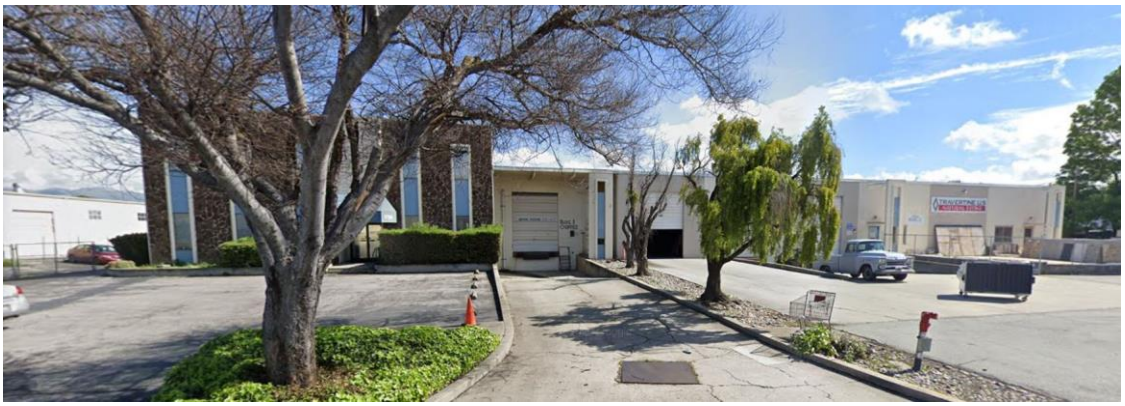
Appendix F

Environmental Noise Analysis

GRANITE EXPO

ENVIRONMENTAL NOISE ANALYSIS

1728 ROGERS AVENUE, SAN JOSE



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CSDA Project No. 20082.01

CSDA | DESIGN GROUP

Table of Contents

List of Figures

List of Tables

1.0 Executive Summary

- Based on site measurements conducted by CSDA Design Group, the existing project site is exposed to noise levels between L_{dn} 69 and 72 dBA. This is considered "normally acceptable" (less than L_{dn} 70 dBA) and "conditionally acceptable" (between L_{dn} 70 and 80 dBA) per the City's noise and land-use compatibility guidelines for commercial uses.

- Based on our review of the traffic impact analysis prepared for this project by Hexagon Transportation Analysis on November 3, 2020, increases in traffic noise due to implementation of the proposed project will be less than the applicable standards provided by the San Jose General Plan Noise Element.

- We reviewed the City of San Jose's Municipal Code and General Plan and did not find applicable construction noise limits for this project. As such, we have included general construction noise mitigation measures that are expected to reasonably reduce noise emanating from the project site.

- Note that the City has a noise limit at the project's property line for future exterior/rooftop equipment noise levels, which is 70 dBA at nearby industrially zoned receivers.

2.0 Project Description

This report summarizes the environmental noise analysis conducted for the 1728 Rogers Avenue commercial project in San Jose, California. The project includes the demolition of an approximately 450 square-foot existing warehouse rear bay structure to allow approximately 20,000 square-feet of additions on an approximately 4.23-gross industrial acre site. The proposed additions include an approximately 14,000 square-foot wholesale retail showroom and approximately 6,000 square feet of warehouse space. The project would also provide 58 new parking spaces and would include landscape modifications. These additions will be accessible from two driveways on Junction Avenue. The project is expected to include typical construction activities such as demolition, site work, building construction, and paving activities.

3.0 Regulatory Setting

The following acoustical criteria are applicable to the project; please refer to Appendix A for definitions of acoustical terms used in this report.

3.1 City of San Jose Municipal Code

3.1.1 Municipal Code Section 10.16

Chapter 10.16 of the San Jose Municipal Code includes a qualitative general noise regulation that may apply to noise generation associated with the proposed project. Section 10.16.020 – "Disturbing Noises Designated" states the following:

> *It is the intent of this chapter to prohibit all noises which are disturbing or unreasonably loud. The types of noises set out in Subsection B shall not be deemed or construed as in any way exclusive, but merely illustrative. The following types of noises are declared to be disturbing to the peace, quiet and comfort of the neighborhood in which they are heard, and persons creating such noises are in violation of Section 10.16.010:*

- The sounding of any horn, signal or noise device on any automobile, motorcycle, bus, truck or other vehicle, in any other manner or for any other purpose than allowed by the California Vehicle Code or other laws of the state;
- The noise from an exhaust system of any vehicle which is not equipped or constructed so as to prevent any disturbing or unreasonably loud noise;
- The revving of the engine of any motor vehicle while such vehicle is not in motion, except when done in the course of repairing, adjusting or testing it;
- The playing or operating of any radio, phonograph, orchestra or other musical device or instrument in a manner that is disturbing or unreasonably loud to a reasonable person outside the facility or unit from which the noise emanates; and
- Disturbing or unreasonably loud shouting, screaming, wailing or other vocalization that is disturbing or unreasonably loud to a reasonable person outside the facility or unit from which the noise emanates.

Additionally, Section 10.16.030 – Operation without Permit Prohibited states that "No person shall operate any loudspeaker or sound amplifier or similar device in such a manner as to cause any sound to be projected outside of any building or out-of-doors, except upon receipt of a permit from the chief of police as provided in Section 10.16.040.

3.1.2 Municipal Code Section 20.50 (Zoning Ordinance)

The sound pressure level generated by any use or combination of uses shall not exceed the decibel level at any property line as shown in Table 1, except upon issuance and in compliance with a special use permit as provided in Chapter 20.100.

Table 1: San Jose Municipal Code Table 20-135 - Reprinted

Land Use	**Maximum Noise Level at Property Line [dBA]**
Industrial use adjacent to a property used or zoned for industrial or use other than commercial or residential properties	70

3.2 City of San Jose General Plan

The City of San Jose General Plan Noise Element includes goals and policies that would apply to development of the proposed project. Relevant goals and policies are as follows:

Goal EC-1: Community Noise Levels and Land Use Compatibility – Minimize the impact of noise on people through noise reduction and suppression techniques, and through appropriate land use policies.

Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, state and City noise standards and guidelines as a part of new development review. Applicable standards and guidelines for land uses are shown in Figure 1 below.

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

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

Normally Acceptable:

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

Conditionally Acceptable:

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

Unacceptable:

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

Figure 1: Land Use Compatibility Guidelines for Community Noise in San Jose – Reprinted Table EC-1

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

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

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

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

Goal EC-1.7: Require construction operations within San José to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code.

The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

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

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

Goal EC-1.9: Require noise studies for land use proposals where known or suspected loud intermittent noise sources occur which may impact adjacent existing or planned land uses.

Goal EC-2.3: Require new development to minimize continuous vibration impacts to adjacent uses during demolition and construction.

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

4.0 Environmental Setting

As referenced above in Section 3.0, noise impacts within the project area shall be considered based on several conditions, including the measured ambient noise level. CSDA conducted long-term noise measurements to quantify the environmental noise levels in the project vicinity between November 9 and November 11, 2020. Long-term measurement 1 (LT-1) was positioned on a streetlight pole on Rogers Avenue directly in front of the project site. Long-term measurement 2 (LT-2) was positioned on a streetlight pole near the rear of the project site along Junction Avenue. Both LT measurements were secured in weatherproof lockboxes, approximately 12-feet above grade, and calibrated before and after the measurement time period. The LT measurement and nearest sensitive receiver locations are shown below in Figure 2. Note that LT-2 was positioned across Junction Avenue from the project site as a

suitable streetlight pole was not located at the site boundary; this is an acoustically equivalent measurement location.

Figure 2: Measurement Locations and Sensitive Receivers

The noise measurement results are presented in Table 2 and the continuous sound levels throughout the measurement period for LT-1 and LT-2 are shown in Figure 3 and Figure 4, respectively.

Table 2: Calculated Noise Measurement Results

Measurement Location	**Loudest Hour L_{EQ} [dBA]**	**L_{dn} [dBA]**
LT-1 (Rogers Ave.)	70 (11/9/2020, 7 AM)	69
LT-2 (Junction Ave.)	72 (11/10/2020, 12 PM)	72

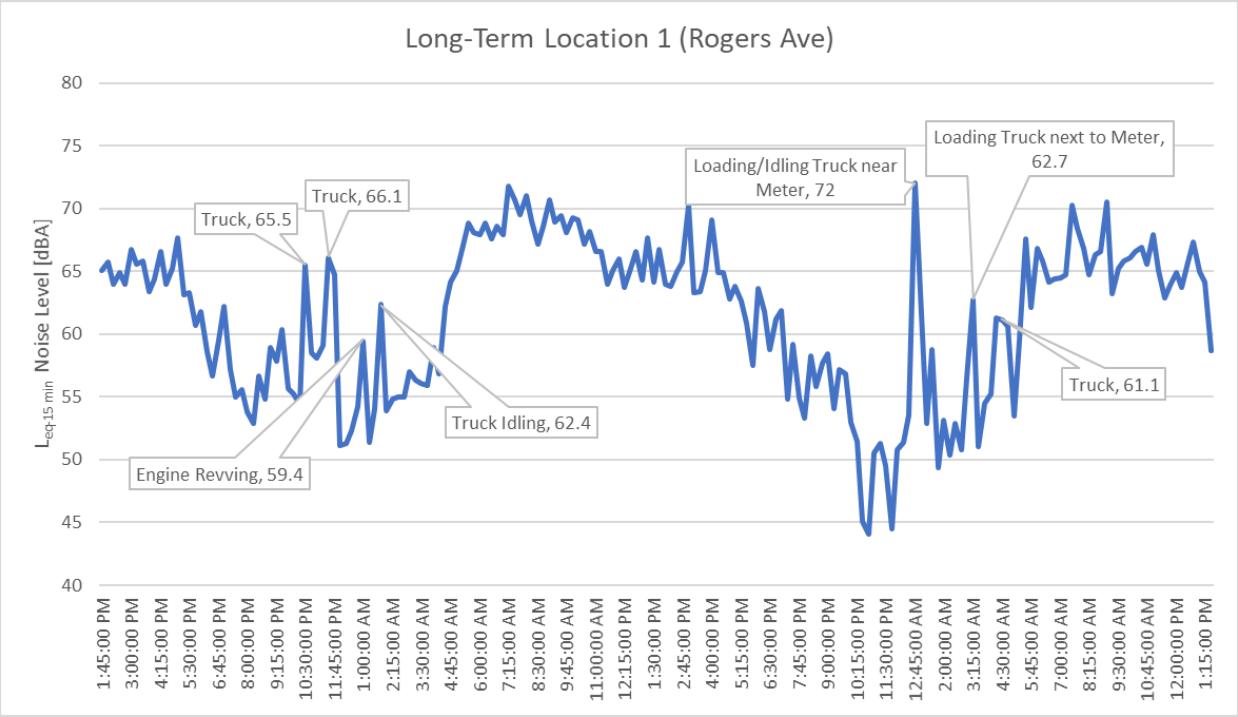

Figure 3: Long-Term Location 1 – Continuous Sound Level

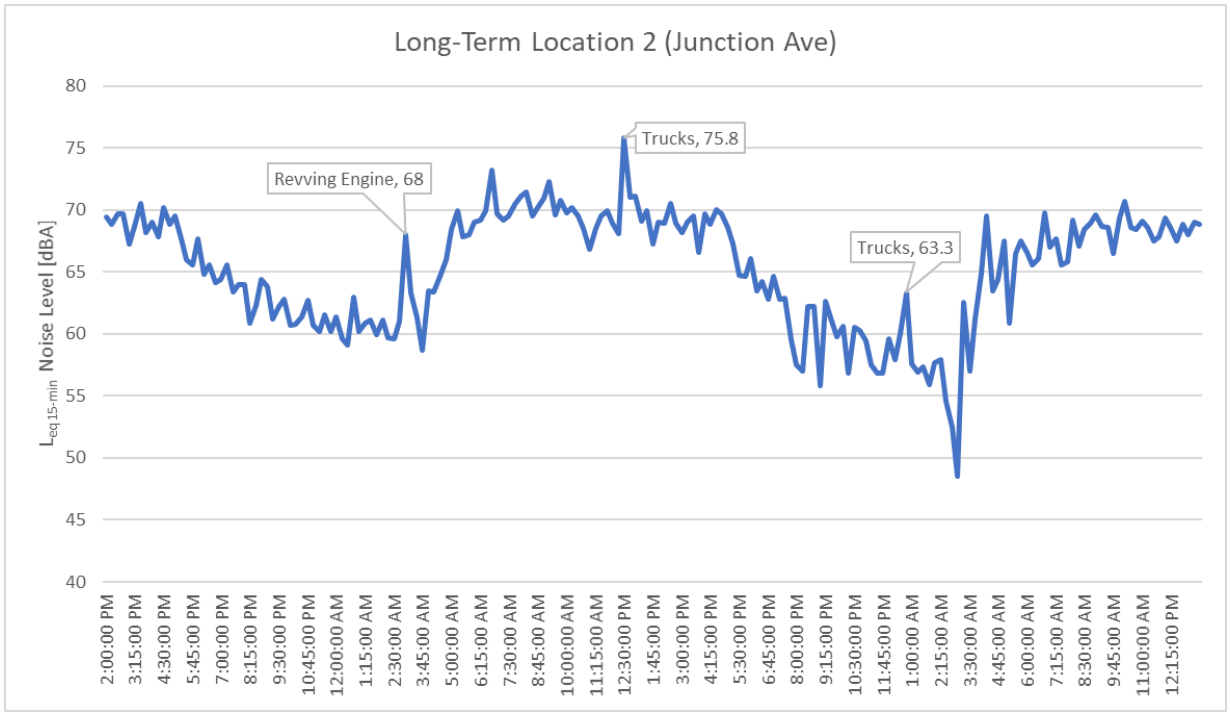

Figure 4: Long-Term Location 2 – Continuous Sound Level

5.0 Land-Use Compatibility Analysis

Based upon the on-site measurements conducted by CSDA Design Group, the existing project site is exposed to noise levels between L_{dn} 69 and 72 dBA. These measurements border the "normally acceptable" (less than L_{dn} 70 dBA) and "conditionally acceptable" (between L_{dn} 70 and 80 dBA) categories per the City's noise and land-use compatibility guidelines for Business, Commercial, and Professional Office uses.

6.0 Traffic Noise Analysis

Per the November 3, 2020, Local Transportation Analysis prepared by Hexagon Transportation Consultants, there is expected to be a net increase in the number of trips to/from the project as compared to the existing conditions. Table 3 summarizes the change in expected traffic volume at the project site.

Table 3: Project Trip Generation Summary

	AM Peak Hour	PM Peak Hour	Average Daily Trips
Existing Trips	24	26	229
Project Generated Trips (Junction Ave)	23	30	264
Project Generated Trips (Rogers Ave)	0	0	0
Existing + Proposed (Junction and Rogers)	47	56	493
Change	+23	+30	+264

We have analyzed the traffic volume changes and resulting traffic noise increases, utilizing the Federal Highway Administration's Traffic Noise Model v2.5, and compared the results of our calculations to the City's General Plan noise criteria. Table 4 summarizes our calculation results at each of the long-term noise monitoring locations, based on the current and expected future and assumed vehicle speed of 25 mph, which is quite conservative.

Table 4: Calculated Traffic Noise Changes

Receptor	Existing Noise Level [L_{dn}, dBA]	Project-Generated Traffic Noise Level * [L_{dn}, dBA]	Cumulative Noise Level, Existing + Project [L_{dn}, dBA]	Increase [L_{dn}, dBA]	Criteria [dBA]	Meets Criteria?
LT-1: Rogers Avenue	69.4	0	69.4	0.0	≤3	Y
LT-2: Junction Avenue	71.6	50.4	71.6	0.0	≤3	Y

* DNL values are estimated based upon typical correlation between peak traffic hour noise levels and corresponding DNL. See Caltrans 2013 Technical Noise Supplement, Pages 2-55 to 2-59.

Based on the results above, there will be no increase in traffic noise due to the implementation of the proposed project.

7.0 Construction Noise Analysis

7.1 Construction Noise Methodology

The primary construction noise impacts would occur from noise generated by the intermittent operation of heavy equipment on the project site. Noise impacts would also result from trucks arriving to and

departing from the site, which would be an intermittent source of noise. Construction activities associated with the project would potentially include demolition, grading, installation of utilities, landscaping, and erection of the building. Equipment typically used in these activities includes bulldozers, excavators, graders, backhoes, concrete trucks, loaders, and heavy-duty trucks. We understand that pile driving is not planned/necessary; therefore, we have not analyzed pile driving noise.

At this time, construction schedules and expected equipment mixes have not been provided. We have completed a preliminary analysis based on expected construction activities associated with a project of this size. The California Emissions Estimator Model (CalEEMod) is typically used for technical environmental reviews of projects subject to the California Environmental Quality Act (CEQA) and other environmental conditions. Appendix D of the CalEEMod User's Guide includes default data tables for construction projects based on project size in acres. Based on a typical project between 0 and 1 acres, we estimate the following construction schedule for this project:

- Demolition: 10 days total
- Grading: 2 days total
- Building Construction: 100 days total
- Architectural Coating: 5 days total
- Site Preparation: 1 day total
- Paving: 5 days total

Appendix D of the CalEEMod User's Guide also includes equipment lists per phase based on project acreage. Based on a typical project between 0 and 1 acres, we estimate each project phase will include the equipment types included in Table 5. To estimate construction noise based on this equipment mix, we used the Federal Highway Administration Roadway (FHWA) Construction Noise Model (RCNM) methodology – this resource includes reference noise levels associated with common construction equipment items. Table 5 includes the estimated construction equipment items per phase (available through the CalEEMod default list), and the associated construction noise information available through the FHWA RCNM resource – including the equivalent construction equipment item (since not all equipment items referenced in the CalEEMod defaults are included in the RCNM construction noise list), typical equipment usage factor per day, reference noise level at 50 feet (with and without typical usage factor), as well as a grid representing the use of equipment items per phase.

Most of the heavy construction equipment will not be running at full capacity throughout each construction period and will not be restricted to one location. To account for this variation in usage, a usage factor (assigned to each piece of equipment in the by the FHWA "Roadway Construction Noise Model") has been incorporated to the reference noise levels presented in Table 5.[1]

[1] Federal Highway Administration Roadway Construction Noise Model Noise Emission Reference Level Database, 2006.

Table 5: Construction Equipment Noise Levels and Phasing

Equipment (CalEEMod Defaults for <1 acre project)	Equivalent RCNM Equipment Noise (dBA)	Ref. Noise Level at 50 ft (dBA)	Use Factor	Noise Level @ 50' with Acoustical Use Factor (dBA)	Demo.	Site Prep	Grading	Building Const.	Arch. Coating	Paving
Rubber Tired Dozers	Dozer	85	40%	81	X		X			
Concrete / Ind. Saws	Concrete Saw	90	20%	83	X		X			
Tractors / Loaders / Backhoes	Backhoe	80	40%	76	X	X	X	X		X
Graders	Grader	85	40%	81		X				
Cranes	Crane	85	16%	77				X		
Forklifts	Man Lift	85	20%	78				X		
Welders	Welder / Torch	73	40%	69						
Generator Sets	Generator	82	50%	79						
Air Compressors	Compressor (air)	80	40%	76					X	
Pavers	Paver	85	50%	82						X
Cement and Mortar Mixers	Concrete Mixer Truck	85	40%	81						X
Rollers	Roller	85	20%	78						X
Paving Equipment	Pavement Scarafier	85	20%	78						

As the City does not include construction noise limits applicable to this project, we have not provided expected construction noise level calculations at adjacent receivers. Section 8.0 provides preliminary "best practice" noise reduction measures based upon typical construction equipment/phasing.

8.0 Construction Noise Reduction Measures

By implementing the noise reduction measures outlined below, we expect to achieve a minimum noise reduction of 3 dBA for construction equipment that moves around the site (e.g., excavator, skid steer, etc.).

- Construction equipment should be well maintained and used judiciously to be as quiet as practical.
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment.
- Utilize "quiet" models of air compressors and other stationary noise sources where technology exists. Select hydraulically or electrically powered equipment and avoid pneumatically powered equipment where feasible.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors when adjoining construction sites. Construct temporary noise barriers or partial enclosures to acoustically shield such equipment where feasible.
- Prohibit unnecessary idling of internal combustion engines.
- Route construction traffic along major roadways and away from sensitive receptors where feasible.
- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The name and telephone number of the disturbance coordinator should be provided to the City. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented. The disturbance coordinator shall record all noise complaints received and actions taken in response and submit this record to the project planner upon request.

- Conspicuously post the name, telephone number, and responsibility for noise management of the disturbance coordinator at the construction site. The property owner shall install a sign stating the allowed days and hours for construction, which shall be posted in a conspicuous place along the front property line where it can be viewed by all contractors, subcontractors and the general public. The sign shall be 4 square feet and state the message below. Lettering shall be at least three inches, except for "No noise-generating construction on Sundays or national holidays" which shall be at least 1.5 inches.
- Combine noisy operations so that they occur in the same time period. The total noise level produced will not be significantly greater than the level produced if the operation were performed separately (and the noise will be of shorter duration).
- All equipment shall be turned off if not in use for more than 5 minutes.

9.0 Exterior Equipment Noise

As stated in Section 3.1, the City of San Jose stipulates that the "sound pressure level generated by any use or combination of uses shall not exceed the decibel level at any property line" as presented in Table 1 (Re-printed Table 20-135). The criteria presented in this table applies to any future exterior/rooftop equipment at the project site; a limit of 70 dBA at the property line of nearby industrially zoned properties.

10.0 Conclusions

- Based on site measurements conducted by CSDA Design Group, the existing project site is exposed to noise levels between L_{dn} 69 and 72 dBA. This is between the "normally acceptable" (less than L_{dn} 70 dBA) and "conditionally acceptable" (between L_{dn} 70 and 80 dBA) designations of the City's noise and land-use compatibility guidelines.
- Based on our review of the traffic impact analysis prepared for this project by Hexagon Transportation Consultants on November 3, 2020, increases in traffic noise due to implementation of the proposed project will be less than the applicable standards provided by the San Jose General Plan Noise Element.
- Based on our review of the City's Municipal Code and General Plan, applicable construction noise limits were not found for this project. As such, we have included general construction noise mitigation measures that are expected to reasonably reduce noise emanating from the project site, but have not prepared an in-depth analysis of the expected project construction noise.
- Note that the City has an applicable noise level criterion at the project's property line for future exterior/rooftop equipment noise levels; which is 70 dBA at nearby industrially zoned receivers.

This concludes our environmental noise analysis for the 1728 Rogers Avenue project in San Jose, California.

11.0 Appendix A: Acoustical Terms and Definitions

dBA: A weighted sound pressure (or noise level) represents the noisiness or loudness of a sound by weighting the amplitudes of various acoustical frequencies to correspond more closely with human hearing. A 10-dB (decibel) increase in noise level is perceived to be twice as loud. A-weighting is specified by the U.S. EPA, OSHA, Caltrans, and others for use in noise measurements.

Day/Night Average Sound Level (L_{dn} or DNL): A descriptor established by the U.S. Environmental Protection Agency to describe the average day-night level with a 10 dB penalty applied to noise occurring during the nighttime hours (10 pm to 7 am) to account for the increased sensitivity of people during sleeping hours. A 10 dB increase in sound level is perceived by people to be twice as loud.

L_{eq}: The equivalent steady-state A-weighted sound level that, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same time period.

Sound Pressure Level (SPL): A numerical value representing the total measured pressure difference (in pascals) compared to a reference sound pressure of 20 micro-pascals. SPL values in dBA are related to the perceived loudness of a sound source at some distance.