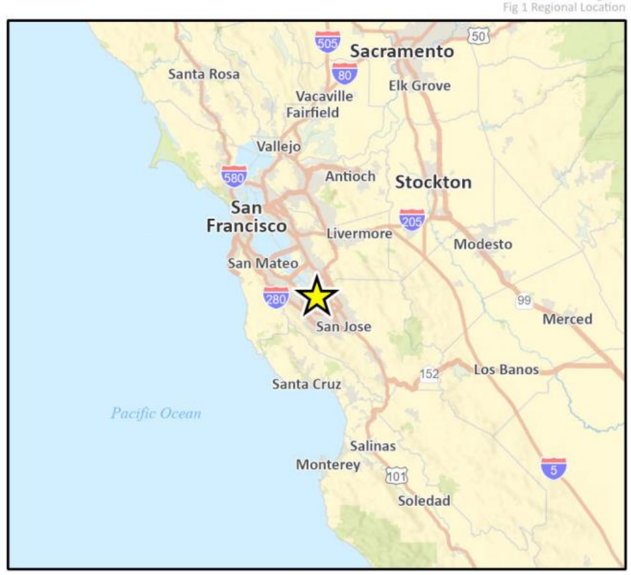

Figure 2 Project Vicinity

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Fig X 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, with the closest being to the south.

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.

A potential construction scenario includes construction equipment such as excavators, gradalls and concrete pump trucks. Therefore, an excavator, a gradall, and a concrete pump truck were analyzed together for construction noise impacts due to their likelihood of being used in conjunction at the same time and therefore a reasonable scenario for the greatest noise generation during construction. At a distance of 50 feet, an excavator, a gradall, and a concrete pump truck would generate a noise level of 82 dBA L_{eq} (FHWA 2006).

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 receivers, 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 3 shows typical vibration levels for various pieces of construction equipment used in the assessment of construction vibration (FTA 2018).

Table 3 Vibration Source Levels for Construction Equipment

	Approximate Vibration Level (in/sec PPV)		
Equipment	**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 4.

Table 4 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

Stationary Noise

Noise sources associated with operation of the proposed project would consist of primarily mechanical equipment (e.g., condenser fans and compressors). The project would install six condenser fans rated at 87.7 dBA sound power level and six compressors rated at 82.0 dBA sound power level. This brings the cumulative sound power level of the 12 units to 96.5 dBA, which is a sound pressure level (SPL) of approximately 88.5 dBA at 3 feet from the source. To characterize the noise levels from the proposed mechanical equipment, assuming that all units were to run for an entire 24-hour period.

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 to existing daily traffic volumes on Patrick Henry Drive and Tasman Drive provided by Hexagon Transportation Consultants (Hexagon 2022).

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 of 82 dBA L_{eq}. The nearest residential receptors are located approximately 1,230 feet south of the center of the project site. At this distance, construction noise would attenuate to 54 dBA L_{eq} or less. 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 within the allowed hours of the City's Municipal Code. Impacts would be less than significant.

Operation

As discussed above, the project would include six condenser fans rated at 87.7 dBA sound power level and six compressors rated at 82.0 dBA sound power level. This brings the cumulative sound power level of the 12 units to 96.5 dBA, which is a sound pressure level (SPL) of approximately 88.5 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 south, at a distance of approximately 275 feet from the center of the proposed building rooftop, would be exposed to a noise level of 49 dBA, which would not exceed the City standard of 70 dBA for light industrial uses. Therefore, impacts would be less than significant.

Off-site Traffic Noise

The proposed project is estimated to generate 854 net new daily vehicle trips (Hexagon 2022). 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 1.0 dBA over existing conditions on Patrick Henry Drive and by approximately 0.2 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 50 feet would be 0.098 in/sec PPV (FTA 2018). Construction vibration at a distance of 70 feet would be less. 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 as a data center is warranted.

5 Conclusions

Construction noise would generate noise levels of up to 54 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 south would be exposed to a noise level of 49 dBA, which would not exceed the City standard of 70 dBA for light industrial uses. Therefore, impacts would be less than significant.

Project traffic would increase traffic noise by approximately 1.0 dBA over existing conditions on Patrick Henry Drive and by approximately 0.2 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.

6 References

California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. (CT-HWANP-RT-13-069.25.2) September.

____. 2020. *Transportation and Construction Vibration Guidance Manual.* CT-HWANP-RT-20-365.01.01. April. Available at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf. Accessed April 2020.

Federal Highway Administration (FHWA). 2006. *FHWA Highway Construction Noise Handbook*. (FHWAHEP-06-015; DOT-VNTSC-FHWA-06-02). Available at: http://www.fhwa.dot.gov/environment/construction_noise/handbook. Accessed March 2020.

_____. 2018. Highway Traffic Noise Analysis and Abatement Policy and Guidance.

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment*. November. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed March 2020.

Hexagon Transportation Consultants, Inc. 2022. Transportation Memo for the Proposed Arista HW Engineering Building at 5200 Patrick Henry Drive in Santa Clara, California.

Lawrence E. Kinsler and R. Frey, Austin and B. Coppens, Alan and V. Sanders, James. *Fundamentals of Acoustics*, 4th Edition. ISBN 0-471-84789-5. Wiley-VCH, December 1999.

Malcolm J. Crocker (Editor). 2007. *Handbook of Noise and Vibration Control Book*, ISBN: 978-0-471-39599-7, Wiley-VCH, October.

Santa Clara County Airport Land Use Commission. 2011. Comprehensive Land Use Plan, Santa Clara County, Norman Y. Mineta San José International Airport. November

_____. 2012. Comprehensive Land Use Plan, Santa Clara County, Moffett Federal Airfield. November 2.

Santa Clara, City of. City of Santa Clara 2010-2035 General Plan. 2014.

Santa Clara, City of. City of Santa Clara Municipal Code.