CarMax Development

Noise Study Report
September 2019

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CarMax Development
Noise Study Report

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Executive Summary

This Noise Study Report (NSR) has been prepared for the purpose of identifying potential noise impacts that may result from the proposed CarMax Development, which seeks to develop an auto dealership on a 5-acre parcel in the City of Visalia. The Project is located at the southwest corner of the Mooney Boulevard (SR 63) and Visalia Parkway intersection. The Project will be located to the east of the Westlake Village Senior Community.

The Project building areas would comprise approximately 8,526 square feet and would accommodate sales, presentation, and retail areas, supporting auto service/repair facilities and a dealership service carwash. The main dealership sales and service/repair building would be centrally located within the Project site, with the proposed dealership carwash located along the western boundary of the site. Vehicle inventory areas would be located along the Project site's northerly Visalia Parkway frontage. Customer and employee parking areas would be located in the easterly portion of the Project site. Access to the Project would be provided by Stop-controlled driveways connecting to Visalia Parkway and Mooney Boulevard.

IMPACTS

Exterior Noise Analysis

Traffic Noise

Traffic volumes associated with the Project in addition to existing traffic along roadway segments in the study area were entered into the model to estimate noise levels at various receivers that would be affected by the Project. Tables E-1 and E-2 show the predicted noise levels at sensitive receivers in the Project area that could potentially be exposed to high noise levels due to the Project's proximity to existing street traffic. Results of the analysis show that none of the sensitive receivers will exceed Tulare County's Land Use Compatibility for Community Noise Environments. As a result, the Project will not create a significant impact at sensitive receptors in the study area.

Stationary Noise

Major noise sources identified on the Project site are related to the operation of the carwash and vehicle maintenance area. Table E-3 shows the predicted noise generation of the individual on-site noise sources at the nearest residence. Based on the decibel addition methodology found in Caltrans' Technical Noise Supplement, it was determined that the maximum noise level experienced at the nearest residence is approximately 65 dBA. It was also determined that the hourly equivalent sound level experienced at the nearest residence is approximately 50 dBA. Therefore, on-site operations from the Project will have a less than significant impact on the nearest residence west of the Property's boundary.

Table E-1
Existing Plus Project Noise Levels

Receiver ID No.	Location	Distance from Noise Source-Roadway Centerline (feet)	Existing Plus Project Noise Level Leq(h) dBA	City of Visalia's Transportation Noise Source Criterion	Impact
1	Open Area located along Visalia Parkway, west of Mooney Boulevard	15	69.0	--	--
2	Residential (Westlake Village) area located south of Visalia Parkway	200	52.0	65.0	None

Source: VRPA Technologies, 2019

Table E-2
Cumulative Year 2040 Noise Levels

Receiver ID No.	Location	Distance from Noise Source-Roadway Centerline (feet)	Cumulative Year 2040 Without Project Noise Level Leq(h) dBA	Cumulative Year 2040 Plus Project Noise Level Leq(h) dBA	Noise Increase (+) or Decrease (-)	City of Visalia's Transportation Noise Source Criterion	Impact
1	Open Area located along Visalia Parkway, west of Mooney Boulevard	15	70.0	70.0	0.0	--	--
2	Residential (Westlake Village) area located south of Visalia Parkway	200	54.0	54.0	0.0	65.0	None

Source: VRPA Technologies, 2019

Table E-3
Project On-Site Noise Sources

Area	Hourly Equivalent Sound Level Leq dBA	Maximum Sound Level, dBA	City of Visalia's Stationary Noise Source Criterion	Impact
Westlake Village Senior Community	50.0	65.0	50 L_{eq} (h) / 70 L_{max}	No / No

Source: VRPA Technologies, 2019

CEQA ENVIRONMENTAL CHECKLIST

In accordance with the California Environmental Quality Act (CEQA), the effects of a Project were evaluated to determine if they will result in significant adverse impacts on the environment. The criteria used to determine the significance of a noise impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines. Accordingly, noise impacts resulting from the Project are considered significant if the Project would result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Short-Term Impacts

Implementation of the Project has the potential to result in short-term construction noise impacts to surrounding land uses due to construction activities. Construction noise represents a short-term impact on ambient noise levels. Although most of the types of exterior construction activities associated with the Project will not generate continually high noise levels, occasional single-event disturbances from grading and construction activities are possible. Table 5 depicts typical construction equipment noise. Construction equipment noise is controlled by the EPA's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations).

During the construction phase of the Project, noise from construction activities will add to the ambient noise environment in the immediate area. Activities involved in construction would generate maximum noise levels, as indicated in Table 5, ranging from 77 to 85dB at a distance of 50 feet. Construction activities will be temporary in nature and are expected to occur during normal daytime working hours in compliance with the City Noise Ordinance. Therefore, noise resulting from short-term, transient construction activity will not result in significant adverse impacts to nearby sensitive receptors.

MM Noise 1 - *Compliance with Section 8.36 of the City's Municipal Code and City Noise Ordinance.*

Long-Term Impacts

Traffic Noise

Tables E-1 and E-2 show the predicted noise levels at sensitive receivers in the study area as a result of adding traffic associated with the Project. Results of the analysis show that none of the sensitive receivers will exceed the Tulare County's Land Use Compatibility for Community Noise Environments criteria for the Existing Plus Project and Cumulative Year

2040 scenarios. As a result, Project traffic will not create a significant impact at sensitive receptors in the study area. The Project generates an increase of less than 1 dB with the addition of Project traffic to the surrounding roadway network considering the Cumulative Year 2040 scenario. Implementation of the Project will not result in significant adverse impacts from traffic noise levels within the Project study area. Therefore, no mitigation measures are needed.

Stationary Noise

Table E-3 indicates that that maximum noise levels at the sensitive receivers (Westlake Village) directly to the west of the Project site would not exceed 65 dBA considering noise generated by the air cannon dryer system and the vehicle maintenance area. In addition, results of the analysis show that hourly noise levels at the sensitive receivers directly to the west of the Project site would not exceed 50 dBA considering noise generated by the carwash and the vehicle maintenance area.

b) Generation of excessive ground-borne vibration or ground-borne noise levels?

Vibration levels from various types of construction equipment are shown in Table 6. The primary concern with construction vibration is building damage. Therefore, construction vibration is generally assessed in terms of peak particle velocity (PPV). It should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions.

Despite the perceptibility threshold of about 65 VdB, human reaction to vibration is not significant unless the vibration exceeds 75 VdB according to the United States Department of Transportation. The City of Visalia Municipal Code does not specifically identify vibration level impact standards. Caltrans has established vibration thresholds in terms of human annoyance of 0.04 in/sec PPV as documented in Caltrans' Transportation and Construction Vibration Guidance Manual. The vibration threshold of 0.04 in/sec PPV was used to estimate the impact of vibrations from construction activities associated with the Project.

Using the vibratory roller vibration level shown in Table 6 (PPV 0.210), the anticipated vibration velocity levels at the nearest residence of the Westlake Village are expected to approach 0.031 in/sec PPV. Based on the vibration velocity levels provided in Table 6, vibrations generated by the construction phase of the Project are considered less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The Project is not located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use airport. The Visalia Municipal Airport (VIS) is the closest public use airport and is located approximately 4.5 miles northwest of the Project site. Therefore, the Project will not result in the stated impact.

1.0 Introduction

1.1 Description of the Region/Project

This Noise Study Report (NSR) has been prepared for the purpose of identifying potential noise impacts that may result from the proposed CarMax Development, which seeks to develop an auto dealership on a 5-acre parcel in the City of Visalia. The Project is located at the southwest corner of the Mooney Boulevard (SR 63) and Visalia Parkway intersection. The Project will be located to the east of the Westlake Village Senior Community. Figures 1 and 2 show the location of the Project along with major roadways and highways. Figure 3 provides the site plan prepared for the Project.

The Project building areas would comprise approximately 8,526 square feet and would accommodate sales, presentation, and retail areas, supporting auto service/repair facilities and a dealership service carwash. The main dealership sales and service/repair building would be centrally located within the Project site, with the proposed dealership carwash located along the western boundary of the site. Vehicle inventory areas would be located along the Project site's northerly Visalia Parkway frontage. Customer and employee parking areas would be located in the easterly portion of the Project site. Access to the Project would be provided by Stop-controlled driveways connecting to Visalia Parkway and Mooney Boulevard.

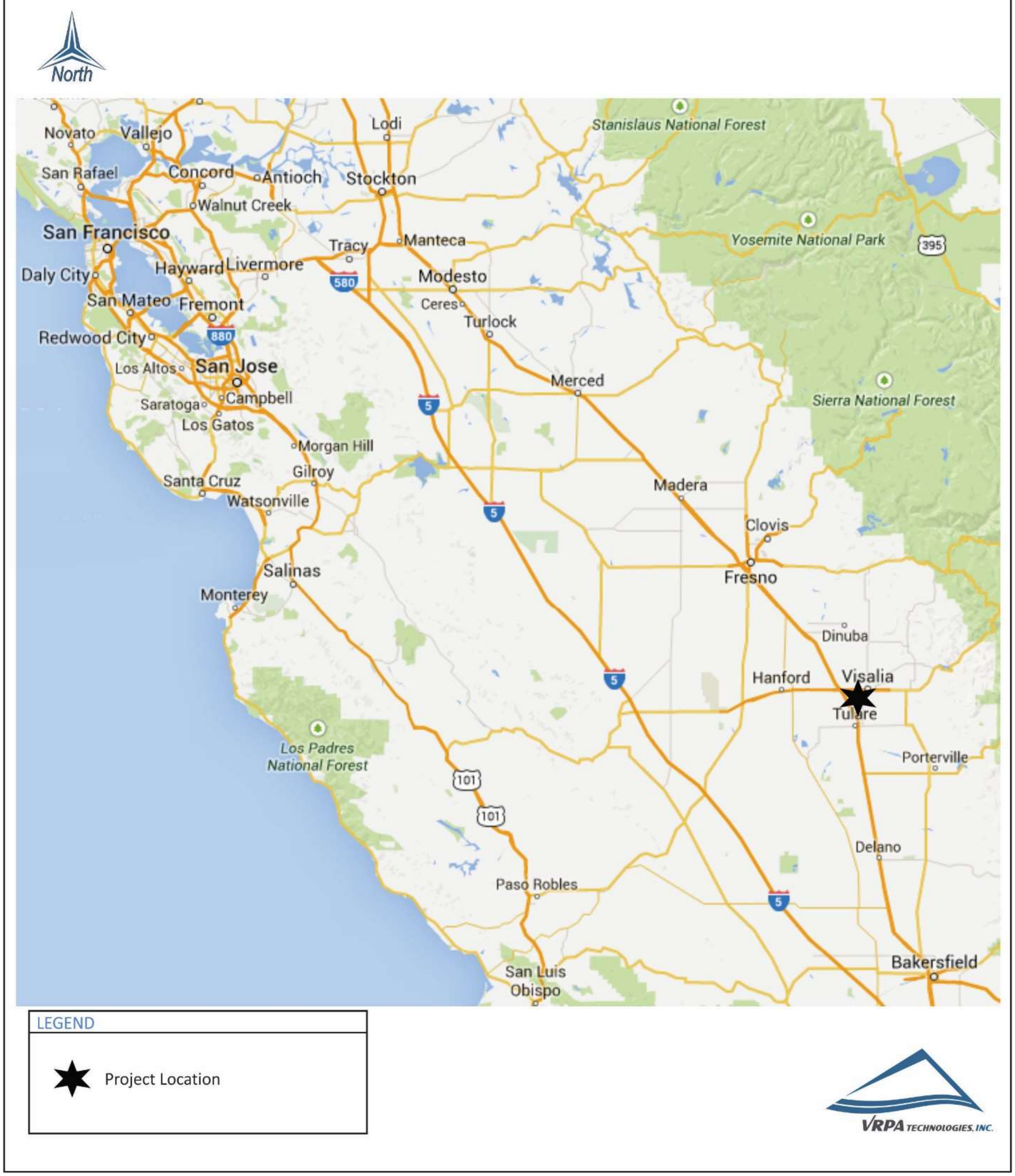
CarMax dealerships physically separate inventory areas from customer and employee parking areas. This facilitates loss prevention and improves operational efficiency and safety. All inventory display areas would be separated from the general public by means of guardrails, gates and fencing. Ornamental wrought-iron fencing or other means acceptable to the City would be used to separate customer and employee parking areas from vehicle display areas.

The Project will offer retail vehicle service (primarily routine maintenance, tires, diagnostics, and mileage services). Vehicles repairs covered under service plans is also provided. All service work would be performed inside fully air-conditioned buildings equipped with rollup doors, eliminating the need to conduct operations with open bay doors.

Retail service vehicles and vehicles awaiting disposition off-site would be stored in a secured non-public staging area on a temporary basis. The staging area would be secured and screened by screening/security features considered appropriate by the City. A proposed dealership carwash would be located southwest of the main dealership/service building, adjacent to the dealership vehicle sales staging area. This carwash would be available for washing of inventory and serviced vehicles but would not be accessible to the general public.

CarMax Development
Regional Location

Figure 1



CarMax Development
Project Location

Figure 2

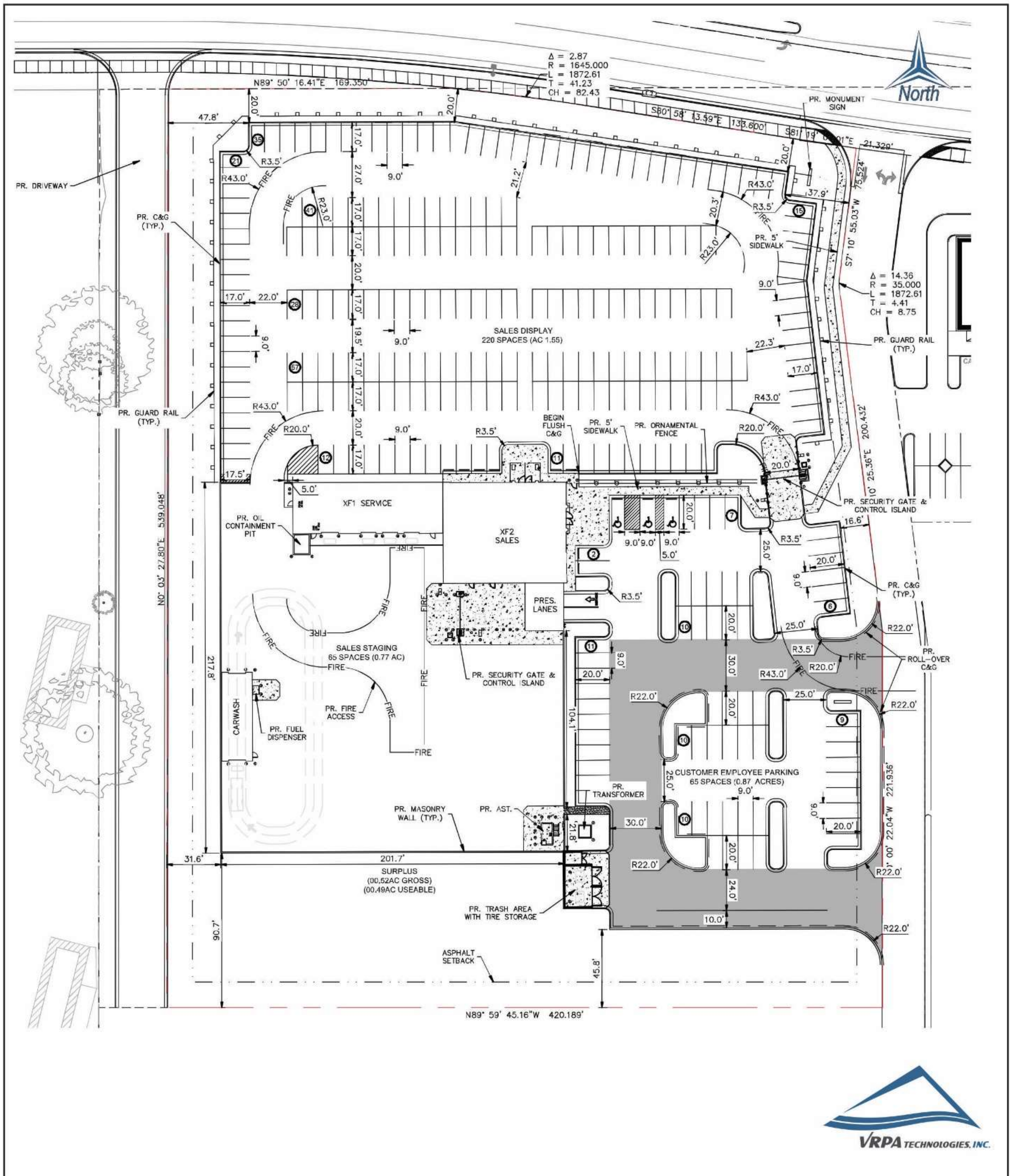
LEGEND

Project Location

VRPA TECHNOLOGIES, INC.

CarMax Development
Project Site Plan

Figure 3



When preparing an NSR, guidelines set by the City of Visalia must be followed. In analyzing noise levels, the guidelines and policies in the Noise section of the City of Visalia's Noise adopted General Plan was utilized. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dBA). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards use A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

1.2 Sound and the Human Ear

Sound levels are presented on a logarithmic scale to account for the large range of acoustic pressures that the human ear is exposed to and is expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals (µPa). Noise can generally be described as unwanted sound and has been cited as being a health problem, not just in terms of actual physiological damages such as hearing impairment, but also in terms of inhibiting general wellbeing and contributing to stress and annoyance. Long or repeated exposure to sounds at or above 85 dB can cause hearing loss. The louder the sound, the shorter the time period before hearing loss can occur. Sounds of less than 75 dB are unlikely to cause hearing loss even after long exposure.[1]

1.2.1 *A-Weighted Decibels*

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear. Human hearing is limited not only in the range of audible frequencies but also in the way it perceives the SPL in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and it perceives a sound within that range as being more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of SPL adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency dependent. The A-scale weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-scale, C-scale, D-scale), but these scales are rarely, if ever, used in conjunction with highway traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted dBAs. In environmental noise studies, A-weighted SPLs are commonly referred to as noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of

1 Source: National Institute on Deafness and Other Hearing Disorders

the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment, referred to as the "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by the hearers. Regarding increases in A-weighted noise level, knowledge of the following relationships will be helpful in understanding this report:

1. Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans.
2. Outside of the laboratory, a 3 dB change is considered a just-perceivable difference.
3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
4. A 10 dB change is subjectively heard as approximately a doubling in loudness.

1.2.2 *Sound Pressure Levels and Decibels*

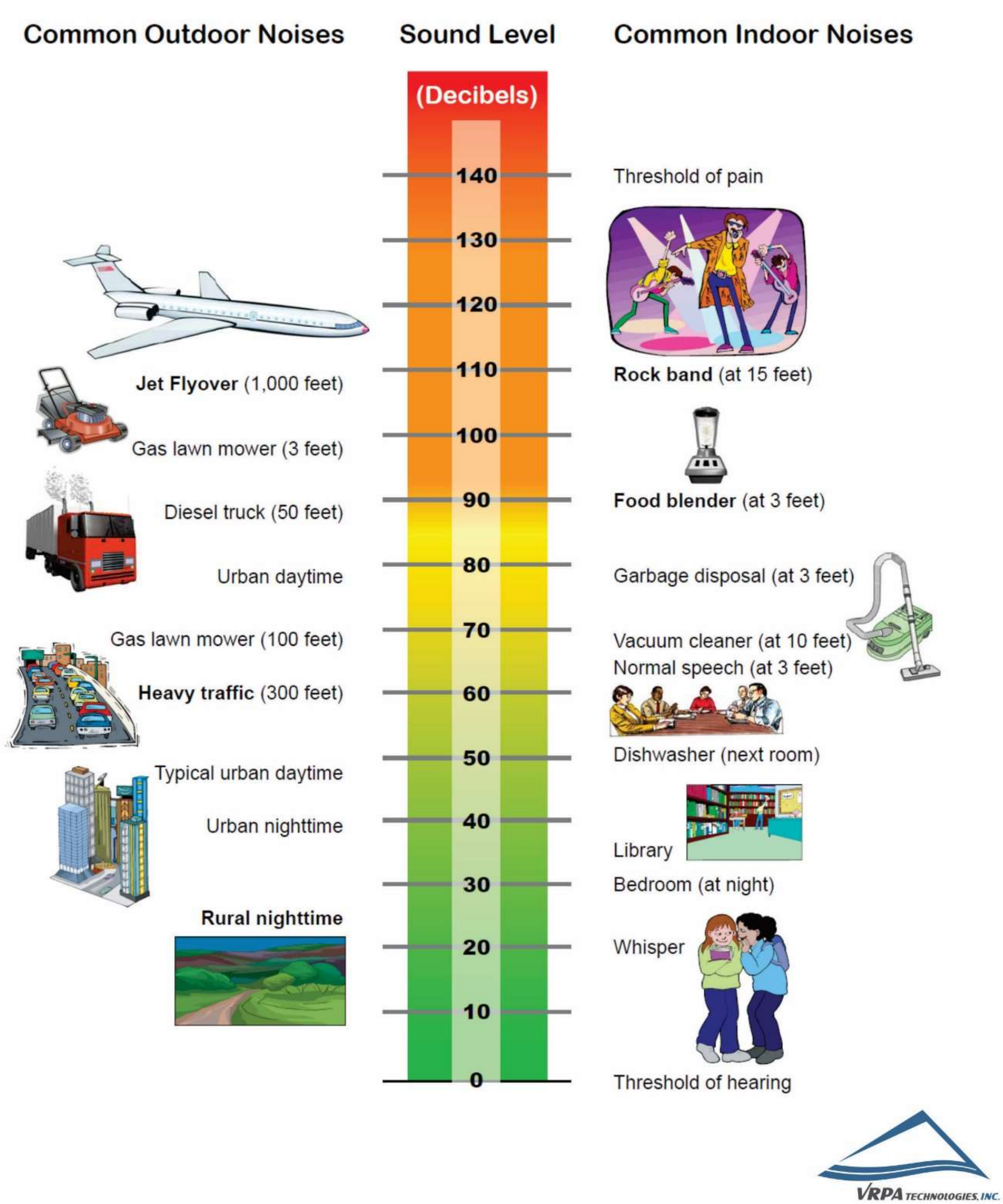
Because of the ability of the human ear to detect a wide range of sound pressure fluctuations, sound pressure levels are expressed in logarithmic units called decibels. The sound pressure level in decibels is calculated by taking the log of the ratio between the actual sound pressure and the reference sound pressure squared. The reference sound pressure is considered the absolute hearing threshold. In addition, because the human ear is not equally sensitive to all sound frequencies, a specific frequency-dependent rating scale was devised to relate noise to human sensitivity. A dBA scale performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. The basis for comparison is the faintest sound audible to the average ear at the frequency of maximum sensitivity. This dBA scale has been chosen by most authorities for purposes of environmental noise regulation. Typical indoor and outdoor noise levels are presented in Figure 4 (Common Environmental Sound Levels).

1.2.3 *Sound, Noise, and Acoustics*

Sound is a disturbance created by a moving or vibrating source in a gaseous or liquid medium or the elastic stage of a solid and is capable of being detected by the hearing organs. Sound may be thought of as the mechanical energy of a vibrating object transmitted by pressure waves through a medium to a hearing organ, such as a human ear. For traffic sound, the medium of concern is air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. Sound is actually a process that consists of three components: the sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Likewise, without a medium to transmit sound pressure waves, there is also no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receivers rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound.

CarMax Development
Common Environmental Sound Levels

Figure 4



1.2.4 *Frequency and Hertz*

A continuous sound can be described by its frequency (pitch) and its amplitude (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch, like the low notes on a piano, whereas high-frequency sounds are high in pitch, like the high notes on a piano. Frequency is expressed in terms of oscillations, or cycles, per second. Cycles per second are commonly referred to as Hertz (Hz). A frequency of 250 cycles per second is referred to as 250 Hz. High frequencies are sometimes more conveniently expressed in units of kilo-Hertz (kHz), or thousands of Hertz. The extreme range of frequencies that can be heard by the healthiest human ear spans from 16–20 Hz on the low end to about 20,000 Hz (or 20 kHz) on the high end.

1.2.5 *Addition of Decibels*

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces an SPL of 70 dBA as it passes an observer, two cars passing simultaneously would not produce 140 dBA; they would, in fact, combine to produce 73 dBA. When two sounds of equal SPL are combined, they will produce a combined SPL 3 dBA greater than the original individual SPL. In other words, sound energy must be doubled to produce a 3 dBA increase. If two sound levels differ by 10 dBA or more, the combined SPL is equal to the higher SPL; in other words, the lower sound level does not increase the higher sound level.

1.3 Characteristics of Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations.

Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3.0 and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance.

Noise generated by stationary sources typically attenuates at a rate between 6.0 and about 7.5 dBA per doubling of distance. Sound levels can be reduced by placing barriers between the noise source and the receiver (commonly called the "receptor"). In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise, but are less effective than solid barriers.

1.3.1 *Noise Descriptors*

Noise in the daily environment fluctuates over time. Some of the fluctuations are minor; some are substantial. Some noise levels occur in regular patterns; others are random. Some noise levels fluctuate rapidly, others slowly. Some noise levels vary widely; others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following is a list of the noise descriptors most commonly used in traffic noise analysis:

1. **Equivalent Sound Level (Leq) -** Leq represents an average of the sound energy occurring over a specified period. Leq is, in effect, the steady-state sound level that, in a stated period, would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. The one-hour A-weighted equivalent sound level, Leq(h), is the energy average of the A-weighted sound levels occurring during a one-hour period and is the basis for the Noise Abatement Criteria (NAC) used by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA).
2. **Percentile-Exceeded Sound Level (Lx) -** Lx represents the sound level exceeded for a given percentage of a specified period. For example, L10 is the sound level exceeded 10 percent of the time, and L90 is the sound level exceeded 90 percent of the time.
3. **Maximum Sound Level (Lmax) -** Lmax is the highest instantaneous sound level measured during a specified period.

1.3.2 *Sound Propagation*

When sound propagates over a distance, it changes in both level and frequency content. The manner in which noise reduces with distance depends on the following factors:

1. Geometric Spreading - Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of six dBA for each doubling of distance. Highway noise is not a single, stationary point source of sound. The movement of the vehicles on a highway makes the source of the sound appear to emanate from a line (i.e., a line source) rather than a point. This line source results in cylindrical spreading rather than the spherical spreading that results from a point source. The change in sound level from a line source is 3 dBA per doubling of distance.
2. Ground Absorption - Most often, the noise path between the highway and the observer is very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is done for simplification only; for distances of less than 60 m (200 ft), prediction results based on this scheme are sufficiently accurate. For acoustically hard sites (i.e., those sites with a reflective surface, such as a parking lot or a smooth body of water, between the source and the receiver), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface, such

as soft dirt, grass, or scattered bushes and trees, between the source and the receiver), an excess ground attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source.

3. Atmospheric Effects - Research by Caltrans and others has shown that atmospheric conditions can have a significant effect on noise levels within 60 m (200 ft) of a highway. Wind has been shown to be the most important meteorological factor within approximately 150 m (500 ft) of the source, whereas vertical air temperature gradients are more important for greater distances. Other factors such as air temperature, humidity, and turbulence also have significant effects. Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Increased sound levels can also occur as a result of temperature inversion conditions (i.e., increasing temperature with elevation).
4. Shielding by Natural and Human-Made Features - A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dBA of noise reduction.

1.4 Ground-borne Vibration

Annoyance to humans and damage to buildings are the two ground-borne vibration impacts of general concern. The two measurements corresponding to human annoyance and building damage for evaluating ground-borne vibration are peak particle velocity (PPV) and root-mean square (RMS) velocity. PPV is the maximum instantaneous positive or negative peak of the vibration signal, measured as a distance per time (such as millimeters or inches per second). This measurement has been used historically to evaluate shock-wave type vibrations from actions like blasting, pile driving, and mining activities, and their relationship to building damage. RMS is an average, or smoothed, vibration amplitude, commonly measured over 1-second intervals. It is expressed on a log scale in decibels (VdB) referenced to 0.000001 x 10-6 inch per second and is not to be confused with noise decibels. It is more suitable for addressing human annoyance and characterizing background vibration conditions because it better represents the response time of humans to ground vibration signals.

1.5 Methodology

When preparing an NSR, guidelines set by affected agencies must be followed. Acoustical terminology used for this NSR is documented in Appendix A. In analyzing traffic noise levels, the FHWA Highway Traffic Noise Prediction methodology must be applied. Safety concerns must also be analyzed to determine the need for appropriate mitigation resulting from increased noise due to increased traffic and other evaluations such as the need for noise barriers and other noise abatement improvements. Stationary noise levels were evaluated using Section 2.1.4 of the California Department of Transportation's (Caltrans) Technical Noise Supplement which evaluates the decrease in noise as distance from the noise source increases. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dBA). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards use A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

1.5.1 *California Environmental Quality Act (CEQA)*

CEQA requires environmental impact reports to evaluate whether and to what extent a proposed project may result in significant effects on the environment. If a project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are also evaluated and determined to not be feasible. An EIR is also required to evaluate a reasonable range of alternatives to the proposed Project that could feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project. An EIR must also evaluate a "No Project" Alternative. CEQA Guidelines Appendix G suggests the following as potential thresholds for determining whether a project will result in significant impacts on the environment:

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

1.5.2 *City of Visalia*

The Safety and Noise section of the City of Visalia's currently adopted 2014 General Plan serves as the primary policy statement for the City for implementing policies to maintain and improve the noise environment in the City of Visalia. The Safety and Noise section presents Goals and Objectives relative to planning for the noise environment within the City. Section 8.36 of the City's Municipal Code establishes exterior and interior noise standards. Future noise/land use incompatibilities can be avoided or reduced with implementation of City of Visalia's noise criteria and standards. The City of Visalia realizes that it may not always be possible to avoid constructing noise-sensitive developments in existing noisy areas and therefore provides noise reduction strategies to be implemented in situations with potential noise/land use conflicts. It should be noted that the City of Visalia does not have specific zoning or general plan requirements related to vibration.

Table 1 shows the City of Visalia's maximum allowable noise exposure from Transportation Noise Sources as depicted in the City of Visalia General Plan. Table 2 shows the City of Visalia's maximum allowable noise exposure from Stationary Noise Sources. The information presented in Table 2 comes from Chapter 8.36 of the City of Visalia's Municipal Code which contains the City of Visalia's noise ordinance. It should be noted that the City of Visalia's Municipal Code does note include criteria related to transportation noise sources.

Table 1
Transportation Noise Sources

Noise-Sensitive Land Use	Outdoor Activity Areas [1]	Interior Spaces	
	DNL/CNEL[2], dB	DNL/CNEL[2], dB	L_{eq}, dB [3]
Residential	65	45	--
Transient lodging	65	45	--
Hospitals, Nursing Homes	65	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	65	--	45
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45

Notes:
(1) Outdoor activity areas generally include backyards of single-family residences and outdoor patios, decks or common recreation area of multi-family developments.
(2) The CNEL is used for quantification of aircraft noise exposure as required by CAC Title 21.
(3) As determined for a typical worst-case hour during periods of use.
-- = not applicable
DNL = Day-Night Average Level
CNEL = Community Noise Equivalent Level
dB = Decibles
L_{eq} = Noise Equivalent Level

Table 2
Stationary Noise Sources[1]

	Daytime (6:00 a.m. - 7:00 p.m.)	Nighttime (7:00 p.m. - 6:00 a.m.)
Hourly Equivalent Sound Level (L_{eq}), dBA	50	45
Maximum Sound Level (L_{max}), dBA	70	65

Notes:
(1) As determined at the property line of the receiving noise-sensitive use.
L_{eq} = Noise Equivalent Level
L_{max} = Maximum noise level recorded during a noise event

1.5.3 *Study Methods and Procedures*

Site Selection

Developed and undeveloped land uses in the project vicinity were identified through land use maps, aerial photography, and site inspection. Within each land use category, sensitive receptors were then identified. Land uses in the Project vicinity include agricultural, residential, and commercial uses. The generalized land use data and location of sensitive receptors were the basis for the selection of the noise monitoring and analysis sites.

Noise Level Measurement Program

Existing noise levels in the project vicinity were sampled during the PM peak hour because traffic counts conducted in the study area show a greater volume of traffic in the PM peak hour than the AM peak hour. All measurements were made using an Extech Type 2 sound level meter datalogger.

The following measurement procedure was utilized:

1. Calibrate sound level meter.
2. Set up sound level meter at a height of 1.5 m (5 ft).
3. Commence noise monitoring.
4. Collect site-specific data such as date, time, direction of traffic, and distance from sound level meter to the center of the roadway.
5. Stop measurement after 15 minutes.
6. Proceed to next monitoring site and repeat.

2.0 Existing Conditions

Existing noise levels in the City are principally generated by transportation noise sources. Vehicular traffic noise is the dominant source in most areas, but aircraft and rail activity are also significant sources of environmental noise in the local areas surrounding these operations. Noise is generated by either mobile or stationary sources.

- ✓ Mobile source noise is typically associated with transportation, such as cars, trains, and aircraft. The most significant sources of mobile noise in the City of Visalia are SR-198 and other major arterial roadways, the Visalia Municipal Airport, and the Burlington Northern and Union Pacific railroad lines.

- ✓ Stationary noise is that generated by any 'fixed' noise source. Examples of stationary sources include outdoor machinery (i.e. such as heating/air conditioning systems and power generators), farming activities, high voltage power lines, and industrial areas within the City. Noise generated from construction sites also falls into the category of stationary sources.

2.1 Traffic Noise

Highway and roadway traffic noise levels are generally dependent upon three primary factors, which include the traffic volume, the traffic speed, and the percent of heavy vehicles on the roadway. Traffic generated noise is the result of vehicle engines, exhaust, tires, and wind generated by taller vehicles. Vehicles with defective mufflers or faulty equipment have the propensity to increase traffic noise. Traffic noise levels are reduced by distance, terrain, vegetation, and natural/manmade obstacles between a noise receptor and the highway/roadway.

To assess existing noise conditions, VRPA Technologies staff conducted noise level measurements at one (1) location (called receivers) in the vicinity of the Project site and tabulated the results. The weather during the time of the noise measurements taken consisted of sunshine and wind speeds of less than 5 mph. The purpose of the measurements was to determine baseline existing noise levels in the Project area and to calibrate the FHWA Traffic Noise model, which will be used to then predict and assess future year conditions.

The receiver evaluated for this Project was located near residential uses along Visalia Parkway. The receiver locations are shown in Figure 5. One (1) additional receiver (2) was incorporated into the analysis to assess impacts of the Project to the backyard area of the residential area located to the west of the Project. The additional receiver is also reflected in Figure 5.

CarMax Development
Noise Receiver Locations

Figure 5

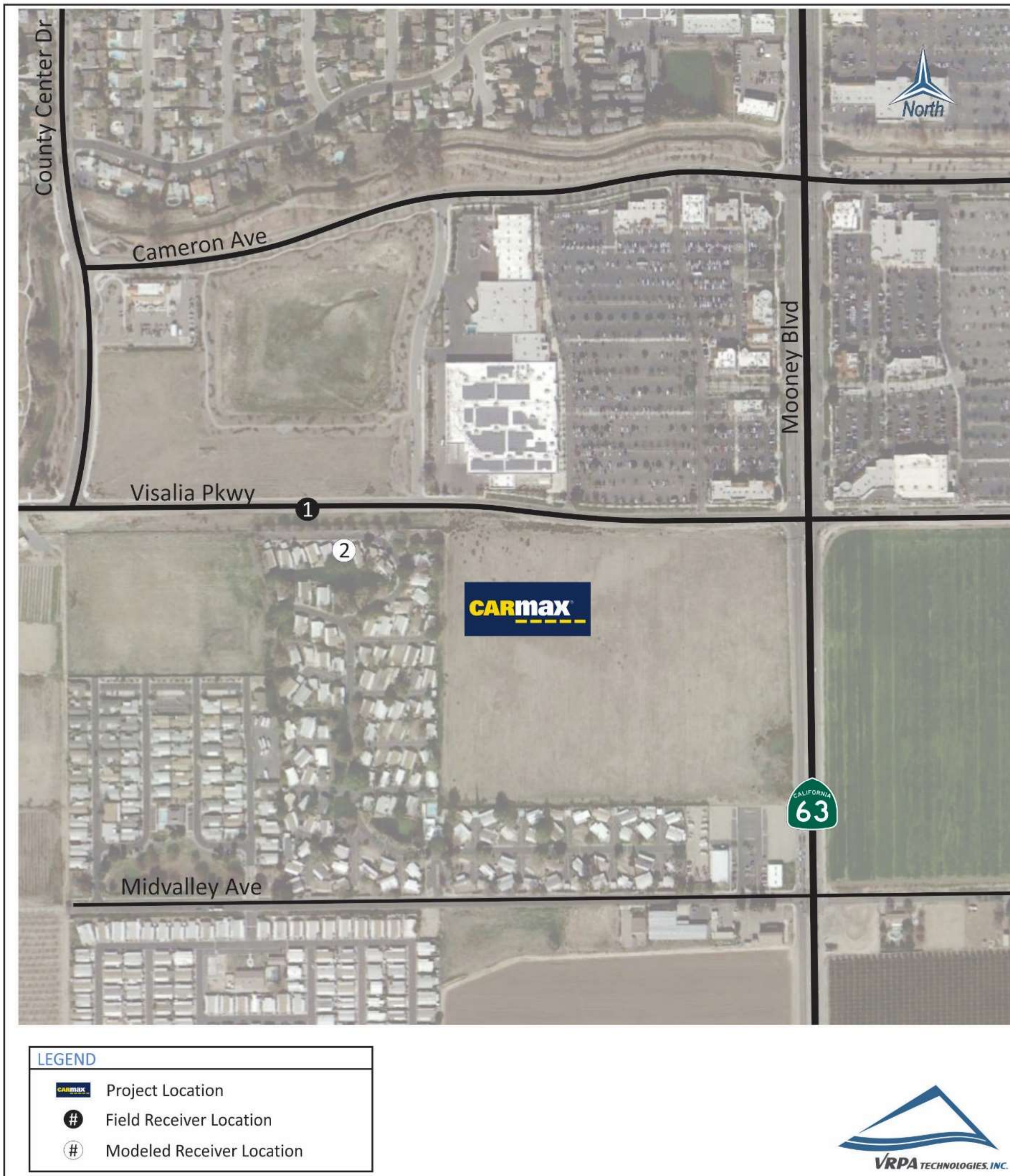


Table 3 characterizes the results of the existing noise conditions at the two (2) receivers evaluated in the study area.

Table 3
Existing Noise Levels

Receiver ID No.	Location	Distance from Noise Source-Roadway Centerline (feet)	Existing Noise Level Leq(h) dBA
1	Open Area located along Visalia Parkway, west of Mooney Boulevard	15	68.0
2	Residential (Westlake Village) area located south of Visalia Parkway	200	52.0

Source: VRPA Technologies, 2019

Traffic noise exposure is mainly a function of the number of vehicles on a given roadway per day, the speed of those vehicles, the percentage of medium and heavy trucks in the traffic volume, and the receiver's proximity to the roadway. Every vehicle passage on every roadway in the City radiates noise.

Existing high noise levels along major streets and highways are generally caused by traffic and congestion. Potential impacts along these facilities are generally classified as follows:

- ✓ Low - Ldn 59 dB or below
- ✓ Moderate - Ldn 60 dB to 65 dB
- ✓ High - Ldn 66 dB or greater

The potential for adverse noise impacts is generally moderate to high along most segments of State highways and is generally low to moderate along most segments of City streets and highways.

2.2 Railroad Noise

The Union Pacific (UP), Burlington Northern & Santa Fe (BNSF), and San Joaquin Valley Railroad (SJVRR) provide freight service to Visalia, connecting Visalia and Tulare County to other major markets and destinations throughout California. Passenger rail service in Tulare County is provided by Amtrak on its San Joaquin service, with the nearest rail station located in the City of Hanford, approximately 22 miles west of the site. Railroad noise will not impact the Project study area since the nearest rail line is located 2 miles away.

2.3 Airport Noise

The Visalia Municipal Airport (VIS), located in the southeast quadrant of the SR 198 and SR 99 interchange, serves Tulare and eastern Kings County. The airport is primarily used for general aviation operations, including local and itinerant services. The airport, which is owned and operated by the City of Visalia, is home to over 150 aircraft, which generate approximately 80,000 annual operations. Noise generated from the airport will not impact the Project study area since the Project is located nearly 4.5 miles away and falls outside of the airport noise contour zones. The Project site occasionally experiences transient overflight noise which is not considered significant or adverse.

2.4 Stationary Noise

There are a wide variety of industrial and other non-transportation noise sources throughout the City of Visalia, including heavy industrial or manufacturing operations, food packaging and processing facilities, lumber mills, and car washes to name a few. Stationary noise generated from the Project could potentially impact the surrounding area.

The change in noise level due to distance for point sources is determined by the following formula, which comes from the California Department of Transportation's (Caltrans) Technical Noise Supplement to the Traffic Noise Analysis Protocol.

$$dBA_2 = dBA_1 + 10\log_{10}[(D_1/D_2)]^2 = dBA_1 + 20\log_{10}(D_1/D_2)$$

Where:
dBA_1 = noise level at distance D_1
dBA_2 = noise level at distance D_2

Stationary noise impacts to the Project will be developed considering the formula above and the closest distance between the Project site and stationary noise sources in the surrounding area.

2.6 Ground-borne Vibration

Ambient vibration levels in residential areas are typically 50 VdB, which is well below human perception. The operation of heating/air conditioning systems and slamming of doors produce typical indoor vibrations that are noticeable to humans. The most common exterior sources of ground vibration that can be noticeable to humans inside residences include construction activities, train operations, and street traffic. Table 4 provides some common sources of ground vibration and the relationship to human perception. This information comes from the Federal Transit Administration's "Basic Ground-Bourne Vibration Concepts."

Table 4
Typical Levels of Ground-Borne Vibration

Human/Structural Response	Velovity Level*, VdB	Typical Events (50 ft. Setback)
Threshold, minor cosmetic damage fragile buildings	100	Blasting from construction projects
		Bulldozers, vibratory rollers, and other heavy tracked construction equiment
Difficulty with tasks such as reading a video or computer screen	90	
		Commuter rail, upper range
Residential annoyance, infrequent events (e.g commuter rail)	80	Rapid transit, upper range
		Commuter rail, typical
Residential annoyance, infrequent events (e.g rapid transit)		Bus or truck over bump
	70	Rapid transit, typical
Limit for vibration sensitive equipment. Approx. threshold for human perception of vibration		Bus or truck, typical
	60	
		Typical background vibration
	50	

* RMS velocity in decibels (VdB) are 10^{-6} inches/second

3.0 Short-Term Impacts

3.1 Construction Noise Impacts

The Project has the potential to result in short-term noise impacts to surrounding land uses due to construction activity noise (collectively referred to hereafter as just "construction" noise). Construction noise represents a short-term impact on ambient noise levels and includes activities such as demolition, site preparation, grading, and other construction-related activities. Noise generated from the transport of workers and the movement of materials to and from the construction site and the physical activities associated with any construction-related activities could potentially impact neighboring sensitive land uses. Although most of the types of exterior construction activities associated with the Project will not generate continually high noise levels, occasional single-event disturbances from grading and construction activities are possible. The Project will also include other components as follows:

- ✓ Sales building;
- ✓ Presentation and Retail Service building; and
- ✓ Car Wash

Table 5 depicts typical construction equipment noise levels, based upon a distance of 50 feet between the noise source and the noise receptor. Noise emitted by construction equipment is controlled by the Environmental Protection Agency's (EPS's) Noise Control Program (Part 204 of Title 40, Code of Federal Regulations).

During construction of various components of the Project, noise from construction activities will add to the noise environment in the immediate area. Activities involved in building construction would generate maximum noise levels, as indicated in Table 5, ranging from 77 to 85 dBA at 50 feet. Construction activities will be temporary in nature and are expected to occur during normal daytime working hours. Construction noise impacts could result in annoyance or sleep disruption for nearby residences if nighttime operations occurred, or if unusually noisy equipment was used. It is not anticipated that any portion of the construction phase will take place during nighttime hours. Based on information provided in Table 5 and the noise attenuation formula provided in Section 2.2, the nearest residence adjacent to the western boundary of the Project site may be subject to short-term noise reaching 65 to 75 dBA Lmax generated by construction activities. Considering the maximum sound level of 70 dBA Lmax from the City of Visalia's Stationary Noise Source criteria (Table 2), construction of the Project will, more likely than not, impact the neighboring residences directly west of the Project site. Mitigation Measure 1 is recommended in Section 5.0 to attenuate this noise exposure from construction of the Project.

Table 5
Construction Equipment Noise

TYPE OF EQUIPMENT	Sound Levles Measured (dBA of 50 feet)
Rock Drills	85
Jack Hammers	85
Pneumatic Tools	85
Pumps	77
Dozers	85
Tractor	84
Vibratory Rollers[1]	80
Front-End Loaders	80
Hydraulic Backhoe	80
Hydraulic Excavators	85
Graders	85
Air Compressors	80
Trucks	84

Source: Noise Control for Buildings and Manufacturing Plants (Bolt, Beranek and Newman, 1987).
1 - Federal Highway Administration Roadway Construction Noise Model, FHWA 2006

3.2 Ground-borne Vibration

Construction activity can result in ground vibration, depending upon the types of equipment used. Operation of construction equipment causes ground vibrations, which spread through the ground and diminish in strength with distance from the source generating the vibration. Building structures that are founded on the soil in the vicinity of the construction site respond to these vibrations, with varied results. Ground vibrations as a result of construction activities very rarely reach vibration levels that will damage structures but can cause low rumbling sounds and detectable vibrations for buildings very close to the site.

Vibration levels from various types of construction equipment are shown in Table 6. The primary concern with construction vibration is building damage. Therefore, construction vibration is generally assessed in terms of peak particle velocity (PPV). It should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions.

Despite the perceptibility threshold of about 65 VdB, human reaction to vibration is not significant unless the vibration exceeds 75 VdB according to the United States Department of Transportation. The City of Visalia Municipal Code does not specifically identify vibration level impact standards. Caltrans has established vibration thresholds in terms of human annoyance of 0.04 in/sec PPV as documented in Caltrans' *Transportation and Construction Vibration Guidance Manual*. The vibration threshold of 0.04 in/sec PPV was used to estimate the impact of vibrations from construction activities associated with the Project. The following formula was used to estimate the human response (annoyance) at the Westlake Village located to the west of the Project site.

$PPVequip = PPVref \times (25/D)^{1.5}$

Using the vibratory roller vibration level shown in Table 6 (PPV 0.210) and the formula shown above, the anticipated vibration velocity levels at the nearest residence of the Westlake Village are expected to approach 0.031 in/sec PPV. Based on the vibration velocity levels provided in Table 6, vibrations generated by the construction phase of the Project are considered less than significant.

Table 6
Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 ft (in/sec)	PPV Levels at Westlake Village homes[1] (in/sec)	Threshold (in/sec)	Threshold Exceeded
Vibratory roller	0.210	0.031	0.040	No
Large bulldozer	0.089	0.013	0.040	No
Caisson drilling	0.089	0.013	0.040	No
Loaded trucks	0.076	0.011	0.040	No
Jackhammer	0.035	0.005	0.040	No
Small bulldozer	0.003	0.000	0.040	No

[1] The nearest Westlake Village homes are located approximately 90 feet from Project site boundary

4.0 Long-Term Impacts

4.1 Traffic Noise Impacts

This section provides an assessment of the anticipated noise conditions in the future as it relates to the Project and the impact of increased traffic noise generated by the Project on the surrounding land uses within the study area. The noise impacts from the Project were analyzed considering Existing Plus Project, Cumulative Year 2040 No Project, and Cumulative Year 2040 Plus Project Conditions.

Existing Plus Project Conditions

Existing Plus Project traffic noise levels were established based on previously collected traffic data and using the Traffic Noise Model (TNM) Version 2.5. Existing Plus Project levels, which are based on expected Project trip distribution, are calculated and compared to both the existing noise level and the maximum allowable noise exposure for transportation noise sources as described in the Tulare County's General Plan. Referencing Table 1, Tulare County's criteria shows that mitigation must be considered when the exterior noise exposure level of 60 Ldn/CNEL for single family residential uses has been exceeded. Levels reported in this section are in terms of A-weighted levels. The Ldn is estimated to be within +/- 2 dBA of the peak hour L_{eq} under normal traffic conditions based upon Caltrans' Traffic Analysis Noise Protocol.

Traffic volumes associated with the Project in addition to existing traffic along roadway segments in the study area were entered into the model to estimate noise levels at various receivers that would be affected by the Project. In order to calibrate the TNM 2.5 model, the existing counts, lane geometry, and any other pertinent existing conditions were added to the model. The noise level measurements taken in the study area were then compared to the noise levels computed by the model. The difference between the measured and modeled noise levels, referred to as the "K constant", is then added to any additional receivers to be evaluated in the TNM 2.5 model.

Table 7 shows the predicted noise levels at sensitive receivers in the study area as a result of adding traffic associated with the Project. As shown in Table 7, the highest peak hour sound level expected at the Westlake Village is 52.0 Leq(h) dBA. When it comes to noise levels, the Ldn is determined to be within +/- 2 dBA of the peak hour Leq under normal traffic conditions based upon Caltrans' Traffic Analysis Noise Protocol. Therefore, none of the Existing Plus Project noise levels exceed Tulare County's Land Use Compatibility for Community Noise Environments. TNM 2.5 printouts included are provided in the Appendix B.

Table 7
Existing Plus Project Noise Levels

Receiver ID No.	Location	Distance from Noise Source-Roadway Centerline (feet)	Existing Plus Project Noise Level Leq(h) dBA	City of Visalia's Transportation Noise Source Criterion	Impact
1	Open Area located along Visalia Parkway, west of Mooney Boulevard	15	69.0	--	--
2	Residential (Westlake Village) area located south of Visalia Parkway	200	52.0	65.0	None

Source: VRPA Technologies, 2019

Cumulative Year 2040 Conditions

This section provides an assessment of the anticipated noise conditions in the future as it relates to the Project and the impact of increased traffic noise generated by the Project on the surrounding land uses within the study area. The noise impacts from the development of the Project was analyzed considering Cumulative Year 2040 Conditions as a result of the Tulare County General Plan. Future development within the planning area will result in increased traffic volumes, thus increasing noise levels in some areas. While there will be increases in some noise levels, efforts can be taken to help minimize such instances. For example, siting noise sensitive uses away from high-noise areas (e.g., major traffic routes) and buffering noise through design will help minimize future noise-related land use conflicts.

The levels of traffic expected in the year 2040 relate to the cumulative effect of traffic increases resulting from the implementation of the general plans of local agencies and pending development projects. Traffic conditions for the Cumulative Year 2040 scenario was determined by the Tulare County Association of Governments (TCAG) regional travel model and Caltrans' SR 63 TCR were used to develop Cumulative Year 2040 traffic volumes as documented in the TIS. Traffic volumes, truck mix, and vehicle speeds were used as inputs to the TNM 2.5 model for the Cumulative Year 2040 modeled scenarios consistent with generally-accepted engineering principles and methods.

Table 8 shows the predicted noise levels at the modeled receivers evaluated in the study area for the Cumulative Year 2040 No Project and Cumulative Year 2040 Plus Project conditions. Results of the analysis show that none of the sensitive receivers will exceed Tulare County's Land Use Compatibility for Community Noise Environments. As a result, the Project will not create a significant impact at sensitive receptors in the study area. Table 8 also shows the increase in noise levels for the Cumulative Year 2040 scenario once Project trips are added to the surrounding roadway system. Results show that the greatest increase in noise levels as a result of the Project is less than 1 Leq(h) dBA. Section 1.2.1 above indicates that a 3 dB change is considered a just-perceivable difference outside of the laboratory and that a change in level of at least 5 dB is required before any noticeable change in community response would be expected.

Table 8
Cumulative Year 2040 Noise Levels

Receiver ID No.	Location	Distance from Noise Source-Roadway Centerline (feet)	Cumulative Year 2040 Without Project Noise Level Leq(h) dBA	Cumulative Year 2040 Plus Project Noise Level Leq(h) dBA	Noise Increase (+) or Decrease (-)	City of Visalia's Transportation Noise Source Criterion	Impact
1	Open Area located along Visalia Parkway, west of Mooney Boulevard	15	70.0	70.0	0.0	--	--
2	Residential (Westlake Village) area located south of Visalia Parkway	200	54.0	54.0	0.0	65.0	None

Source: VRPA Technologies, 2019

4.2 Stationary Noise Impacts

The City of Visalia's maximum allowable noise exposure from Stationary Noise Sources is reflected in Table 2. The hourly and maximum sound level allowed during daytime (6:00am to 7:00pm) hours is 50 dBA and 70 dBA respectively. This section evaluates the noise generated by on-site sources. This section provides a description of the reference noise level measurements shown on Table 9 used to estimate the stationary noise impacts.

Table 9
Reference Noise Level Measurements

Noise Source	Distance from Noise Source (feet)	Noise Source Height (feet)	Reference Noise Level (dBA Leq)
Carwash Tunnel Exit (Air Dryer) [1]	80	7	77.0
Vehicle Maintenacen Activity [2]	15	5	78.7

1: 30 HP Air Cannon Dryer Refernce Noise Levels

2 Urban Crossroads, Inc. / Lake Forest Discount Tire Center

4.2.1 *On-Site Operational Noise*

The air dryer located at the carwash tunnel exit is the most dominant noise source generated by the carwash operation. The carwash located at this site will use the 3 Nozzle / 30 HP Air Cannon Dryer system. System specifications are provided in Appendix C. The registered noise levels for the 30 HP Sir Cannon Dryer system, presented in Appendix D, show noise levels of 77dBA at a distance of 80 feet. Figure 6 shows the approximate distances of the carwash tunnel exit to the sensitive receivers (residences) to the west of the Project site in addition to the approximate distances of the vehicle maintenance area. The residences to the west of the Project site are the closest sensitive receivers to the Project site. As noted in Figure 6, the Project proposes to construct a 6-foot block wall along a portion of the eastern border of the Westlake Village in addition to a 6-foot block wall around the southwest corner of the of the Project site.

Results of the analysis, as depicted in Table 10, shows that maximum noise levels at the sensitive receivers (Westlake Village) directly to the west of the Project site would not exceed 65 dBA considering noise generated by the air cannon dryer system and the vehicle maintenance area. In the absence of either proposed block wall, maximum noise levels at the Westlake Village would exceed the City of Visalia's Stationary Noise Source criteria.

The hourly sound level allowed during daytime (6:00am to 7:00pm) hours is 50 dBA according to the City of Visalia's maximum allowable noise exposure from Stationary Noise Sources criteria. To determine if operational noise from the carwash would impact the sensitive receivers (Westlake Village) directly to the west of the Project site, it was assumed that the 3 Nozzle / 30 HP Air Cannon Dryer system was operational for 20 minutes out of every hour, during continuous operation. It was also assumed that noise generated by an impact wrench in the vehicle maintenance area was operational for 20 minutes out of every hour. Results of the analysis shows that hourly noise levels at the sensitive receivers directly to the west of the Project site would not exceed 50 dBA considering noise generated by the carwash and the vehicle maintenance area. If the Air Cannon Dryer system was operational for 30 minutes out of every hour, the hourly noise levels at the Westlake Village would exceed the City of Visalia's Stationary Noise Source criteria. An 8-foot block wall around the southwest corner of the Project site would be required to eliminate noise impacts at the Westlake Village if the Air Cannon Dryer system was operational for 30 minutes out of every hour.

CarMax Development
Sensitive Receiver Boundary vs On-Site Noise Sources

Figure 6

Table 10
On-Site Noise Source Impacts

Area	Hourly Equivalent Sound Level Leq dBA	Maximum Sound Level, dBA	City of Visalia's Stationary Noise Source Criterion	Impact
Westlake Village Senior Community	50.0	65.0	50 L_{eq} (h) / 70 L_{max}	No / No

Source: VRPA Technologies, 2019

5.0 Impact Determinations and Recommended Mitigation

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in significant adverse impacts on the environment. The criteria used to determine the significance of a noise impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines. Accordingly, noise impacts resulting from the Project are considered significant if the Project would result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Generation of excessive ground-borne vibration or ground-borne noise levels?

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Each of these thresholds are evaluated individually below to determine whether the Project will cause a significant effect on the environment. Where impacts are found to be significant, mitigation measures are recommended that would avoid or reduce the impact to less than significant.

5.1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies

5.1.1 Short-Term Impacts

Implementation of the Project has the potential to result in short-term construction noise impacts to surrounding land uses due to construction activities. Construction noise represents a short-term impact on ambient noise levels. Although most of the types of exterior construction activities associated with the Project will not generate continually high noise levels, occasional single-event disturbances from grading and construction activities are possible. Table 5 depicts typical construction equipment noise. Construction equipment noise is controlled by the EPA's

Noise Control Program (Part 204 of Title 40, Code of Federal Regulations).

During the construction phase of the Project, noise from construction activities will add to the ambient noise environment in the immediate area. Activities involved in construction would generate maximum noise levels, as indicated in Table 5, ranging from 77 to 85dB at a distance of 50 feet. Construction activities will be temporary in nature and are expected to occur during normal daytime working hours in compliance with the City Noise Ordinance. Therefore, noise resulting from short-term, transient construction activity will not result in significant adverse impacts to nearby sensitive receptors.

> ***MM Noise 1 -*** *Compliance with Section 8.36 of the City's Municipal Code and City Noise Ordinance.*

5.1.2 Long-Term Impacts

Traffic Noise

Tables 7 and 8 show the predicted noise levels at sensitive receivers in the study area as a result of adding traffic associated with the Project. Results of the analysis show that none of the sensitive receivers will exceed the Tulare County's Land Use Compatibility for Community Noise Environments criteria for the Existing Plus Project and Cumulative Year 2040 scenarios. As a result, Project traffic will not create a significant impact at sensitive receptors in the study area. The Project generates an increase of less than 1 dB with the addition of Project traffic to the surrounding roadway network considering the Cumulative Year 2040 scenario. Implementation of the Project will not result in significant adverse impacts from traffic noise levels within the Project study area. Therefore, no mitigation measures are needed.

Stationary Noise

Section 4.2 above indicates that that maximum noise levels at the sensitive receivers (Westlake Village) directly to the west of the Project site would not exceed 65 dBA considering noise generated by the air cannon dryer system and the vehicle maintenance area. In addition, results of the analysis show that hourly noise levels at the sensitive receivers directly to the west of the Project site would not exceed 50 dBA considering noise generated by the carwash and the vehicle maintenance area.

5.2 Generation of excessive ground-borne vibration or ground-borne noise levels

Vibration levels from various types of construction equipment are shown in Table 6. The primary concern with construction vibration is building damage. Therefore, construction vibration is generally assessed in terms of peak particle velocity (PPV). It should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions.

Despite the perceptibility threshold of about 65 VdB, human reaction to vibration is not significant unless the vibration exceeds 75 VdB according to the United States Department of Transportation. The City of Visalia Municipal Code does not specifically identify vibration level impact standards. Caltrans has established vibration thresholds in terms of human annoyance of 0.04 in/sec PPV as documented in Caltrans' Transportation and Construction Vibration Guidance Manual. The vibration threshold of 0.04 in/sec PPV was used to estimate the impact of vibrations from construction activities associated with the Project.

Using the vibratory roller vibration level shown in Table 6 (PPV 0.210), the anticipated vibration velocity levels at the nearest residence of the Westlake Village are expected to approach 0.031 in/sec PPV. Based on the vibration velocity levels provided in Table 6, vibrations generated by the construction phase of the Project are considered less than significant.

5.3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels

The Project is not located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use airport. The Visalia Municipal Airport (VIS) is the closest public use airport and is located approximately 4.5 miles northwest of the Project site. Therefore, the Project will not result in the stated impact.

APPENDIX A
Acoustical Terminology

ACOUSTICAL TERMINOLOGY

The following terminology has been used for purposes of this NSR:

Ambient Noise Level: The 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.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7 p.m. to 10p.m. and ten decibels to sound levels in the night before 7 a.m. and after 10 p.m.

Decibel, dBA: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micro-newtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition often decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

L_{eq}(h): The hourly value of L_{eq}.

L_{max}: The maximum noise level recorded during a noise event

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). L_{10} equals the level exceeded 10 percent of the time.

L_n(h): The hourly value of L_n.

Noise Exposure Contours: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to the duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and the reference duration of one second

Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighing filter network. The A-weighing filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

Note: *CNEL and DNL represent daily levels of noise exposure averaged on an annual basis,* while L_n *represents the average noise exposure for a shorter time period, typically one hour.*

APPENDIX B
TNM 2.5 Sound Level Worksheets

City of Visalia
VRPA Technologies, Inc.

11 September 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: CarMax Development
RUN: Existing Conditions
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver													
Name	No.	#DUs	Existing	No Barrier					With Barrier				
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
Receiver1	1	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0	
Westlake Village	3	1	0.0	51.7	65	51.7	10	----	51.7	0.0	8	-8.0	

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	2	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

City of Visalia
VRPA Technologies, Inc.

11 September 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: CarMax Development
RUN: Existing Plus Project Conditions
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
Westlake Village	3	1	0.0	52.1	65	52.1	10	----	52.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	2	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

City of Visalia
VRPA Technologies, Inc.

11 September 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: CarMax Development
RUN: Cumulative Year No Project Conditions
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
Westlake Village	3	1	0.0	53.5	65	53.5	10	----	53.5	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	2	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

City of Visalia
VRPA Technologies, Inc.

11 September 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: CarMax Development
RUN: Cumulative Year Plus Project Conditions
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	70.3	66	70.3	10	Snd Lvl	70.3	0.0	8	-8.0
Westlake Village	3	1	0.0	53.8	65	53.8	10	----	53.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	2	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

APPENDIX C
Air Cannon Dryer Specifications

Owners Manual

ISO 9001 CERTIFIED

Air Cannon™

Dryer

Belanger, Inc.
P.O. Box 5470
Northville, MI 48167-5470
Customer Service Phone (248) 374-4700
Fax (248) 380-9681
www.belangerinc.com

Belanger®

1MANUL008
REV 04

Specifications

Physical Dimensions

3 Nozzle / 30 HP

Tunnel space required	60"
Unit height overall	132"
Unit width overall	164"

5 Nozzle / 50 HP

Tunnel space required	70"
Unit height overall	136"
Unit width overall	164"

7 Nozzle / 70 HP

Tunnel space required	70"
Unit height overall	136"
Unit width overall	190"

3 Nozzle / 30 HP with Silencers

Tunnel space required	72"
Unit height overall	132"
Unit width overall	164"

5 Nozzle / 50 HP with Silencers

Tunnel space required	106"
Unit height overall	136"
Unit width overall	164"

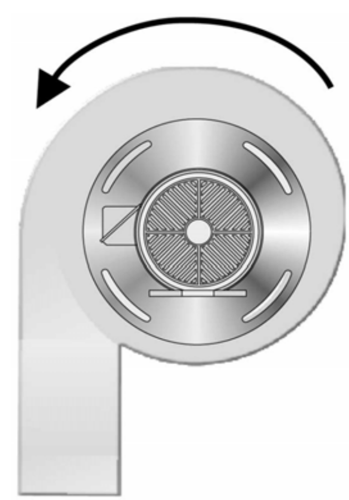
7 Nozzle / 70 HP with Silencers

Tunnel space required	106"
Unit height overall	136"
Unit width overall	190"

The following is important in understanding how to determine Impeller rotation.

Impeller Rotation is Referenced from the Motor Side of the Impeller

Clockwise Impeller Rotation

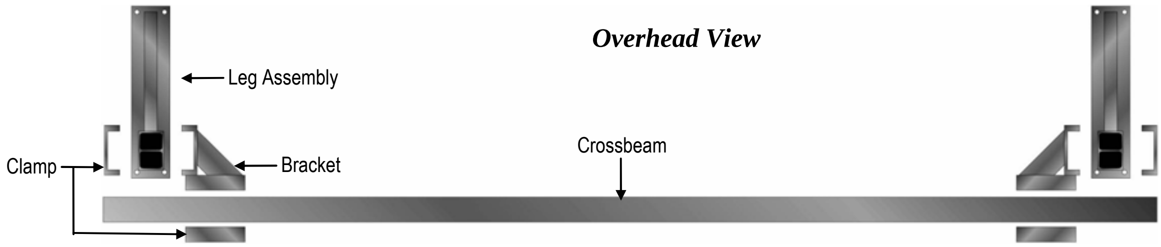


Counter Clockwise Impeller Rotation

Installation

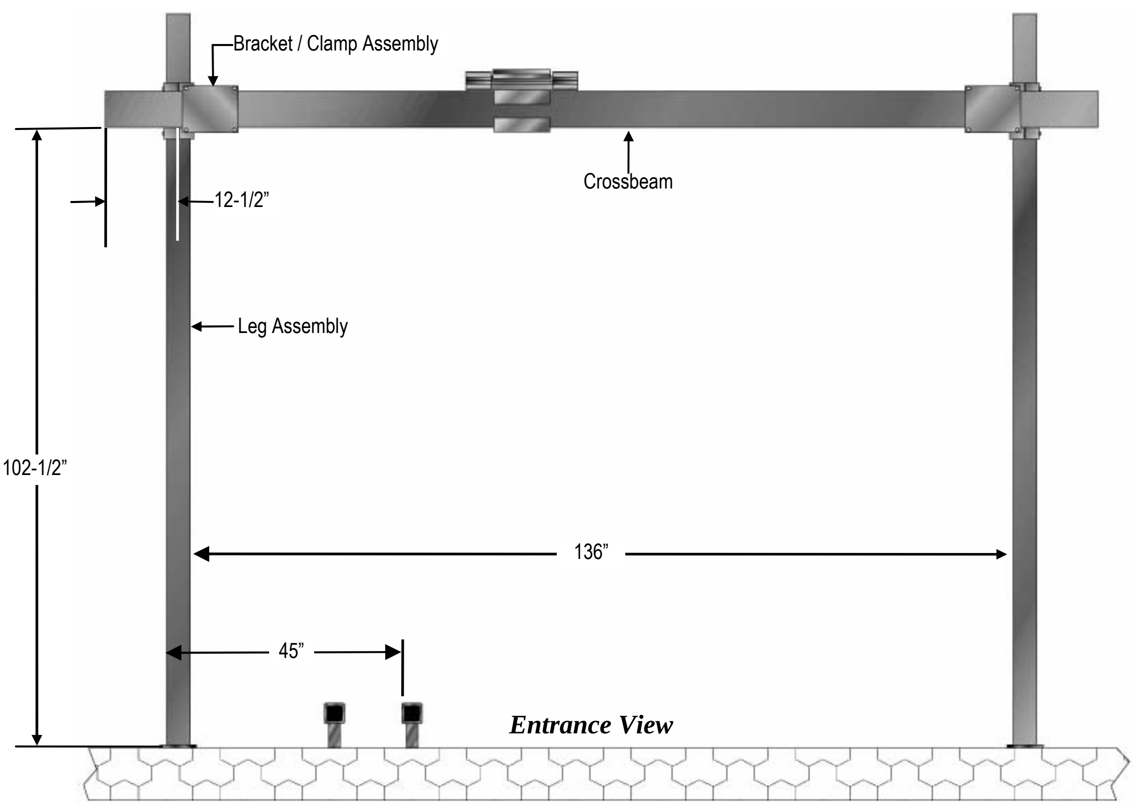
Frame Assembly

1) Assemble the frame as shown in the overhead view below.



2) Be sure that the crossbeam is on the entrance side of the frame as shown in the entrance side view below.
3) Position the assembled frame in its proper bay location keeping in mind the required operating envelope as shown below and lag it to the floor.

Note: ***Drip space is the distance between the last Rinse Arch and the Dryer. Typically, the larger the drip space, the better the Dryer can perform.***



Note: ***45" dimension is taker from the outside of the driver side leg to the inside of the passenger side Guide Rail. Actual tunnel depth will vary according to available building space.***

Installation

Motor / Nozzle Mounts

There are 2 types of mounts. Crossbeam Mounts and Leg Mounts. Both mount styles can be configured and mounted in a number of ways. It is very important that they are mounted as shown in the following diagrams.

There are also 3 complete Dyer configurations:

- **3 Nozzle**
- **5 Nozzle**
- **7 Nozzle**

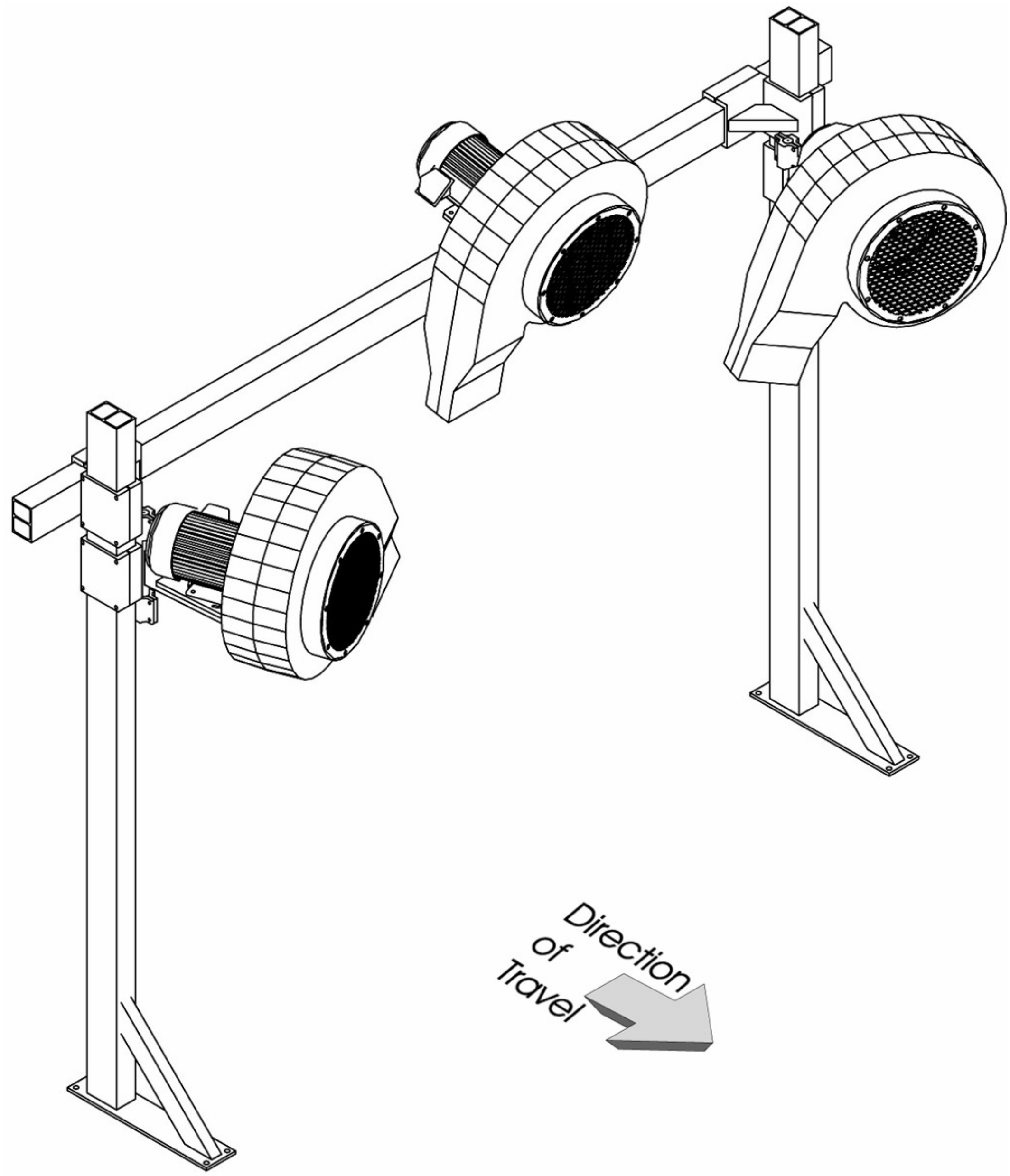
The 3-nozzle system is a completely different setup from the other two styles. The 7-nozzle system is identical to the 5-nozzle system with two added nozzles. This document will show all mount positions starting with the 3-nozzle system.

It is very important to notice if a mount is facing the entrance or exit side of the Dryer.

1) Locate and identify all of the clamps supplied with your system. Secure them to the appropriate locations on the frame as shown in the following two drawings. Adjustments will follow.

Installation

3-Nozzle System Overview



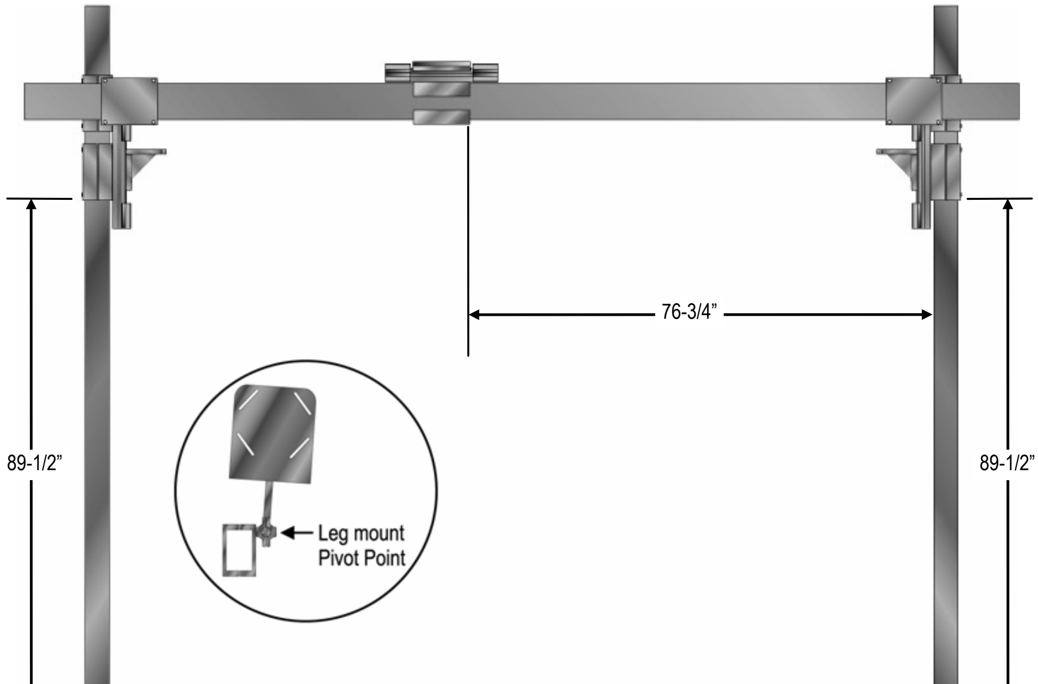
Installation

3-Nozzle Frame Mounts

The following will show the correct positions and orientations of all Mounts. Before proceeding, be sure all Mounts are tightly secured to the frame.

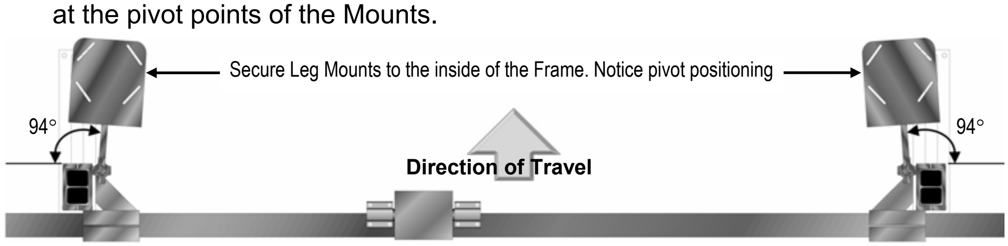
All adjustments are done at the pivot points of the Mounts.

1) Secure the Mounts to the frame at the locations shown below.



View from entrance. All mounts should face the exit (see below)

2) Adjust the Leg Mounts horizontally as shown below. All horizontal adjustments are done at the pivot points of the Mounts.



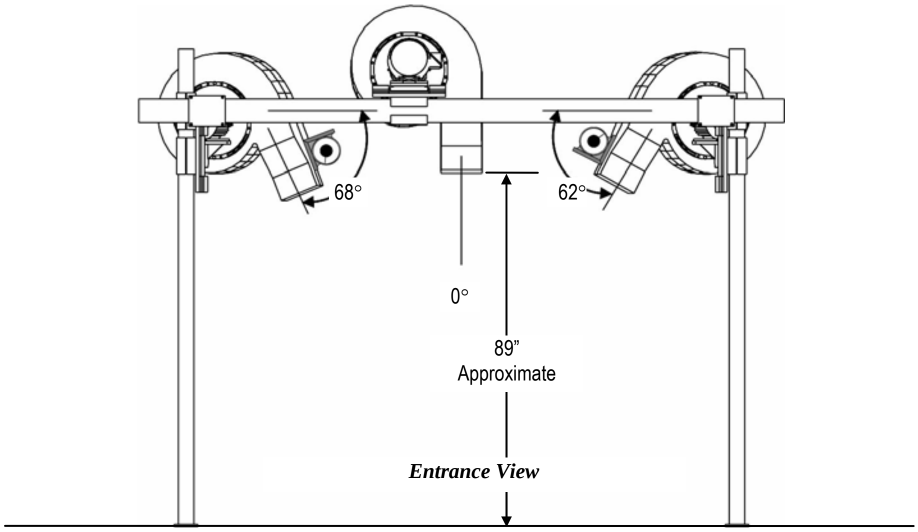
3) Once all Mounts are properly set, securely tighten all fasteners.

Installation

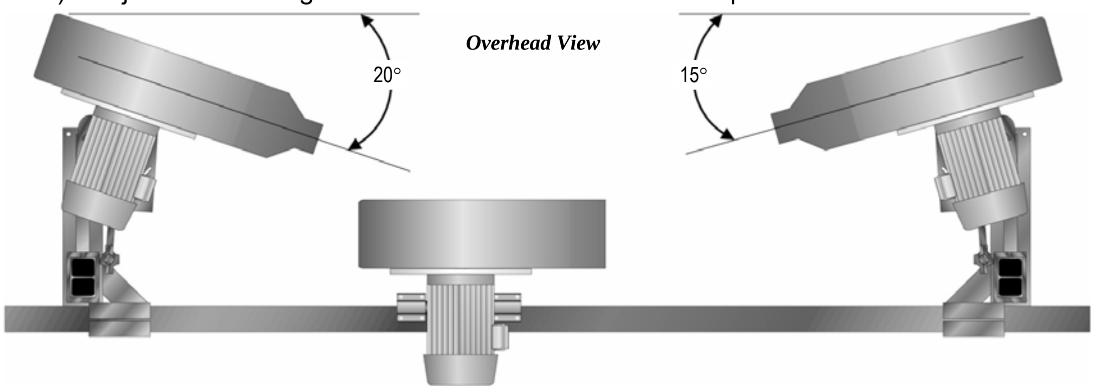
3 Nozzle Frame Housings

The following will assist in setting the proper angles of the Housings.

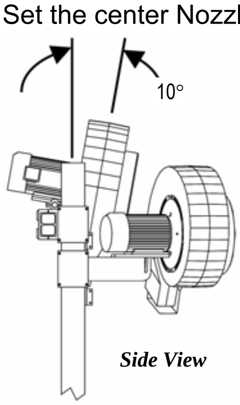
1) Secure the Motor/Impeller assemblies to the appropriate Mounts. Use your leveler to achieve the angles shown below. The center Nozzle is to point straight down.



2) Adjust the Housings with the Motor Mount bolts to the positions shown below.



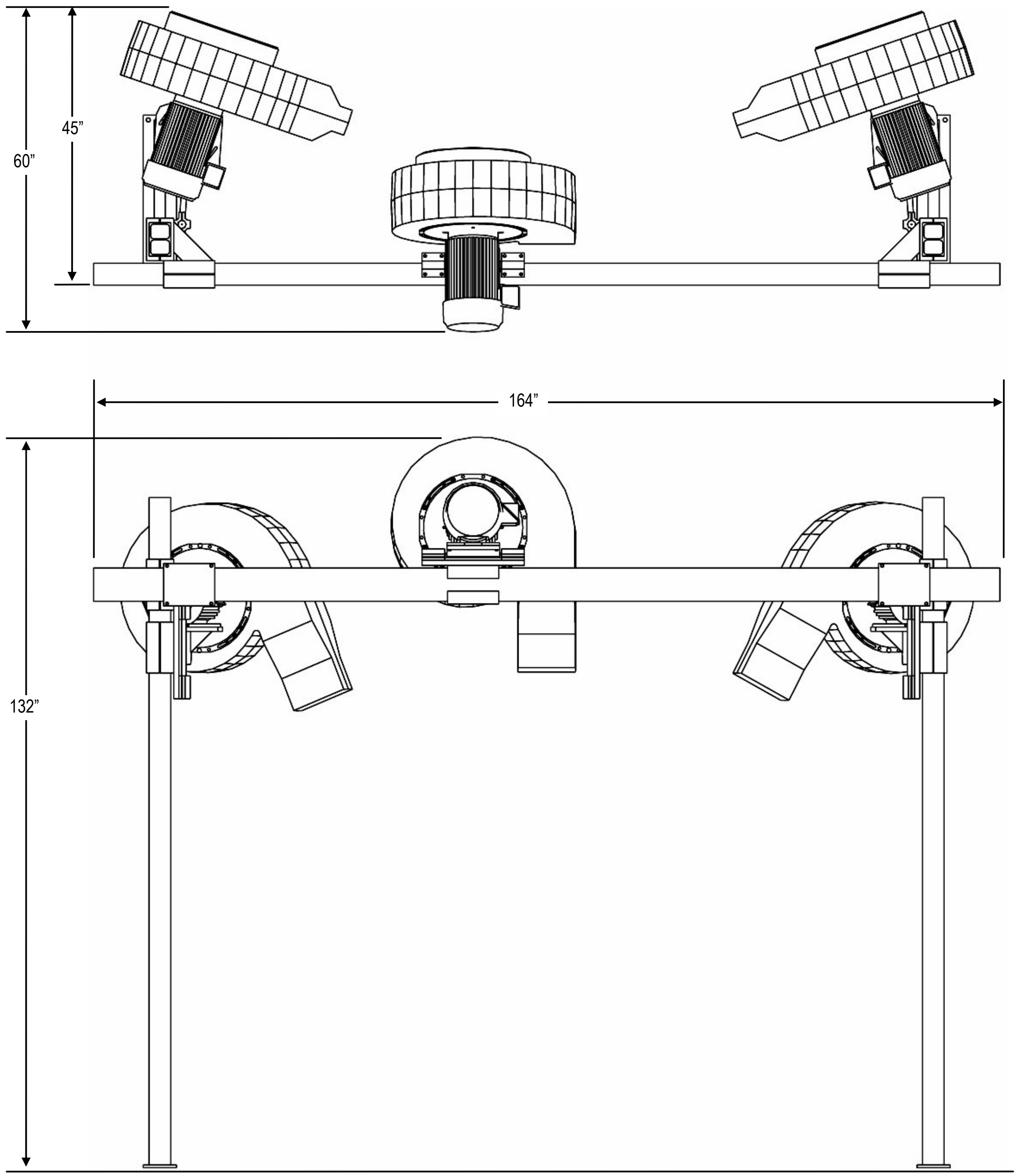
3) Set the center Nozzle angle as shown below.



4) Once all Nozzles are properly set, securely tighten all fasteners.

Installation

3 Nozzle Completed Assembly



Belanger, Inc. * P.O. Box 5470 * Northville, MI 48167-5470
Customer Service Phone (248) 347-4700 * Fax (248) 380-9681

APPENDIX D

Air Cannon Dryer Registered Noise Levels

Distance	Noise Level (DbA)
0 ft.	100.0
10 ft.	96.5
20 ft.	95.0
30 ft.	94.0
40 ft.	88.0
50 ft.	84.0
60 ft.	81.0
70 ft.	78.0
80 ft.	77.0
90 ft.	75.5
100 ft.	75.5