Almaden Country Day School Master Plan

Noise Impact Analysis

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Prepared for:

Almaden Country Day School
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Acronym / Abbreviation	**Full Phrase or Description**
ACDS	Almaden Country Day School
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	Decibels (unweighted)
dBA	Decibels (A-weighted)
dBV	Velocity Decibels
DNL	Day-Night Average Noise Level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
In/Sec	Inches per Second
Leq	Continuous Equivalent Noise Level
LT	Long-Term
OITC	Outdoor Indoor Transmission Class
P.E.	Physical Education
PRC	Public Resources Code
PQP	Public, Quasi-Public
SJUSD	San Jose Unified School District
SR	State Route
ST	Short-Term
STC	Sound Transmission Class
SUP	Special Use Permit

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EXECUTIVE SUMMARY

This Noise Impact Assessment Report (Report) evaluates the potential noise impacts associated with the construction and operation of the Almaden Country Day School Campus Master Plan Project (proposed Project) located at 6835 Trinidad Drive in the City of San Jose, Santa Clara County, California 95120.

This Report is consistent with the requirements specified in the City of San Jose Municipal Code and Envision 2040 General Plan Environmental Leadership Element (City of San Jose 2018, 2019). This Report is intended to assist the California Environmental Quality Act (CEQA) Lead Agency (City of San Jose) with its review of potential Project-related noise impacts in compliance with CEQA (Public Resources Code (PRC) §21000 et seq.) and the CEQA Guidelines (14 CCR §15000 et seq.), particularly in respect to the noise issues identified in Appendix G of the CEQA Guidelines. This Report does not make determinations of significance pursuant to CEQA because such determinations are solely the purview of the CEQA Lead Agency.

S.1 PROPOSED PROJECT DESCRIPTION

The Almaden Country Day School (ACDS) is applying to the City of San Jose for a rezoning and Special Use Permit for approval of a master plan improvement project at the existing ACDS Campus.[1] The project consists of improvements to the existing ACDS, located at 6835 Trinidad Drive in San Jose. ACDS leases a closed school site from the San Jose Unified School District (SJUSD) and the buildings are aging and no longer serve the ACDS well. The SJUSD has given ACDS permission to remodel the campus through the implementation of the proposed Campus Master Plan. The project would remove existing school buildings at the site and redevelop the site with new school buildings, add a new multipurpose building, and reconfigure the driveways, drop-off and pick-up zones, and parking lot. The proposed Campus Master Plan would be implemented in four phases over the next approximately 15 years.

The proposed Project would involve construction and operational activities that would generate noise from equipment use, vehicle trips, and other sources of noise.

S.2 POTENTIAL CONSTRUCTION NOISE AND VIBRATION IMPACTS

The proposed Project's construction noise and vibration levels were estimated using published noise data from the California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA). Estimated construction noise levels were analyzed at adjacent property lines and at sensitive noise receptor locations, including residential receptors west of the ACDS, along Trinidad Drive; south of the ACDS, along Akio Way; and east of the ACDS, along Winterset Way.

Implementation of the proposed Campus Master Plan would result in four construction phases anticipated to last approximately 12 to 15 months each over the next approximately 15 years. Worst-case

[1] The City requires rezoning the property from R-1-5 to Public, Quasi-Public (PQP) and the issuance of a Special Use Permit for the private school use.

noise levels could range from approximately 75 dBA to 85 dBA at nearby sensitive receptor locations depending on the phase and activity being undertaken. The City of San Jose does not have established maximum construction noise level limitations; however, General Plan Policy EC-1.7 requires construction projects within 500 feet of residential land uses to prepare a Construction Noise Logistics Plan if the project would involve substantial noise generating activities for 12 or more months. In addition, City Municipal Code Section 20.100.450 limits construction activities occurring within 500 feet of a residence to the hours of 7 AM to 7 PM, Monday through Friday, unless alternative hours are expressly allowed in a development permit or other planning approval.

MIG recommends the proposed Project implement Mitigation Measure NOI-1, which requires the preparation of a Construction Noise Logistics Plan prior to beginning construction activity for any Campus Master Plan phase. At a minimum, the Construction Noise Logistics Plan should specify the hours of construction, noise and vibration minimization measures, posting or notification of construction schedule, and the designation of a noise disturbance coordinator who would respond to neighborhood complaints.

The proposed Project's demolition, site preparation, grading, and other construction activities that could result in ground-borne vibration would occur at least 25 feet from any adjacent structure. At this distance, potential construction-related groundborne vibration levels would likely be perceptible at residential structures adjacent to the Project site's eastern property line; however, these vibration levels would not be excessive, because any equipment operation near property lines would be short in duration, intermittent (lasting only a few hours or days in work areas near property lines), and would not result vibration levels that could cause structural damage.

S.3 POTENTIAL OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from parking activities and heating, ventilation, and air conditioning (HVAC) equipment. The potential increase in noise resulting from these activities was estimated using the guidance and recommendations contained in the *Caltrans Technical Noise Supplement* (Caltrans, 2013a), Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Handbook* (FTA, 2006), and available manufacturer's data for HVAC noise levels.

Estimates of the proposed Project's operational noise levels indicate the Project would not generate noise levels that increase the ambient noise environment by more than 3.0 DNL at any nearby sensitive receptor location with an existing ambient noise level of "Normally Acceptable," as defined in Policy EC-1.2 City's General Plan. In addition, the proposed Project would be located in an ambient noise environment that is consistent with the City's land use compatibility guidelines for public and quasi-public land uses (e.g., schools).

Although operation of the proposed project would not result in a 3 DNL increase at any nearby receptor locations, activities associated with motor-vehicle operation in the campus' southeastern boundary have the potential to conflict with the 55 dBA Lmax noise level limitation established in Section 20.40.6500 of the City's Municipal Code. Accordingly, the project would incorporate Project Design Feature-1 (PDF-1) to reduce potential noise levels from vehicular activity in the southeastern parking lot. PDF-1 would require ACDS to install a permanent, 6-foot tall, concrete barrier along the campus' property line with residential land uses on Winterset Way. The concrete wall should be installed at the beginning of Phase 2 to initially help shield sensitive receptor locations from construction noise, also in addition to reducing operational noise associated with parking lot operation.

S.4 AIRPORT-RELATED NOISE

The proposed Project site is located approximately 10 miles south of the San Jose International Airport. The proposed Project is not within an airport influence area and would not expose students or staff to excessive public or private airport-related noise.

S.5 RECOMMENDED MITIGATION MEASURES AND PROJECT DESIGN FEATURES

Since the proposed Project could conflict with City General Plan Policy EC-1.7 and Municipal Code Section 20.40.6500, MIG recommends the inclusion of the following mitigation measure and Project Design Feature (PDF), respectively:

Mitigation Measure NOI-1: Consistent with City of San Jose General Plan Policy EC-1.7, the ACDS and/or its designated contractor shall prepare a Construction Noise Logistics Plan (CNLP) prior to the start of any construction activities associated with the ACDS Campus Master Plan. The CNLP shall apply to all phases of master plan development and shall:

- Designate an ACDS employee and/or contractor's representative to serve as a noise disturbance coordinator responsible for receiving noise complaints and resolving construction-noise related issues.
- Include procedures describing how the noise disturbance coordinator will receive, respond to, and resolve construction noise complaints. At a minimum, upon receipt of a noise complaint, the Contractor and/or ACDS representative described in the first sub-bullet above shall identify the noise source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint.
- Restrict construction work hours to the hours specified in City of San Jose Municipal Code Section 20.11.450 (7:00 AM to 7:00 PM, Monday through Friday)
- Require construction staging areas to be established in locations that create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project sure during all project construction
- Provide notice (at least 10 days prior to the start of construction activities) to all adjacent residences that describes the approximate start date and schedule for the construction activities and a contact name and phone number for the construction contractor and/or ACDS staff person responsible for handling construction-related noise complaints. The notice shall also identify periods of peak construction activities and noise levels (e.g., grading activities, foundation work, etc.).
- Specify the noise and vibration minimization measures that will be undertaken during the construction phase to reduce construction-related noise levels. Such measures may include, but are not limited to:
    - Equipping all internal combustion engine-drive equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment being controlled
    - Prohibiting unnecessary idling of internal combustion engines (i.e., idling should generally be limited to no more than five minutes)
    - Using hydraulically or electrically powered impact tools (e.g., jack hammer) to avoid noise associated with compressed air exhaust from pneumatically powered tools, if feasible
    - Reducing noise from pneumatic tools through the use of a noise suppression device on the

compressed air exhaust

- Connecting to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators
- Locating stationary noise-generating equipment such as pumps, compressors, and welding machines as far from sensitive receptor locations as practical. If such equipment must be located near receptors, provide shielding in the form of a three-sided sound enclosure (with a full or partial roof) that provides for proper ventilation, equipment operation, and effective noise control.
- Phasing demolition and construction activities to take advantage of noise shielding provided by existing structures (i.e., start from the side of the building the farthest away from nearby sensitive receptors).
- Prohibiting noise from radios or other amplified sound devices to be audible beyond the property line of the construction site.

Project Design Feature-1: Prior to any construction activities associated with Phase 2 of the Campus Master Plan, the ACDS shall install a permanent, concrete barrier along the entire portion of the proposed Project's southeastern parking lot. The barrier shall be constructed free of openings or gaps and have a minimum rated transmission loss value of 25 dBA (or higher). The design of this barrier would reduce noise levels between the southeastern parking lot and the residential property line by 15 dBA (or more).

The implementation of Mitigation Measure NOI-1 would ensure all project construction activities associated with implementation of the Campus Master Plan are consistent with General Plan Policy EC-1.7. The Construction Noise Logistics Plans that would be prepared pursuant to this mitigation measure would specify the hours of construction, noise and vibration minimization measures that would be implemented, posting or notification of a construction schedule, and the designation of a noise disturbance coordinator who would respond to neighborhood complaints.

The implementation of PDF-1 would serve to reduce vehicle-related noises that would be generated in the ACDS Campus' southeastern parking lot to levels consistent with Municipal Code Section 20.40.6500. Based on MIG's noise monitoring conducted during morning drop-off activities, a concrete wall installed along the campus' eastern property line that reduces noise levels by 15 dBA would be sufficient to meet the City's maximum noise level limitation of 55 dBA Lmax at the adjacent property line with residences along Winterset Way.

1 INTRODUCTION

The Almaden Country Day School (ACDS) has submitted an application for a rezoning and Special Use Permit (SUP) to the City of San Jose (City) for its proposed Almaden Country Day School Campus Master Plan (proposed Project). The proposed Project would be located at 6835 Trinidad Drive, in the southern portion of San Jose, in Santa Clara County, and include redevelopment of the site with new school buildings, the addition of a new, multipurpose building, and reconfiguration of driveways, drop-off and pick-up zones, and parking lots. Figure 1-1 depicts the regional setting of the proposed Project.

The proposed Project would be constructed in four phases over the next approximately 15 years, with each phase lasting approximately five years, based on available funding. Project development would involve construction and operational activities that would generate noise that would affect the surrounding environment.

MIG, Inc. (MIG) prepared this Noise Impact Assessment Report (Report) at the request of ACDS. This Report evaluates the potential construction- and operations-related noise impacts of the proposed Project using Project-specific information contained in the proposed site plan and ACDS Operational Plan that will be submitted to the City as part of the SUP application. Where necessary, MIG has supplemented available information with standardized sources of information, such as model assumptions pertaining to construction equipment activity levels. In general, this Report evaluates the potential "worst-case" conditions associated with the proposed Project's construction and operational noise levels to ensure a conservative (i.e., likely to overestimate) assessment of potential noise impacts is presented.

This Report is intended for use by the Lead Agency to assess the potential noise and vibration impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines. This report does not make determinations of significance pursuant to CEQA because such determinations are solely the purview of the Lead Agency.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- **Chapter 1, Introduction,** explains the contents of this Report and its intended use.
- **Chapter 2, Noise Fundamentals,** provides pertinent background information on the measurement, propagation, and characterization of noise levels.
- **Chapter 3, Environmental Setting,** describes the existing noise setting of the proposed Project.
- **Chapter 4, Regulatory Setting,** provides information on the federal, state, and local regulations that govern the proposed Project's noise setting and potential noise impacts.
- **Chapter 5, Proposed Project Description**, provides an overview of construction and operational activities associated with the proposed Project.
- **Chapter 6, Impact Assessment,** identifies the potential construction and operational noise impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.
- **Chapter 7, Report Preparers and References** list the individuals involved, and the references used, in the preparation of this Report.

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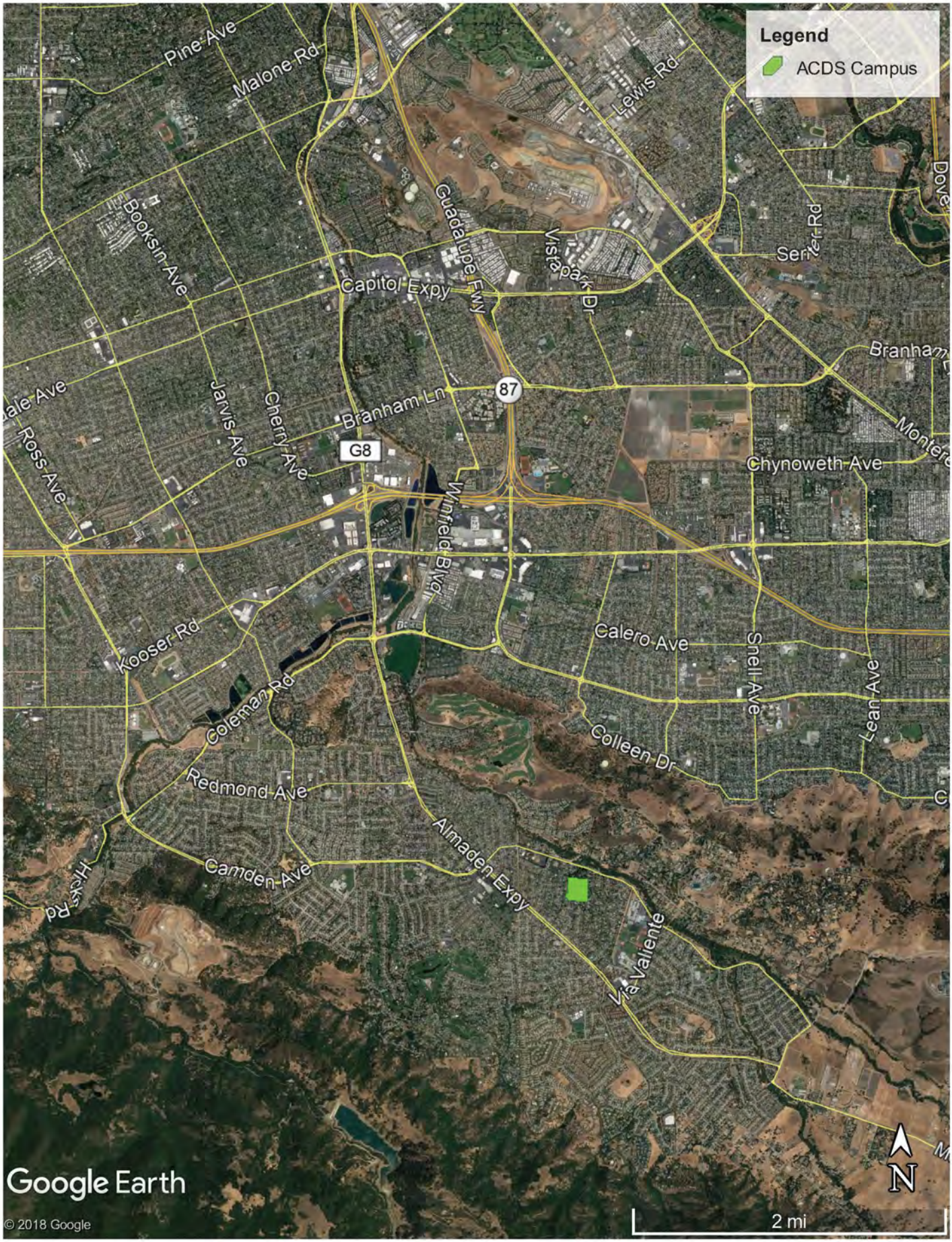

Figure 1-1 Regional Location

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2 NOISE FUNDAMENTALS

2.1 DEFINING NOISE

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. For example, airborne-sound is the rapid fluctuation of air pressure above and below atmospheric pressure. "Noise" may be defined as unwanted sound that is typically construed as loud, unpleasant, unexpected, or undesired by a specific person or for a specific area.

2.1.1 Sound Production

Sound has three properties: frequency (or pitch), amplitude (or intensity or loudness), and duration. Pitch is the height or depth of a tone or sound and depends on the frequency of the vibrations by which it is produced. Sound frequency is expressed in terms of cycles per second, or Hertz (Hz). Humans generally hear sounds with frequencies between 20 and 20,000 Hz and perceive higher frequency sounds, or high pitch noise, as louder than low-frequency sound or sounds low in pitch. Sound intensity or loudness is a function of the amplitude of the pressure wave generated by a noise source combined with the reception characteristics of the human ear. Atmospheric factors and obstructions between the noise source and receptor also affect the loudness perceived by the receptor.

The frequency, amplitude, and duration of a sound all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the sound as "noisy" or annoying. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

2.1.2 Measuring Sound

Sound pressure levels are typically expressed on a logarithmic scale in terms of decibels (dB). A dB is a unit of measurement that indicates the relative amplitude (i.e., intensity or loudness) of a sound, with 0 dB corresponding roughly to the threshold of hearing for the healthy, unimpaired human ear. Since decibels are logarithmic units, an increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. In general, there is a relationship between the subjective noisiness or loudness of a sound and its intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness. Due to the logarithmic basis, decibels cannot be directly added or subtracted together using common arithmetic operations:

$$50\ decibels + 50\ decibels\ \neq 100\ decibels$$

Instead, the combined sound level from two or more sources must be combined logarithmically. For example, if one noise source produces a sound power level of 50 dBA, two of the same sources would combine to produce 53 dB as shown below.

$$10 * \ 10\,log\left(10^{\left(\frac{50}{10}\right)} + \ 10^{\left(\frac{50}{10}\right)}\right) = 53\ decibels$$

In general, when one source is 10 dB higher than another source, the quieter source does not add to the sound levels produced by the louder source because the louder source contains ten times more sound energy than the quieter source.

2.1.3 Characterizing Sound

Although humans generally can hear sounds with frequencies between 20 and 20,000 Hz most of the sound humans are normally exposed to do not consist of a single frequency, but rather a broad range of frequencies perceived differently by the human ear. In general, humans are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. Instruments used to measure sound, therefore, include an electrical filter that enables the instrument's detectors to replicate human hearing. This filter known as the "A-weighting" or "A-weighted sound level" filters low and very high frequencies, giving greater weight to the frequencies of sound to which the human ear is typically most sensitive. Most environmental measurements are reported in dBA, meaning decibels on the A-scale.

Sound levels are usually not steady and vary over time. Therefore, a method for describing either the average character of the sound or the statistical behavior of the variations over a period of time is necessary. The continuous equivalent noise level (Leq) descriptor is used to represent the average character of the sound over a period of time. The Leq represents the level of steady-state noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. Leq is useful for evaluating shorter time periods over the course of a day. The most common Leq averaging period is hourly, but Leq can describe any series of noise events over a given time period.

Variable noise levels are the values that are exceeded for a portion of the measured time period. Thus, the L1, L5, L10, L25, L50, and L75 descriptors represent the sound levels exceeded 1%, 5%, 10%, 25%, 50%, and 75% of the time the measurement was performed.

When considering environmental noise, it is important to account for the different responses people have to daytime and nighttime noise. In general, during the nighttime, background noise levels are generally quieter than during the daytime but also more noticeable due to the fact that household noise has decreased as people begin to retire and sleep. Accordingly, a variety of methods for measuring noise have been developed. The California General Plan Guidelines for Noise Elements identifies the following common metrics for measuring noise:

- **Day-Night Average Level (DNL or L_{dn}):** The average equivalent A-weighted sound level during a 24-hour day, divided into a 15-hour daytime period (7 AM to 10 PM) and a 9-hour nighttime period (10 PM to 7 AM). A 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45-dBA nighttime sound level (e.g., at 2 AM) would contribute as much to the overall day-night average as a 55-dBA daytime sound level (e.g., at 7 AM).
- **Community Noise Equivalent Level (CNEL):** The CNEL descriptor is similar to DNL, except that it includes an additional 5 dBA penalty for noise events that occur during the evening time period (7 PM to 10 PM). For example, a 45-dBA evening sound level (e.g., at 8 PM) would contribute as much to the overall day-night average as a 50-dBA daytime sound level (e.g. at 8 AM).

The artificial penalties imposed during DNL and CNEL calculations are intended to account for a receptor's increased sensitivity to noise levels during quieter nighttime periods. As such, the DNL and CNEL metrics are usually applied when describing longer-term ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. In contrast, the Leq metric is usually applied to shorter reference periods where sensitivity is presumed to remain generally the same.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the CNEL for evaluating community noise exposure levels.

2.1.4 Sound Propagation

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. The strength of the source is often characterized by its "sound power level." Sound power level is independent of the distance a receiver is from the source and is a property of the source alone. Knowing the sound power level of an idealized source and its distance from a receiver, sound pressure level at the receiver point can be calculated based on geometrical spreading and attenuation (noise reduction) as a result of distance and environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and shielding by terrain or barriers.

For an ideal "point" source of sound, such as mechanical equipment, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. In contrast, a "line" source of sound, such as roadway traffic or a rail line, spreads out in a cylindrical pattern and theoretically attenuates by 3 dB with each doubling of distance from the line source; however, the sound level at a receptor location can be modified further by additional factors. The first is the presence of a reflecting plane such as the ground. For hard ground, a reflecting plane typically increases A-weighted sound pressure levels by 3 dB. If some of the reflected sound is absorbed by the surface, this increase will be less than 3 dB. Other factors affecting the predicted sound pressure level are often lumped together into a term called "excess attenuation." Excess attenuation is the amount of additional attenuation that occurs beyond simple spherical or cylindrical spreading. For sound propagation outdoors, there is almost always excess attenuation, producing lower levels than what would be predicted by spherical or cylindrical spreading. Some examples include attenuation by sound absorption in air; attenuation by barriers; attenuation by rain, sleet, snow, or fog; attenuation by grass, shrubbery, and trees; and attenuation from shadow zones created by wind and temperature gradients. Under certain meteorological conditions, like fog and low-level clouds, some of these excess attenuation mechanisms are reduced or eliminated due to noise reflection.

2.1.5 Noise Effects on Humans

Noise effects on human beings are generally categorized as:

- Subjective effects of annoyance, nuisance, and/or dissatisfaction
- Interference with activities such as speech, sleep, learning, or relaxing
- Physiological effects such as startling and hearing loss

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports. Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person's subjective reaction to a new noise source is to compare it the existing environment without the noise source, or the "ambient" noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

When exposed to high noise levels, humans may suffer hearing damage. Sustained exposure to high noise levels (e.g., 90 dBs for hours at a time) can cause gradual hearing loss, which is usually temporary, whereas sudden exposure to a very high noise level (e.g., 130 to 140 dBs) can cause sudden and permanent hearing loss. In addition to hearing loss, noise can cause stress in humans and may contribute to stress-related diseases, such as hypertension, anxiety, and heart disease (Caltrans, 2013a).

2.2 VIBRATION AND GROUNDBORNE NOISE

Vibration is the movement of particles within a medium or object such as the ground or a building. Vibration may be caused by natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or humans (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources are usually characterized as continuous, such as factory machinery, or transient, such as explosions.

As is the case with airborne sound, groundborne vibrations may be described by amplitude and frequency; however, unlike airborne sound, there is no standard way of measuring and reporting amplitude. Vibration amplitudes can be expressed in terms of velocity (inches per second) or discussed in dB units in order to compress the range of numbers required to describe vibration[2]. Vibration impacts to buildings are usually discussed in terms of peak particle velocity (PPV) in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. Vibration can impact people, structures, and sensitive equipment. The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Groundborne vibration can also disrupt the use of sensitive medical and scientific instruments, such as electron microscopes.

Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities. Next to pile driving, grading activity has the greatest potential for vibration impacts if large bulldozers, large trucks, or other heavy equipment are used.

[2] As with airborne sound, the groundborne velocity can also be expressed in decibel notation as velocity decibels, or dBV (FTA, 2006). The vibration of floors and walls may cause perceptible vibration, rattling of items such as windows or dishes on shelves, or a low-frequency rumble noise, referred to as groundborne noise. This Report uses PPV to describe vibration effects.

3 ENVIRONMENTAL SETTING

3.1 PROJECT LOCATION AND SITE DESCRIPTION

The ACDS Campus is located at 6835 Trinidad Drive in the City of San Jose, in Santa Clara County (see Figure 1-1). The campus consists of an approximately 9.13-acre school site developed with an elementary school building, multipurpose building, administration building, restroom buildings, and several modular buildings that serve as the middle school, coach offices, pre-kindergarten, locker room, and art, science, library, and computer center. Most of these buildings were constructed in 1965-66. The campus is bounded by Trinidad Drive to the west, Akio Way to the south, single-family homes along Winterset Way to the east, and Greystone Park to the north.

ACDS currently serves a student population of approximately 360 students, although it has served up to 425 students in the recent past. The intent of the Master Plan is to update and modernize the outdated school facilities, without any plans to increase overall enrollment.

The campus is currently zoned R-1-5, which is a residential zoning district with a maximum of 5 dwelling units per acre, and is designated Public, Quasi-Public (PQP) in the City's General Plan. The school site is within the Almaden Planning Area of the City's General Plan and is surrounded to the west, south, and east by residential land uses (designated "Residential Neighborhood" in the City's General Plan) and to the north by Graystone Park (designated "Open Space, Parklands and Habitat" in the City's General Plan).

The ACDS Campus is currently accessed via two driveways along Trinidad Drive (a two-way and an outbound only access driveway) and one driveway along Akio Way (inbound only access).

3.2 EXISTING NOISE AND VIBRATION ENVIRONMENT

As described in the City of San Jose's Envision 2040 General Plan Environmental Impact Report (EIR), the ambient noise conditions within the City of San Jose are predominantly the result of transportation-related noise sources. US 101, Interstate 280, 680, and 880, and State Routes 17, 82, 85, 87, and 237 are the most significant sources of traffic noise throughout the City. In areas that are more distant from highways, collector roadways and local streets are the primary noise sources at nearby land uses. Although the project site is not near any freeways or state routes, it is approximately 1,100 feet from Almaden Expressway.

The City's General Plan EIR identifies that Almaden Expressway between Camden Avenue and Redmond Avenue (the closest expressway segment to the ACDS Campus evaluated in the City's General Plan EIR) generates a noise level of 68 DNL at a distance of 75 feet from the center of the expressway under both 2008 and 2035 traffic conditions. Given the campus is more than 1,000 feet from Almaden Expressway and there are a number of residential structures that lie between the Expressway and the project site, the primary transportation noise sources influencing the ambient noise environment come from vehicular operation on local streets adjacent to the ACDS Campus, such as Trinidad Drive and Akio Lane.

3.2.1 Existing Ambient Noise Levels

Existing ambient noise measurement levels at the ACDS Campus were monitored from approximately 7:30 AM on Tuesday, December 10, 2019 to 4:00 PM on Wednesday, December 11, 2019. Ambient noise levels were measured with three, Larson Davis Model LxT, Type I, sound level meters. The meters' receiving microphones were set to a height of five feet above ground to approximate a human

receptor. Noise monitoring was conducted in 10-minute intervals. Weather conditions on December 10, 2019 started off partly cloudy and progressed to cloudy as the day progressed. Light rainfall totaling approximately 0.05 inches occurred between the hours of 8:30 PM on December 10 and 4:00 AM on December 11. The daytime high temperatures were approximately 60 degrees and the nightly low was approximately 54 degrees.

The monitoring effort consisted of two long-term (LT) measurements (approximately 36 hours) and one short-term (ST) measurement (approximately 20 minutes) at locations selected to:

- Provide direct observations of existing noise sources in the vicinity of the proposed Project area (e.g., heating, ventilation, and air conditioning (HVAC) systems on the portable classroom buildings, students playing on the black top, morning drop-off activities, etc.);
- Determine the typical ambient noise levels in the proposed Project area and vicinity; and
- Evaluate the proposed Project's potential increase in noise levels at nearby sensitive receptor locations (see Section 3.3).

Ambient noise monitoring locations are described below.

- **Location LT-1** was approximately 75 feet north of Akio Way, along the ACDS Campus' eastern boundary, near the property line shared with the single-family homes on Winterset Way. The ambient noise levels at LT-1 are considered representative of typical day- and night-time noise levels near the southeastern portion of campus during school operation. The primary sources of noise at this location were from HVAC operation on the back of the Middle School portable classrooms and background noise from school operations (see Figure 5-2).
- **Location LT-2** was approximately 280 feet north of Akio Way, along the ACDS Campus' eastern boundary, near the property line shared with the single-family homes on Winterset Way, east of the school's blacktop area. The ambient noise levels at LT-2 are considered representative of typical day and nighttime noise levels along the eastern portion of the ACDS Campus, near outdoor areas where students congregate / play during school operation. The primary sources of noise at this location were from HVAC operation on the back of the Middle School portable classrooms and students talking / playing on the blacktop.
- **Location ST-1** was approximately 20 feet north of the campus' northern driveway on Trinidad Drive. Measurements were collected from 7:40 AM to 8:00 AM, and are considered representative of typical conditions during student pick-up and drop-off. The primary source of noise was from vehicular operation and students, parents, and faculty talking. Instantaneous increases in noise levels were observed when car doors closed.

The results of the ambient noise monitoring are summarized in Table 3-1. It is noted that measured ambient noise levels are a composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location. Please refer to Appendix A for detailed ambient noise monitoring results and data sheets.

Table 3-1: Existing Ambient Noise Levels (dBA) at the ACDS Campus							
Monitoring Site	**Duration**	**L_{min}**	**L_{max}**	**Hourly L_{eq} Range**			**DNL(B)**
				Daytime (7 AM - 7 PM)	**Evening(A) (7 PM - 10 PM)**	**Nighttime (10 PM - 7 AM)**	
LT-1	36 Hours	25.0	80.6	45.9 – 58.4	44.7 – 51.9	39.1 – 53.6	54.7
LT-2	36 Hours	24.8	88.0	43.0 – 62.3	43.5 – 48.1	37.8 – 53.6	55.9
ST-1	20 Minutes	47.2	72.9	56.0 – 57.4	N/A(C)	N/A(C)	N/A(C)

Source: MIG 2019 (see Appendix A)

(A) Although the City of San Jose's land use compatibility metrics are based on the DNL 24-hour weighting descriptor (see Section 2.1.3), an evening noise range has been provided, since some activities would occur at the school during this time frame.

(B) The DNL noise levels are based on the 24-hour period between 8:00 AM on December 10, 2019 and 8:00 AM on December 11, 2019.

(C) Data is not available for these noise metrics because noise data was not collected for the time period in question or the noise metric was not available for use in this table.

As shown in Table 3-1, measured ambient noise levels were generally highest during the daytime at location LT-2. Traffic and other ambient sources of noise had a greater effect on LT-1 during the evening and nighttime hours. Noise levels associated with drop-off activities were generally constant during the two, 10-minute intervals. Car doors closing approximately 20 feet from the sound level meter generally produced noise levels of approximately 65 dBA. Although not shown in the data presented in Table 3-1, there was a large truck delivering water along the eastern portion of the ACDS Campus at approximately 3:30PM on December 10. At LT-1 it produced an Leq and Lmax of 76.6 and 94.2 dBA, respectively, during the 3:30 – 3:40 PM interval. At LT-2 it produced an Leq and Lmax of 76.2 and 95.2 dBA, respectively, during the 3:30 – 3:40 PM interval.

3.3 NOISE-SENSITIVE RECEPTORS

Noise sensitive receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. Residential areas, hospitals, schools, and parks are examples of noise sensitive receptors that could be sensitive to changes in existing environmental noise levels. The noise sensitive receptors adjacent or in close proximity to the perimeter of the proposed Project include the single-family residential homes on Trinidad Drive, west of the project site; Akio Way, south of the project site; and Winterset Way, east of the project site.

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4 REGULATORY SETTING

4.1 FEDERAL NOISE REGULATIONS

There are no federal regulations that directly apply to the proposed Project.

4.2 STATE NOISE REGULATIONS

4.2.1 California Building Standards Code

The California Building Standards Code is contained in Title 24 of the California Code of Regulations and consists of 11 different parts that set various construction and building requirements. Part 2, California Building Code, Section 1207, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies. Specifically, Section 1207.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room.

The California Green Building Standards Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section, establishes additional standards for interior noise levels.

- 5.507.4.1.1 sets forth that buildings exposed to a noise level of 65 dB Leq (1-hour) during any hour of operation shall have exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composting sound transmission class (STC) rating of at least 45 (or an outdoor indoor transmission class (OITC) of 35, with exterior windows of a minimum STC of 40.
- Section 5.507.4.2 sets forth that wall and roof assemblies for buildings exposed to a 65 dBA Leq pursuant to Section 5.507.4.1.1, shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA Leq in occupied areas during any hour of operation.

4.3 LOCAL NOISE REGULATIONS

4.3.1 City of San Jose Municipal Code

Title 20 of the City of San Jose Municipal Code, Zoning, Chapter 40.470, Commercial Zoning Districts and Public/Quasi-Public (PQP) Zoning District, sets forth standards that apply to the proposed Project's potential operational noise sources. The purpose of these standards is to prevent activities and noise levels that are dangerous, obnoxious, or offensive, or that create a public or private nuisance. Table 20-105, Noise Standards, in Section 20.40.6500 establishes a maximum noise level limitation of 55 dBA at the property line for commercial or PQP use adjacent to a property use or zoned for residential purposes, unless the noise generated by the commercial or PQP use is in compliance with a special use permit as provided in Chapter 20.100 of the Municipal Code.

In addition, Section 20.100.450, Hours of Construction within 500 feet of a Residential Unit, limits construction activities to the hours of 7 AM to 7 PM, Monday through Friday, unless alternative hours are expressly allowed in a development permit or other planning approval.

4.3.2 City of San Jose General Plan

The Environmental Leadership Element of the City of San Jose's Envision 2040 General Plan is designed to minimize the impact of noise on people through noise reduction and suppression techniques and land use policies (General Plan Goal EC-1). Table EC-1 of the General Plan identifies 60 dBA DNL as the normally acceptable exterior noise exposure level for residential land uses and 55 dBA DNL is the normally acceptable exterior noise exposure level for public and quasi-public land uses.

The Envision 2040 General Plan also contains the following noise and vibration policies that apply to the proposed project:

- EC -1.1: Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, state, and City noise standard and guidelines as part of new development review.
- EC-1.2: Minimize the noise impacts of new development on land uses sensitive to increased noise levels by limiting noise generation and by requiring the use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would:
    - Cause the DNL at noise sensitive receptors to increase by five dBA DNL or more where the noise levels would remain "Normally Acceptable"; or
    - Cause the DNL at noise sensitive receptors to increase by three dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level.
- EC-1.3: Mitigate noise generation of new nonresidential land uses to 55 dBA DNL at the property line when located adjacent to existing or planned noise sensitive residential and public/quasi-public land uses.
- EC-1.7: Require construction operations within San Jose 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 schedule, 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 residential and other uses.
- EC-2.3: Require new development to minimize 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.

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5 PROPOSED PROJECT DESCRIPTION

ACDS has submitted an application for a rezoning and Special Use Permit (SUP) to the City of San Jose (City) for its proposed ACDS Campus Master Plan (proposed Project).[3] The proposed Project would be located at the existing ACDS Campus at 6835 Trinidad Drive, in the southern portion of San Jose, in Santa Clara County, and include redevelopment of the Campus with new school buildings, the addition of a new, multipurpose building, and reconfiguration of driveways, drop-off and pick-up zones, and parking lots. The existing site aerial and currently building designations are shown in Figure 5-1 and Figure 5-2, respectively. The proposed Project site plan is shown in Figure 5-3.

The proposed Project would be constructed in four phases over the next approximately 15 years, with each phase lasting approximately five years, based on available funding. The phases are:

- Phase 1: A multipurpose building with a stage and a new western parking lot.
- Phase 2: A new middle school building and office, an eastern parking lot and pick-up/drop-off driveway along Trinidad Drive, and a southern pick-up/drop-off driveway along Akio Way
- Phase 3: A new elementary building
- Phase 4: A theater and enrichment program building

5.1 PROJECT CHARACTERISTICS

5.1.1 Project Construction

The proposed Project would involve construction activities that would occur intermittently in phases over the next approximately 15 years. Phase 1 construction activities would entail relocating the existing, portable classrooms located along the school's southern boundary to the north side of the campus. In their place, a new approximately 15,000 square foot, single-story multipurpose building would be constructed. The existing school parking lot along Trinidad Drive would remain unchanged under this phase; however, the existing inbound access driveway along Akio Way would be closed off during the school's drop-off/pick-up times, and access to the drop-off area would be provided via a new driveway along Akio Way, at the southeast corner of the school site. The new driveway would connect to the existing fire lane that runs along the site's southern and eastern boundaries, providing access to both the drop-off area and the parking spaces located along the eastern fire lane.

Although the timing and sequencing of Phases 2 through 4 are tentative at this point, it is envisioned that Phase 2 would involve replacing the corner parking lot at Trinidad and Akio Way with a new, two-story middle school and administration building totaling approximately 23,256 square feet. Following the development of the new middle school classrooms and administration building, the existing middle school portable classrooms would be removed from the site, making room for a new, approximately 78 space parking lot in the southeastern portion of the campus. During development of the parking lot, driveways along Trinidad Drive and Akio Way would be constructed and reconfigured, respectively, so

[3] The City requires rezoning the property from R-1-5 to Public, Quasi-Public (PQP) and the issuance of a Special Use Permit for the private school use

there would be two, distinct pick-up and drop-off locations. The newly constructed driveway along Trinidad Drive would include approximately 17 parking spaces.

Phase 3 would involve the deconstruction of the existing multipurpose building, administration building, and restroom building to accommodate a new, approximately 21,640 square foot elementary school classroom building.

Phase 4 would include, in the following order, the:

- Renovation of the previously vacated, former elementary school building,
- Demolition of the existing, science/art/library/computer rooms, and
- Construction of a new approximately 12,600 square foot enrichment building and approximately 5,935 square foot theater/auditorium building.

ACDS anticipates construction activities associated with Phase 1 would begin in the summer of 2021 when school is in recess for summer break. Construction activities associated with Phase 1 are anticipated to last approximately 12 to 15 months. It is assumed construction activities associated with Phases 2 through 4 would also take approximately 12 to 15 months for their respective site improvements. Please refer to Section 6.2.2 for more information on potential construction activities.

5.1.2 Site Design and Layout

The new, multipurpose building would be located along the campus' southern boundary, and the building's eastern façade would be approximately 130 feet from the property line shared with single-family residences along Winterset Way. The middle school and administrative building would be constructed along the campus' south-western boundary and would front both Akio Way and Trinidad Drive. The elementary school building would be located on the northwestern portion of the campus, north of the middle school and administration building, and west of the asphalt play area. The auditorium and enrichment building would be located on the interior of the site, north of the multipurpose building and middle school/administration building, respectively. It is anticipated all buildings included in the proposed Project would feature roof-mounted HVAC units located behind parapet walls. Figure 5-4 depicts the parapet wall for the new multipurpose building.

Upon completing Master Plan Phase 2, approximately 17 parking spaces would be provided along the western portion of the campus, and approximately 78 spaces would be provided along the southeastern portion of the campus. Vehicular access would be provided along Akio Way and Trinidad Drive (see Figure 5-3).

5.1.3 Project Operation

The ACDS is an existing, private school operating in San Jose. It currently serves approximately 360 students ranging from preschool (age 4) to 8th grade; however, it has served up to 425 students in the recent past. Typical, weekday operations at the school begin around 7:00 AM with before school care and end around 6:00 PM, once after-school sports and clubs have finished. Middle school is in session from 8:00 AM to 3:00 PM. ACDS is not proposing to change existing, daytime, school operations as part of the proposed Project; however, the proposed multipurpose room (Phase 1) could be used for other afterschool and weekend activities. In addition, under full buildout of the Master Plan, the ACDS would feature two new driveways; one along Trinidad Drive and one along Akio Way.

Operation of the Proposed Multipurpose Building

After construction of Phase 1 is completed, the ACDS Campus would have a new multipurpose room. The proposed building would feature:

- A gymnasium with regulation size-basketball and volleyball courts,
- An elevated stage and backstage space
- Locker rooms that double as dressing rooms for the stage
- Storage and office space, and
- A servery for concessions and serving school lunches.

The primary function of the multipurpose room would be to shift existing physical education (P.E.) activities and the performing arts program to a safer and more modern, indoor, all-season space.[4] While the primary function of the multipurpose room would focus on the school's athletics and performing arts programs, ACDS envisions using the facility for other purposes, such as:

- A gathering space for the entire school while school is in session (e.g., school assemblies, celebrations, author visits, graduation, guest speakers, etc.),
- Potentially providing a community space where the public can interact with one another and the school (e.g., community meeting, parent education, etc.),
- A polling station where ACDS students can provide service and participate in the voting process, and
- Existing afterschool activities (e.g., ACDS sports, evening drama performances, etc.).

As with other schools, ACDS would manage the use of the facility by community-groups as a secondary focus. The school is not proposing or seeking loud noise generating events, such as parties, concerts, or other similar events. For any activities taking place in the multipurpose building, including all school-sponsored and community-organized events, hours of use would generally fall between 7:00 AM and 10:00 PM, Monday through Saturday, and 8:00 AM and 8:00 PM on Sunday. As is current practice, ACDS would continue to notify and alert nearby neighbors in advance of all-school events that involve traffic noise, or other considerations (ACDS, 2019).

In addition, following development of Phase 2, there would be an approximately 78 space parking lot immediately east of the multipurpose building, and adjacent to the campus' shared property line with single-family residences on Winterset Way. It is anticipated this would be the primary parking lot used for after school, evening, and weekend events occurring at the multipurpose building.

Proposed Driveways on Trinidad Drive and Akio Way

With the completion of the proposed Master Plan, vehicular access to the school site during the school's peak hours would be split between two parking lots/drop-off areas: the Trinidad Drive/west parking lot/drop-off area and the Akio Way/east parking lot/drop-off area. The Trinidad Drive drop-off area would be

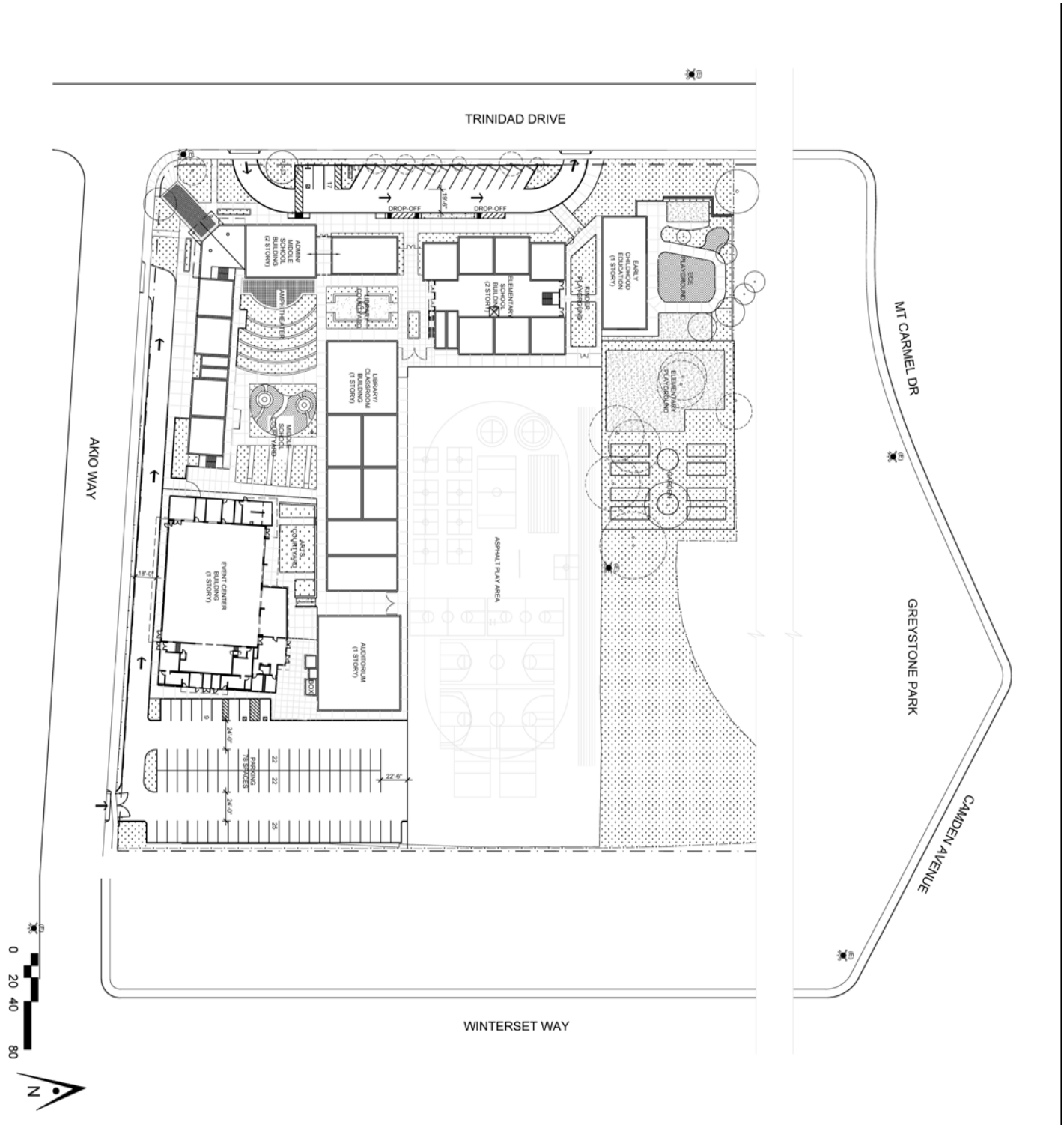
[4] The existing school campus does not have a gymnasium; rather, the school relies on a 25-year-old portable when students need to be brought indoors for P.E. (e.g., when it is raining). In addition, the school's performing arts program is currently housed in a corner of the school's former cafeteria.

designated for kindergarten and elementary grades, while the Akio Way drop-off area would be designated for the middle school grades. Based on existing, inbound and outbound trips to the ACDS Campus in the morning in afternoon, it is estimated approximately 151 and 70 vehicles would access the Trinidad Drive drop-off area during the AM and after school peak hours, respectively, and 74 and 35 vehicles could access the Akio Way drop-off area during the AM and after school peak hours, respectively (Hexagon, 2020).

The ACDS actively encourages students and their families to carpool for morning drop-off and afternoon pick-up. Parents are able to use the school's Veracross student information system that has a custom feature enabling them to find other ACDS families living near them who want to form a carpool. Approximately half of the cars dropping or collecting students each day are carpools (ACDS, 2019). In addition, although not part of the proposed Project, the ACDS administration plans to launch an incentive program in 2020 that would celebrate and reward staff for carpooling, biking, or walking to campus.

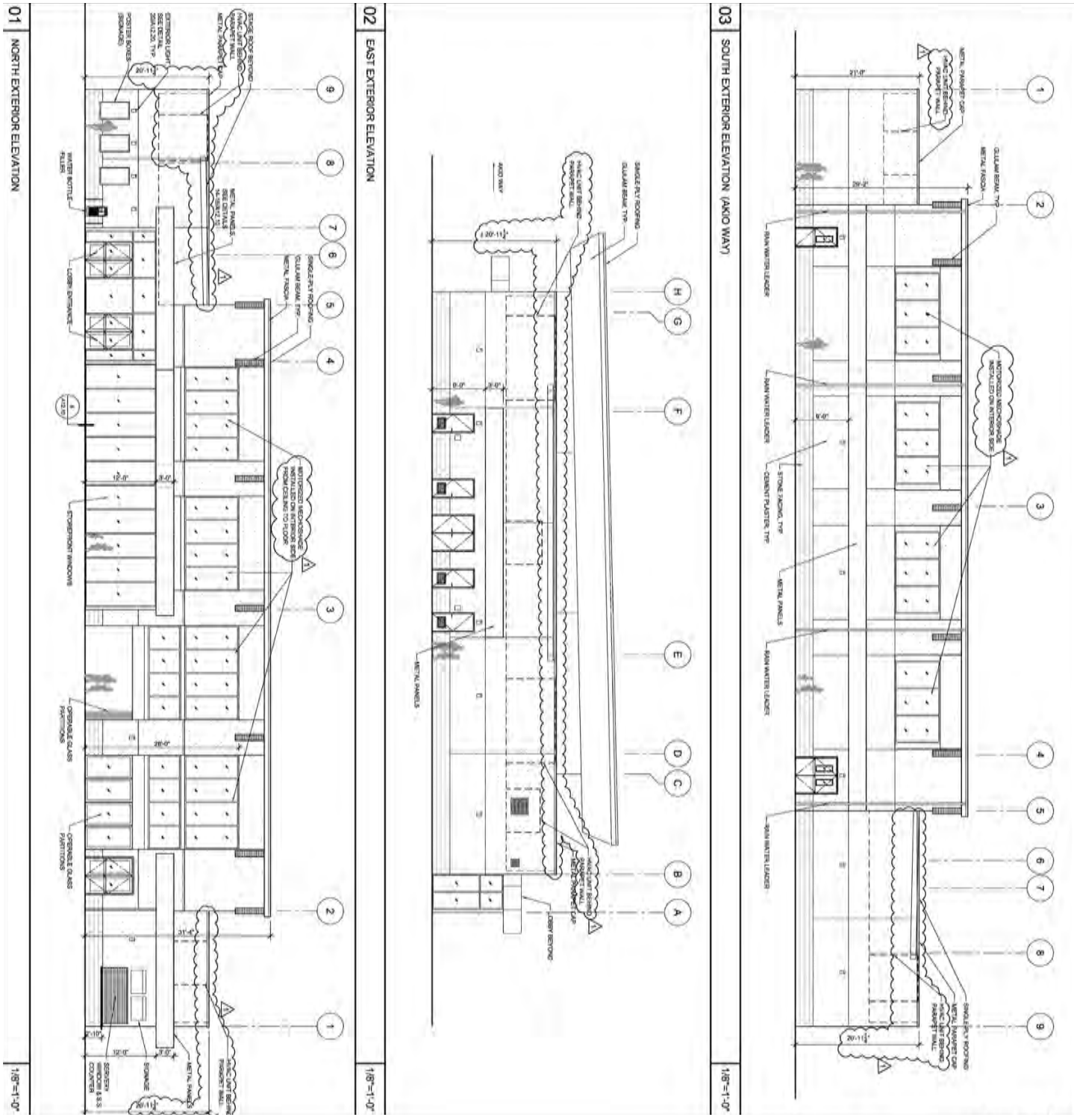
Figure 5-1 Proposed Project Aerial

Figure 5-2 Existing Campus Building Designations



Source: Art Artik Art and Architecture 2019

Figure 5-3 Proposed Project Site Plan



Source: Art Artik Art and Architecture 2020

Figure 5-4 Exterior Elevations Depicting Parapet Wall

6 NOISE IMPACT ANALYSIS

This chapter evaluates the direct and indirect impacts that could result from implementation of the proposed ACDS Campus Master Plan Project.

6.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to noise or vibration if it would result in:

- 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;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan, or where such as 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.

For the purposes of this Report:

- A substantial temporary noise level increase would occur if the project involves substantial construction noise generating activities within 500 feet of residential uses continues for a period of 12 or more months and does not prepare a Construction Noise Logistics Plan (General Plan Policy EC-1.7).
- A substantial permanent noise level increase would occur if project-generated noise would result in: 1) an increase of 5 dBA DNL or more where the noise levels would remain within the "Normally Acceptable" level; or 2) an increase of 3 dBA DNL or more where the noise levels would equal or exceed the "Normally Acceptable" level (General Plan Policy EC-1.2).

In addition to the CEQA thresholds of significance, this Report evaluates the proposed Project's consistency with the 55 dBA Lmax noise limit established by Section 20.40.6500 of the City's Municipal Code.[5]

6.2 EXPOSURE TO NOISE LEVELS ABOVE APPLICABLE STANDARDS

6.2.1 Land Use Compatibility

The proposed Project consists of modernizing an existing school with new facilities. The City's General Plan indicates 55 DNL is the normally acceptable exterior noise exposure level for public and quasi-public land uses (e.g., schools). The results of the ambient noise monitoring show existing noise levels at the ACDS Campus are approximately 55 dBA DNL; however, these noise levels capture existing

[5] This approach follows guidance provided by San Jose City staff regarding the City's municipal code standard.

quasi-public land uses (e.g., schools). The results of the ambient noise monitoring show existing noise levels at the ACDS Campus are approximately 55 dBA DNL; however, these noise levels capture existing noise generated with typical school activities. Absent typical school noise levels captured by the noise monitoring effort, the 24-hour measurement would have been lower than 55 dBA DNL. In addition, the ACDS Campus Master Plan does not propose any activities that would substantially affect the ambient noise environment (e.g., the school does not propose to increase enrollment, a bell system or amplified public address system, etc.). The proposed Project, therefore, is considered compatible with the existing and projected ambient noise level at the Project site.

6.2.2 Potential Construction Noise Levels

As described in Chapter 5, the proposed Project would be constructed over the next approximately 15 years in four different phases, each lasting approximately 12 to 15 months each. Construction activities associated with Master Plan implementation would generally include demolition, site preparation, grading, construction, paving, and architectural coating work.

Project construction would require the use of heavy-duty construction equipment that could temporarily increase noise levels at adjacent property lines near work areas. The type of equipment used could include bulldozers, backhoes, a grader, compactors/rollers, small cranes, and material handlers, lifts, and trucks. Since Project-specific construction equipment information is not available at this time, potential construction-related noise impacts can only be evaluated based on the typical construction activities associated with a commercial development. Table 6-1 presents the estimated, worst-case noise levels that could occur from operation of typical construction equipment.

Table 6-1: Typical Construction Equipment Noise Levels (dBA)					
Equipment	**Reference Noise Level at 50 Feet (Lmax)(A)**	**Percent Usage Factor(B)**	**Predicted Noise Levels (Leq) at Distance(C)**		
			50 Feet	**75 feet**	**100 feet**
Backhoe	80	40	76	72	70
Bulldozer	85	40	81	77	75
Compact Roller	80	20	73	69	67
Crane	85	16	77	74	71
Delivery Truck	85	40	81	77	75
Excavator	85	40	81	77	75
Generator	82	50	79	75	73
Pneumatic tools	85	50	82	78	76
Scraper	85	40	82	77	75

Sources: Caltrans, 2013b and FHWA, 2010.

(A) L_{max} noise levels based on manufacturer's specifications.

(B) Usage factor refers to the amount of time the equipment produces noise over the time period.

(C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans, 2009: L_{eq} (hourly) = L_{max} at 50 feet – 20log (D/50) + 10log (UF), where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

As shown in Table 6-1, the worst-case Leq and Lmax noise levels associated with the operation of a dozer, excavator, scraper, etc. are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. The concurrent operation of two or more pieces of construction equipment would result in noise levels of approximately 86 dBA Leq and 90 dBA Lmax at a distance of 50 feet from equipment operating areas[6].

During demolition, site preparation, grading, and paving activities construction equipment would operate throughout the site, moving closer to one property line and farther away from another; building construction and architectural coating activities would be concentrated at building pad locations. For these reasons, potential construction noise levels are estimated for worst-case equipment operations for each phase of Master Plan implementation, as described below.

- Phase 1: Construction activities associated with development of the multipurpose facility are evaluated at a distance of 100 feet, which is the approximate distance between the proposed building and residences across the street on Akio Way

[6] As shown in Table 6-1 a single bulldozer provides a sound level of 81 dBA Leq at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA Leq and when three identical sound levels are combined, the noise level increases to 86 dBA Leq. These estimates assume no shielding or other noise control measures are in place at or near the work areas.

- Phase 2: Construction activities associated with Phase 2 are evaluated at three different locations:
  - Noise levels associated with the deployment of the middle school and administration building is evaluated at a distance of 100 feet, which is the approximate distance between the proposed building and residences across the street on Akio Way.
  - Noise levels associated with the development of the eastern parking lot are evaluated at a distance of 50 feet, which is the approximate distance between the center of the eastern parking lot, and the property line with residences along Winterset Way.
  - Noise levels associated with the development of the western parking lot are evaluated at a distance of 75 feet, which is the approximate distance between the center of the western parking lot and the residences along Trinidad Drive.
- Phase 3: Construction activities associated with development of the elementary school building are evaluated at a distance of 100 feet, which is the approximate distance between the proposed building and residences on Trinidad Drive.
- Phase 4: Construction activities associated with the enrichment building and auditorium are evaluated at a distance of 100 feet, which is the approximate distance between the auditorium and the property line with residences along Akio Way.

Table 6-2, summarizes potential, worst-case equipment noise levels at sensitive receptor locations by phase.

Table 6-2: Worst-Cast Noise Levels at Residential Receptor Locations by Phase

Phase / Activity	Distance (feet)	Predicted Noise Level (Leq)	
		Single Piece of Equipment	Multiple Pieces of Equipment(A)
Phase 1: Multipurpose Facility	100	75	79
Phase 2: Middle School / Administration Building	100	75	79
Phase 2: Eastern Parking Lot	50	81	85
Phase 2: Western Parking Lot	75	77	81
Phase 3: Elementary School Building	100	75	79
Phase 4: Enrichment Building / Auditorium	100	75	79

(A) Predicted worst-case noise levels are based on the concurrent operation of a bulldozer, delivery truck, and backhoe.

As shown in Table 6-2, worst-case noise levels could range from approximately 75 dBA to 85 dBA at nearby sensitive receptor locations depending on the phase and activity being undertaken. In actuality, construction noise levels would likely be lower, since these estimated noise levels evaluate the concurrent operation of equipment at the same distance from the receptor location. In addition, the site is already developed and level, so extensive site-preparation is not anticipated. Furthermore, heavy-duty construction equipment cycles between higher and lower loads, adding variability to the noise generated by the equipment in any given minute. Finally, the above estimates do not consider any potential shielding that would be provided by other buildings on campus (e.g., the middle school / administration building would provide shielding for residences along Trinidad Drive and Akio Way during development of the enrichment building and auditorium).

The City of San Jose does not have established maximum construction noise level limitations; however, General Plan Policy EC-1.7 requires construction projects within 500 feet of residential land uses to prepare a Construction Noise Logistics Plan if the project would involve substantial noise generating activities for 12 or more months. In addition, City Municipal Code Section 20.100.450 limits construction activities occurring within 500 feet of residence to the hours of 7 AM to 7 PM, Monday through Friday, unless alternative hours are expressly allowed in a development permit or other planning approval.

As stated previously, each phase of Campus Master Plan construction is anticipated to last approximately 12 to 15 months. As such, MIG recommends the proposed Project implement Mitigation Measure NOI-1, which requires the preparation of a Construction Noise Logistics Plan prior to beginning construction activity for any Campus Master Plan phase. At a minimum, the Construction Noise Logistics Plan should specify the hours of construction, noise and vibration minimization measures, posting or notification of construction schedule, and the designation of a noise disturbance coordinator who would respond to neighborhood complaints.

Mitigation Measure NOI-1: Consistent with City of San Jose General Plan Policy EC-1.7, the ACDS and/or its designated contractor shall prepare a Construction Noise Logistics Plan (CNLP) prior to the start of any construction activities associated with the ACDS Campus Master Plan. The CNLP shall apply to all phases of master plan development and shall:

- Designate an ACDS employee and/or contractor's representative to serve as a noise disturbance coordinator responsible for receiving noise complaints and resolving construction-noise related issues.
- Include procedures describing how the noise disturbance coordinator will receive, respond to, and resolve construction noise complaints. At a minimum, upon receipt of a noise complaint, the Contractor and/or ACDS representative described in the first sub-bullet above shall identify the noise source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint.
- Restrict construction work hours to the hours specified in City of San Jose Municipal Code Section 20.11.450 (7:00 AM to 7:00 PM, Monday through Friday)
- Require construction staging areas to be established in locations that create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project sure during all project construction
- Provide notice (at least 10 days prior to the start of construction activities) to all adjacent residences that describes the approximate start date and schedule for the construction activities and a contact name and phone number for the construction contractor and/or ACDS staff person responsible for handling construction-related noise complaints. The notice shall also identify periods of peak construction activities and noise levels (e.g., grading activities, foundation work, etc.).
- Specify the noise and vibration minimization measures that will be undertaken during the construction phase to reduce construction-related noise levels. Such measures may include, but are not limited to:
    - Equipping all internal combustion engine-drive equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment being controlled.
    - Prohibiting unnecessary idling of internal combustion engines (i.e., idling should generally

be limited to no more than five minutes).

- Using hydraulically or electrically powered impact tools (e.g., jack hammer) to avoid noise associated with compressed air exhaust from pneumatically powered tools, if feasible.
- Reducing noise from pneumatic tools through the use of a noise suppression device on the compressed air exhaust.
- Connecting to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators.
- Locating stationary noise-generating equipment such as pumps, compressors, and welding machines as far from sensitive receptor locations as practical. If such equipment must be located near receptors, provide shielding in the form of a three-sided sound enclosure (with a full or partial roof) that provides for proper ventilation, equipment operation, and effective noise control.
- Phasing demolition and construction activities to take advantage of noise shielding provided by existing structures (i.e., start from the side of the building the farthest away from nearby sensitive receptors).
- Prohibiting noise from radios or other amplified sound devices to be audible beyond the property line of the construction site.

In addition to Mitigation Measure NOI-1, MIG recommends the implementation of PDF-1 prior to the start of Phase 2 construction activities (see Section 6.2.3). The implementation of PDF-1, while intended to reduce operational noise levels associated with parking lot activities at the southeastern parking lot, would have the added benefit of reducing construction noise levels at residential land uses along Winterset Way during construction of Phases 2 through 4. With the implementation of Mitigation Measure NOI-1 and PDF-1, the proposed Project would not generate a substantial temporary noise increase in the vicinity of the project.

6.2.3 Potential Operational Noise Levels

The ACDS is an existing school that generates noise levels from typical school activities, including vehicle trips, operation of HVAC units, landscaping and maintenance activities, waste-disposal truck traffic, etc. Implementation of the proposed project would not change the types of noise generated at the project site but could change the locations where these noise sources occur. Under implementation of the proposed project, the existing ambient noise environment could change as a result of:

- Existing portable classrooms being removed, as well as their HVAC units, and new HVAC equipment being installed top of the new buildings proposed in the Campus Master Plan;
- On-site traffic being shifted to two driveways: one along Trinidad Drive, and one along Akio Way; and
- Primary on-site parking being shifted to the southeastern parking lot under the implementation of Phase 2. Potential noise levels associated with the use of this parking lot could be more prominent during after hour / weekend use of the multipurpose building.

HVAC Equipment Operation

Although not depicted on all buildings shown the ACDS Campus Master Plan site plan (see Figure 5-2), it is anticipated each one of the buildings proposed under the Master Plan would feature HVAC unit(s)

on top of the rooves. The specific locations of HVAC units and parapet walls for each project phase are contingent on final building design. For example, the multipurpose facility, which is the only building for which detailed drawings are available at this point, would feature parapet walls that shield the multipurpose HVAC units from residential receptors (see Figure 5-4). Roof-top mounted HVAC units are presumed to be a Carrier Model 48HC or equivalent rated at 3 tons and capable of producing a noise level of approximately 76 dBA at a distance of 3 feet. Rooftop HVAC units would generally be located in the center of the proposed buildings.

HVAC equipment was presumed to operate for 15 minutes every hour of the day to account for refrigeration and building heating and cooling needs. This assumption is considered conservative (likely to overestimate noise) since this level of operation would likely not occur during the nighttime (i.e., maximum use involves afternoon cooling operations in the summer, and morning and early-afternoon heating operations during the winter). Units would be concealed behind a parapet wall that shield the HVAC units from the street and serve to reduce potential HVAC unit noise levels at adjacent property lines. The level of attenuation provided by this partial shielding was assumed to be 5 dBA.[7]

Noise levels associated with operation of two HVAC units were assessed at a distance of 165 feet. This is the approximate distance between the center of the auditorium and event center, and the residential property line along the project site's eastern boundary. At this distance, the two HVAC units would produce an hourly noise level of approximately 49.2 dBA Leq, which is lower than the existing, hourly ambient noise level monitored along the project site's southeastern boundary. For example, during the 8:00 AM hour on December 10, 2019, it was observed the hourly average noise level was approximately 55.1 dBA Leq, and a primary noise source at this location was from middle school portable classroom HVAC operation. Under implementation of the Campus Master Plan these existing, middle school classrooms would be removed, and HVAC units would generally be located further away from residential receptors.

Vehicular Operation on Trinidad Drive and Akio Way Driveway

Under buildout of the Campus Master Plan, two, new driveways would be constructed along the campus' western and southern borders. The Trinidad Drive drop-off area would be designated for kindergarten and elementary grades, while the Akio Way drop-off area would be designated for the middle school grades. Based on existing, inbound and outbound trips to the ACDS Campus in the morning in afternoon, it is estimated approximately 151 and 70 vehicles would access the Trinidad Drive drop-off area during the AM and after school peak hours, respectively, and 74 and 35 vehicles could access the Akio Way drop-off area during the AM and after school peak hours, respectively (Hexagon 2020). This is in contrast to existing conditions on Trinidad Drive where there are approximately 171 and 91 inbound and outbound trips during the during the AM and after school peak hours, respectively. Similarly, for existing inbound and outbound trips on Akio Way, there were approximately 91 and 29 trips occurring during the AM and after school peak hours, respectively.

[7] Common building materials such as wood framing materials, plywood, and light concrete/stucco all have transmission loss rating greater than 20 dBA to 25 dBA and are capable of reducing transmitted sound levels by 10 to 15 dBA at minimum (Caltrans, 2013a). This analysis assumes a 5-dBA reduction in HVAC unit noise levels associated with parapet walls. This is considered a conservative assumption (i.e., likely to underestimate shielding and noise attenuation).

The proposed driveway reconfiguration would not result in a substantial noise level increase at nearby residential receptors. The ambient noise environment at and near the ACDS Campus during the morning and afternoon is predominantly influenced by traffic on Trinidad Drive and Akio Way. Although some of this traffic is attributable to students, parents, and staff at ACDS, the majority of it is attributable to other traffic, such as that from other schools in the area (e.g., Bret Harte Middle School, Leland High School, etc.) and adults traveling to work. Based on the traffic analysis, it is estimated the proposed reconfiguration would reduce morning, driveway trips along Trinidad by 20, and increase driveway trips along Akio by approximately 17. As shown in the equations in Section 2.1.3, it would take a doubling of energy (or associated activity) to increase noise levels by 3 dBA. The Project does not propose such a change in drop-off or pick-up distribution and any, slight change to the noise environment would likely be imperceptible to the human ear given the other sources of noise in the area. Furthermore, as shown in Table 3-1, the short-term measurement taken approximately 20 feet north of existing drop-off activities showed typical AM peak hour noise levels were approximately 56.0 to 57.4 dBA. The proposed reconfiguration would move pick-up and drop-off activities further into the campus. At a distance of approximately 80 feet (the distance from the drop-off lane on Trinidad Drive to the nearest residential property line), these noise level would be reduced to approximately 50.0 to 51.4 dBA.

Although this assessment is based on the anticipated ingress and egress associated with existing (i.e., 362 students) pick-up and drop-off activities, these findings would still hold true if this school were operating under historical enrollment (i.e., 425 students). Even if the school were to have an additional 63 students to be aligned with historic maximum, this level of additional vehicular operation would not be double what it currently is. Furthermore, the ACDS actively promotes carpooling which would likely reduce the number of vehicle trips associated with potential, additional enrollment, not to exceed historic maximum levels.

Vehicular Operation in the Southeastern Parking Lot and Activities at the Multipurpose Building

Buildout of the proposed Campus Master Plan would result in the development of a new multipurpose building, approximately 78 space parking lot in the southeastern portion of the campus. Although the multipurpose building is intended to be used primarily for school-related functions, there is the potential for it to be used for other community events during the weekday afternoons and evenings, and during the weekends. Since ACDS is not proposing or seeking loud noise generating events, such as parties, concerts, or other similar events, it is anticipated the primary source of noise occurring from its operation would be from vehicular operation in the parking lot.

Potential noise levels resulting from vehicular operation in the parking lot (e.g., doors shutting, vehicle engines starting up, etc.) were assessed using the guidance and recommendations contained in the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment Handbook* (FTA, 2006). According to this handbook, parking lots with a peak hourly activity of 256 vehicles, more than triple the capacity of the proposed parking lot (i.e., average turn over time would be less than 20 minutes), can produce a noise level of 50.5 dBA Leq at a distance of 50 feet. The center of the proposed parking lot is approximately 50 feet from the residential property line with the single-family homes on Winterset Way.

Although under this hypothetical scenario the average, hourly noise level could be 50.5 dBA Leq, instantaneous noise levels could be higher. During the monitoring at location ST-1, car doors slamming were observed to create short-term (e.g., one second) noise level increases of up to 63 dBA Lmax at a distance of 20 feet. At a distance of approximately 5 feet (i.e., the approximate distance a car door would be from the residential property line) this noise level would be closer to 69 dBA Lmax. Since the proposed parking lot would be adjacent to a residential property line, and instantaneous noise levels could be as high

as 69 dBA Lmax, noise levels resulting from vehicular activity would have the potential to exceed the project-specific goal of not having exceeding 55 dBA Lmax nearby residential property lines, consistent with Section 20.40.6500 of the City's Municipal Code.

CEQA Conclusion

The proposed project would not increase the ambient noise level as adjacent sensitive receptor locations by 3.0 dBA DNL or more for the following reasons.[8] First, the proposed Project would include deconstruction / removal of some of the existing classrooms and buildings at the project site, which could serve to reduce noise levels from HVAC operation. New facilities, such as the multipurpose building and the auditorium would be erected at locations more centrally located than existing structures. These new buildings would likely have HVAC units that generate noise that could be perceptible at nearby sensitive receptor locations; however, the noise levels would generally be lower than what they are currently and other sources of on-site noise (e.g., HVAC on middle school portables near the property boundary with single-family residences on Winterset Way) would be removed from the site. As such, the proposed Project is anticipated to reduce HVAC noise levels at nearby sensitive receptor locations. Second, the proposed Project would involve the construction of two driveways that would change access to the ACDS Campus along Trinidad Drive and Akio Way. Although there would be changes to the ingress and egress locations and drop-off and pick-up distribution, the overall change in trips along these two streets would be nominal, and the noise likely imperceptible to the human ear given the other sources of noise in the campus' vicinity (e.g., vehicular transportation from other schools and residents in the area). Third, even if every space in the project site's southeastern parking lot were to turn over three times in the span of an hour, the resulting hourly average noise level would be less than it is currently. In addition, this parking lot would not be used on a continuous basis throughout the day; rather, it would experience peak activity during the morning drop-off, afternoon pick-up, and during special events. Finally, although not described in the preceding analysis, the proposed Project could serve to reduce noise levels emanating from the school site. For example, among other things, the multipurpose room is intended to be used by ACDS for P.E. and athletic purposes, meaning that some of the daytime noise levels generated by students exercising outside could be reduced by bringing them inside. For example, noise levels observed at location LT-2 on December 10th from approximately 3:30 PM to 4:45 PM showed the average 10-minute average noise level ranged from 56.1 dBA Leq to 67.6 dBA Leq, which corresponds with an ACDS basketball practice that occurs on the eastern portion of the black top. The 10-minute average noise levels generally decrease to the mid-40 dBA range after that. As such, overall perceived noise levels from the ACDS could be lower under operational activities proposed by the Master Plan, and implementation of the Master Plan would not increase noise levels by 3 dBA DNL or more ay any nearby sensitive receptor locations.

[8] The proposed project would result in noise levels would equal or exceed the "Normally Acceptable" standard for nearby residential land uses (i.e., 55 DBA DNL). Consistent with General Plan Policy EC-1.2, the incremental increase would be potentially significant if the project results in an increase of 3.0 dBA DNL or more under these conditions. Accordingly, this analysis utilizes a 3.0 dBA DNL increase as the CEQA threshold of significance, since the ambient noise levels at nearby sensitive residential receptor property lines would be in excess of 55 dBA DNL.

Non-CEQA Standard Conclusion

Although operation of the proposed project would not result in a 3 dBA DNL increase at any nearby receptor locations, activities associated with motor-vehicle operation in the campus' southeastern boundary have the potential to conflict with the 55 dBA Lmax noise level limitation established in Section 20.40.6500 of the City's Municipal Code.[9] Accordingly, Project Design Feature-1 (PDF-1) has been incorporated to reduce potential noise levels from vehicular activity in the southeastern parking lot. PDF-1 consists of the installation of a permanent, 6-foot tall, concrete barrier along the campus' property line with residential land uses on Winterset Way. The concrete wall would be installed at the beginning of Phase 2 to initially help shield sensitive receptor locations from construction noise, but also operational noise associated with parking lot operation.

> **Project Design Feature-1:** Prior to any construction activities associated with Phase 2 of the Campus Master Plan, the ACDS shall install a permanent, concrete barrier along the entire portion of the proposed Project's southeastern parking lot. The barrier shall be constructed free of openings or gaps and have a minimum rated transmission loss value of 25 dBA (or higher). The design of this barrier would reduce noise levels between the southeastern parking lot and the residential property line by 15 dBA (or more).

With the implementation of PDF-1, the proposed Project would not exceed the City's 55 dBA Lmax noise limitation at a receptor property line.

6.3 EXPOSURE TO EXCESSIVE GROUNDBORNE VIBRATION / NOISE LEVELS

The potential for groundborne vibration is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation. For the proposed Project, the largest earthmoving equipment would primarily operate during demolition, site preparation, grading, and paving work across the four phases of Campus Master Plan implementation. This equipment would, at worst-case and very limited period of times, operate adjacent to the site's property lines and within approximately 25 feet of the residences immediately east of the ACDS Campus; however, most site work would occur at least 50 feet or more from Project property lines. Table 6-3 lists the typical vibration levels generated by the type of heavy-duty construction equipment most likely to be used during Project construction, as well as the estimated vibration levels at nearby residential receptor locations.

[9] As stated under Section 6.1, the 55 dBA Lmax is a standard against which the proposed project is being prepared (Municipal Code Section 20.40.6500). It is not, however, a CEQA threshold of significance.

Table 6-3: Potential Groundborne Vibration Levels				
Equipment	**Peak Particle Velocity(A) (Inches/Second) at Distance**			
	25 Feet	**50 Feet**	**100 Feet**	**400 Feet**
Vibratory Roller	0.21	0.085	0.035	0.006
Large Bulldozer	0.089	0.036	0.015	0.002
Small Bulldozer	0.03	0.012	0.005	0.001
Loaded Truck	0.076	0.031	0.013	0.002
Jackhammer	0.035	0.014	0.006	0.001

Sources: Caltrans, 2013b and FTA, 2006.

(A) Estimated PPV calculated as: PPV(D)=PPV(ref*(25/D^1.3 where PPV(D)= Estimated PPV at distance; PPVref= Reference PPV at 25 ft; D= Distance from equipment to receiver; and n= ground attenuation rate (1.3 for competent sands, sandy clays, silty clays, and silts).

As shown in Table 6-3, construction equipment vibration levels from a roller could exceed the City of San Jose's vibration detection threshold of 0.20 in/sec PPV, which is used to minimize the potential for cosmetic damage at buildings of normal conventional construction (General Plan Policy EC-2.3). This, however, is not considered to be excessive, because any vibratory roller operating near property lines would be short in duration and intermittent (lasting only a few hours or days in work areas closest to property lines) and would not be close enough to nearby structures to cause damage. In addition, none of the other pieces of heavy-duty off-road construction equipment anticipated for use (e.g., bulldozers, forklifts, etc.) would generate a vibration noise levels exceeding 0.20 in/sec PPV. Thus, short-term, intermittent construction equipment vibration levels would not be excessive.

Once operational, the proposed Project would not result in the operation of sources that would generate substantial groundborne levels.

6.4 AIRPORT-RELATED NOISE

The proposed Project site is located approximately 10 miles south of the San Jose International Airport. The proposed Project is not within an airport influence area, and would not expose students or staff to excessive public or private airport-related noise.

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7 Report Preparers and References

This report was prepared by MIG under contract to Almaden Country Day School. This report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation and review of this report:

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7.1 REFERENCES

Almaden Country Day School (ACDS) 2019. *Almaden Country Day School Organizational and Program Summary*. November 22, 2019.

California Department of Transportation (Caltrans) 2013a. *Technical Noise Supplement to the Traffic Noise Analysis Protocol.* Sacramento, California. September 2013.

Carrier, 2018. *48HC High Efficiency Gas Heat/Electric Cooling Packaged Rooftop 3 to 12.5 Nominal Tons Product Data.* 2018.

Hexagon Transportation Consultants (Hexagon) 2020. Memorandum: Traffic Circulation Review for the Proposed Almaden Country Day School. April 20, 2020.

San Jose, City of (San Jose) 2018. *Envision San Jose 2040*. Revised December 18, 2018.

_____2019. "Municipal Code City of San Jose, California" Codified through Ordinance No. 30327, adopted November 5, 2019. Web. https://library.municode.com/ca/san_jose/codes/code_of_ordinances

U.S. Federal Highway Administration (FHWA) 2010. "Construction Noise Handbook, Chapter 9 Construction Equipment Noise Levels and Ranges." *U.S. Department of Transportation FHWA*. August 24, 2017. Accessed April 1, 2018 at: http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm

U.S. Federal Transit Administration (FTA) 2006.*Transit Noise and Vibration Assessment*.FTA-VA-90-1003-06. Washington, DC. May 2006.

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APPENDIX A: Technical Noise Data

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Almaden Country Day School Campus Master Plan
San Jose, CA
Appendix A: Ambient Noise Monitoring Data
Prepared by MIG, December 2019

Site LT-1 (ACDS Eastern Campus, Approximately 75 feet north of Akio Way)											
Date	Time	Duration	Leq	Lmin	Lmax	L(1)	L(5)	L(10)	L(25)	L(50)	L(75)
12/10/2019	7:00 AM	20-minutes	56.0	44.9	67.5	60.4	58.0	57.4	56.5	55.8	54.5
12/10/2019	8:00 AM	1-hour	54.5	42.7	66.1	59.6	57.3	56.3	55.1	53.7	52.9
12/10/2019	9:00 AM	1-hour	55.0	41.7	67.5	61.6	59.0	57.9	56.0	53.6	51.5
12/10/2019	10:00 AM	1-hour	53.5	36.8	71.7	59.3	56.9	55.8	54.3	52.8	50.6
12/10/2019	11:00 AM	1-hour	56.5	37.5	72.6	66.2	60.4	58.9	56.5	54.3	52.3
12/10/2019	12:00 PM	1-hour	60.0	33.8	88.0	70.4	61.7	60.2	58.5	56.6	54.8
12/10/2019	1:00 PM	1-hour	53.7	34.0	77.1	65.4	61.7	55.9	48.5	44.7	39.7
12/10/2019	2:00 PM	1-hour	50.0	37.7	68.1	60.3	54.0	52.2	50.2	46.7	44.3
12/10/2019	3:00 PM	1-hour	56.0	46.8	68.6	63.2	60.2	58.8	56.6	54.8	53.0
12/10/2019	4:00 PM	1-hour	62.3	34.9	78.0	70.6	68.2	65.5	62.9	59.7	57.1
12/10/2019	5:00 PM	1-hour	43.0	35.9	62.6	50.3	46.6	44.9	43.0	41.5	40.2
12/10/2019	6:00 PM	1-hour	44.2	35.4	57.2	50.7	47.6	46.4	44.5	43.3	42.2
12/10/2019	7:00 PM	1-hour	43.5	33.0	59.5	50.3	47.3	46.2	44.2	42.2	40.6
12/10/2019	8:00 PM	1-hour	48.1	33.9	67.1	57.4	54.5	52.1	47.6	44.3	42.2
12/10/2019	9:00 PM	1-hour	47.4	41.2	54.7	51.1	50.2	49.4	48.5	47.0	45.5
12/10/2019	10:00 PM	1-hour	45.9	34.6	57.0	51.8	50.0	49.2	46.6	44.6	42.3
12/10/2019	11:00 PM	1-hour	40.5	26.6	54.9	47.4	44.4	43.4	42.5	37.2	34.6
12/11/2019	12:00 AM	1-hour	38.0	24.8	49.5	44.7	42.1	41.8	41.4	31.1	28.1
12/11/2019	1:00 AM	1-hour	39.7	25.2	49.4	46.4	45.9	45.7	41.9	31.2	28.0
12/11/2019	2:00 AM	1-hour	39.3	26.4	49.8	45.3	44.5	44.1	41.4	33.8	31.3
12/11/2019	3:00 AM	1-hour	37.8	25.3	49.3	44.6	44.1	41.6	41.1	32.0	30.0
12/11/2019	4:00 AM	1-hour	42.6	26.3	53.8	45.9	45.0	44.8	44.4	41.1	40.3
12/11/2019	5:00 AM	1-hour	53.6	31.8	57.7	55.2	54.7	54.5	54.1	53.5	52.9
12/11/2019	6:00 AM	1-hour	50.2	33.0	62.2	55.5	54.0	52.5	50.5	49.1	48.6
12/11/2019	7:00 AM	1-hour	51.8	38.9	72.7	60.4	56.2	54.3	51.7	49.7	48.2
12/11/2019	8:00 AM	1-hour	52.5	42.8	71.8	60.9	56.8	55.4	52.7	50.4	49.0
12/11/2019	9:00 AM	1-hour	53.7	39.9	66.6	60.2	57.5	56.0	54.4	52.5	51.0
12/11/2019	10:00 AM	1-hour	52.7	41.0	69.5	59.4	56.5	55.3	53.6	51.9	49.4
12/11/2019	11:00 AM	1-hour	55.8	40.3	68.8	62.1	59.5	58.3	56.5	54.7	53.0
12/11/2019	12:00 PM	1-hour	57.4	40.9	74.2	63.5	60.8	59.8	57.9	56.3	54.9
12/11/2019	1:00 PM	1-hour	51.5	37.8	77.3	61.9	55.4	53.2	49.7	47.0	44.6
12/11/2019	2:00 PM	1-hour	47.5	38.3	67.2	56.4	51.5	49.7	47.2	44.8	43.3
12/11/2019	3:00 PM	1-hour	54.7	44.8	73.2	64.2	59.6	56.7	54.4	52.6	50.8
12/10 Daytime (7 AM to 10 PM)			56.3	33.8	88.0	65.0	60.8	58.6	56.4	54.1	0.0
12/11 Daytime (7 AM to 4 PM)			53.8	37.8	77.3	61.5	57.8	56.2	54.1	52.3	0.0
Evening (7 PM to 10 PM)			46.8	33.0	67.1	54.2	54.2	54.2	54.2	54.2	54.2
Nightime (10 PM to 7 AM)			46.8	24.8	62.2	50.8	49.6	48.8	47.6	46.0	45.2
24-hour DNL			55.9	--	--	--	--	--	--	--	--

Site LT-2 (ACDS Eastern Campus, Near Blacktop)											
Date	Time	Duration	Leq	Lmin	Lmax	L(1)	L(5)	L(10)	L(25)	L(50)	L(75)
12/10/2019	7:00 AM	30-minutes	58.4	51.0	67.7	63.1	61.0	60.2	59.1	57.9	56.6
12/10/2019	8:00 AM	1-hour	55.1	40.1	64.9	59.5	56.8	56.0	55.4	54.8	54.0
12/10/2019	9:00 AM	1-hour	52.1	36.9	65.5	58.4	55.8	55.0	52.4	51.0	50.2
12/10/2019	10:00 AM	1-hour	45.9	33.6	65.5	56.4	50.5	47.1	44.4	42.8	41.6
12/10/2019	11:00 AM	1-hour	51.7	34.5	71.9	64.2	55.1	52.2	50.1	48.9	43.1
12/10/2019	12:00 PM	1-hour	52.4	32.8	80.6	63.9	54.2	51.8	47.7	45.3	42.6
12/10/2019	1:00 PM	1-hour	49.3	32.9	74.1	62.4	52.2	48.6	44.8	42.5	38.0
12/10/2019	2:00 PM	1-hour	53.0	34.3	72.4	62.9	59.0	57.6	53.3	46.6	40.1
12/10/2019	3:00 PM	1-hour	54.6	39.8	67.0	61.0	58.7	57.5	55.3	53.2	51.7
12/10/2019	4:00 PM	1-hour	51.6	34.5	66.3	60.0	57.3	55.8	52.0	48.5	45.8
12/10/2019	5:00 PM	1-hour	46.3	35.2	64.5	57.2	52.9	49.6	44.3	40.6	39.0
12/10/2019	6:00 PM	1-hour	50.3	34.8	59.8	56.8	54.4	52.7	49.7	49.2	48.7
12/10/2019	7:00 PM	1-hour	49.8	32.4	68.6	56.0	52.5	51.8	51.2	49.2	39.9
12/10/2019	8:00 PM	1-hour	44.7	33.0	58.6	54.4	49.9	46.9	44.8	42.0	40.5
12/10/2019	9:00 PM	1-hour	51.9	43.1	62.4	57.9	54.4	53.9	53.2	52.1	48.1
12/10/2019	10:00 PM	1-hour	49.1	41.8	60.5	55.3	52.2	51.4	49.6	48.2	46.9
12/10/2019	11:00 PM	1-hour	43.5	26.6	68.0	53.9	44.9	44.2	43.6	37.6	35.9
12/11/2019	12:00 AM	1-hour	39.1	25.0	55.3	47.8	43.0	42.8	42.4	28.4	27.3
12/11/2019	1:00 AM	1-hour	40.8	25.5	51.2	47.7	47.3	47.1	42.5	29.3	28.0
12/11/2019	2:00 AM	1-hour	40.4	27.1	51.7	46.9	46.0	45.6	42.5	30.3	29.4
12/11/2019	3:00 AM	1-hour	39.1	25.9	54.8	46.8	45.7	42.7	42.3	28.7	28.1
12/11/2019	4:00 AM	1-hour	53.6	26.8	59.6	55.7	55.3	55.1	54.7	53.0	52.6
12/11/2019	5:00 AM	1-hour	48.1	31.7	57.6	52.5	50.2	49.4	49.1	47.4	46.7
12/11/2019	6:00 AM	1-hour	46.8	32.6	64.2	54.9	52.2	50.4	47.8	42.9	41.5
12/11/2019	7:00 AM	1-hour	55.2	38.5	72.1	61.8	59.2	57.7	55.5	54.0	52.8
12/11/2019	8:00 AM	1-hour	53.2	43.8	64.0	58.9	55.7	54.6	53.2	52.5	52.1
12/11/2019	9:00 AM	1-hour	50.2	40.2	64.3	58.2	54.6	52.7	50.3	48.7	47.1
12/11/2019	10:00 AM	1-hour	47.0	38.0	59.8	55.1	50.9	49.2	47.2	45.5	43.9
12/11/2019	11:00 AM	1-hour	47.4	38.8	63.6	56.6	51.6	49.1	46.8	45.5	44.2
12/11/2019	12:00 PM	1-hour	51.1	39.9	64.4	58.2	54.4	53.1	52.2	51.4	45.5
12/11/2019	1:00 PM	1-hour	46.8	37.3	66.6	57.2	51.6	48.7	45.3	43.5	42.1
12/11/2019	2:00 PM	1-hour	48.0	37.5	65.0	58.0	53.6	50.7	47.0	44.0	42.5
12/11/2019	3:00 PM	1-hour	52.6	40.7	73.7	65.1	59.0	54.1	49.0	46.6	45.3
12/10 Daytime (7 AM to 10 PM)			53.0	32.8	80.6	61.3	56.6	55.2	53.0	51.3	49.8
12/11 Daytime (7 AM to 4 PM)			51.1	37.3	73.7	59.9	55.5	53.2	50.9	49.5	47.9
Evening (7 PM to 10 PM)			49.7	32.4	68.6	56.3	56.3	56.3	56.3	56.3	56.3
Nightime (10 PM to 7 AM)			47.3	25.0	68.0	52.6	50.2	49.5	48.4	45.9	45.2
24-hour DNL			54.7	--	--	--	--	--	--	--	--

Site ST-1 (Approximately 20 feet north of the northern Trinidad Drive driveway)											
Date	Time	Duration	Leq	Lmin	Lmax	L(1)	L(5)	L(10)	L(25)	L(50)	L(75)
12/10/2019	7:50 AM	10-minutes	57.4	47.2	72.9	66.4	61.7	59.8	57.3	54.7	52.1
12/10/2019	8:00 AM	10-minutes	56.0	49.0	63.9	61.1	59.1	58.1	56.8	55.4	54.0