INDEPENDENCE AT CANYON SPRINGS

NOISE AND VIBRATION ANALYSIS

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Independence at Canyon Springs
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this Noise and Vibration Analysis to determine the noise exposure and identify any necessary noise mitigation measures for the Independence at Canyon Springs residential development (Project) in the City of Riverside. The Project consists of 156 residential units, a fitness building, a leasing office, a pool, and involves an amendment to the Canyon Springs Business Park Specific Plan to allow for the development of mixed-use/multi-family residential uses within Planning Area 8B, a General Plan Amendment to change from the General Plan Land Use designation for the Project site from C - Commercial to MU-U – Mixed Use – Urban (max. 40 du/ac), and a Zoning Code Amendment to rezone the property from O - Office to MU-U – Mixed Use - Urban (40 du/ac). This noise study has been prepared to satisfy applicable City of Riverside noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report, consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Airport Noise	4	Less Than Significant	-
On-Site Traffic Noise[1]	7	-	-
Off-Site Traffic Noise	8	Less Than Significant	-
Operational Noise	10	Less Than Significant	-
Construction Noise	11	Less Than Significant	-
Construction Vibration	11	Less Than Significant	-

[1] The effects of the environment on a Project are not an impact under CEQA and are provided for informational purposes.

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1 INTRODUCTION

This Noise and Vibration Analysis has been completed to determine the noise impacts associated with the development of the proposed Independence at Canyon Springs Project ("Project"). This noise and vibration analysis briefly describes the Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for noise analysis, evaluates the future exterior noise environment, potential off-site traffic impacts, the Project-related long-term stationary-source operational noise, and Project-related short-term construction noise and vibration impacts.

1.1 SITE LOCATION

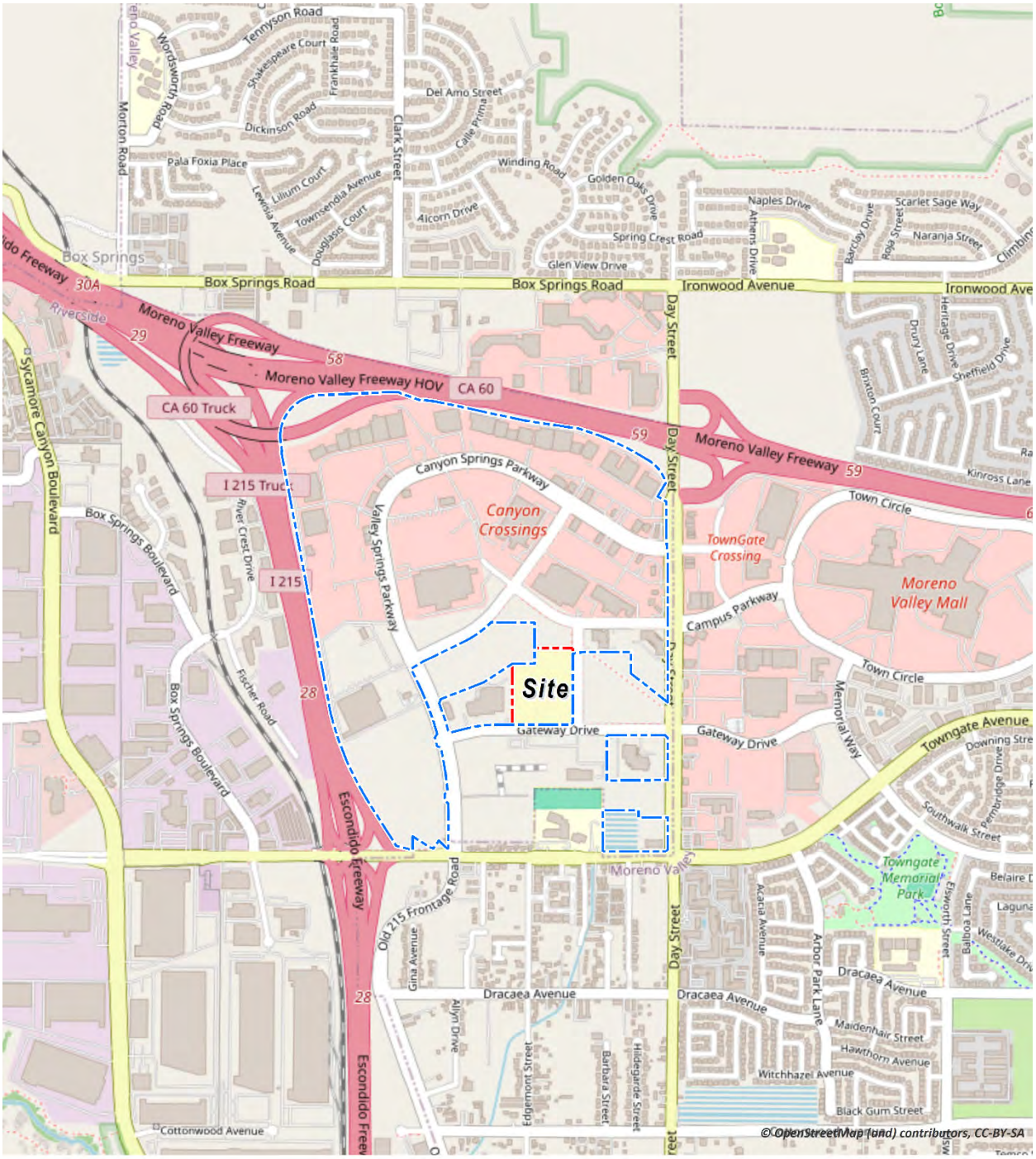
The Project is located at the northwest corner of the intersection of Gateway Drive and Canyon Park Drive in the City of Riverside, and specifically within Planning Area 8B of the Canyon Springs Business Park Specific Plan area. The Project is surrounded by undeveloped land within the Canyon Springs Specific Plan area and Canyons Springs Healthcare Campus Specific Plan area to the north and east, a parking lot and school to the south, and the Riverside County Registrar of Voters office to the west, as shown in Exhibit 1-1. Gateway Drive and Canyon Park Drive form the southern and eastern boundaries of the Project site, respectively.

1.2 PROJECT DESCRIPTION

The proposed development associated with the Project consists of 156 residential units, a fitness building, a leasing office, and a pool on approximately 9.13 acres, as shown on Exhibit 1-2. For purposes of this analysis, the Project is anticipated to be developed in one phase with an opening year of 2028.

The Project also involves an amendment to the Canyon Springs Business Park Specific Plan to allow for the development of mixed-use/multi-family residential uses within Planning Area 8B, a General Plan Amendment to change from the General Plan Land Use designation for the Project site from C - Commercial to MU-U – Mixed Use – Urban (max. 40 du/ac), and a Zoning Code Amendment to rezone the property from O - Office to MU-U – Mixed Use - Urban (40 du/ac).

EXHIBIT 1-1: PROJECT LOCATION



LEGEND:

N

Site Boundary

Canyon Springs Business Park Specific Plan

EXHIBIT 1-2: SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies that are audible to the human ear. Exhibit 2-1 presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-1: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately

1,000 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous noise levels. The most used metric is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time-varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely, evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level, is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise-sensitive time periods during the evening and night hours when noise can become more intrusive. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Riverside relies on the 24-hour CNEL level to assess land use compatibility with transportation-related noise sources.

2.3 SOUND PROPAGATION

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

2.3.1 Geometric Spreading

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (2)

2.3.2 Ground Absorption

The propagation path of noise from a highway to a receiver is usually 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 usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (2)

2.3.4 Shielding

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 shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide, and dense enough to completely obstruct the line-of-sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (5)

2.4 Noise Control

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 Noise Barrier Attenuation

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

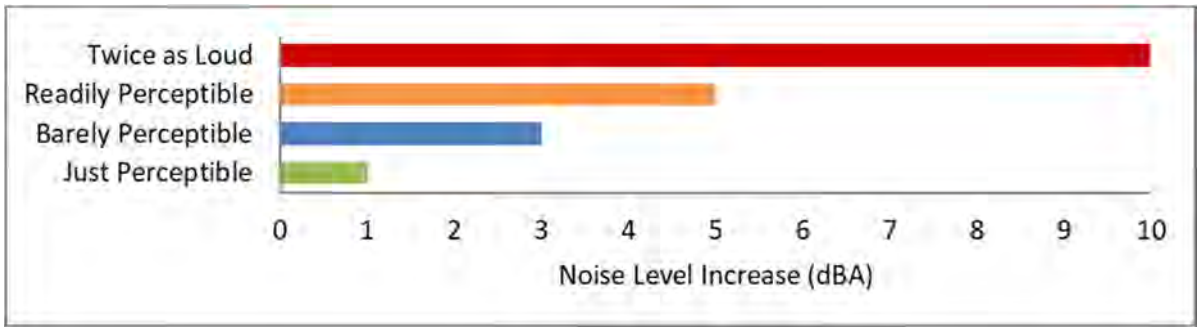
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop, and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local governments to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (7 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises, averaging from 10 dB below existing to 25 dB above existing. (8) According to research originally published in the Noise Effects Handbook (7), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels, as shown in Exhibit 2-2. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)

EXHIBIT 2-2: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem, and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (6). Therefore, the effects of vibrations should only be evaluated at a structure, and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (6). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structures reduce vibration levels due to the coupling of the building to the soil.

There are several methods used to quantify vibration levels. Peak Particle Velocity (PPV) is defined as the maximum instantaneous peak of a vibration signal and is most commonly used to evaluate the impact of vibration on buildings (13) (6). However, PPV is not always suitable for assessing human response (e.g., annoyance), as the human body does not respond instantly to vibration signals. Instead, it responds to the average amplitude, more accurately represented by the Root Mean Square (RMS) value of the vibration (6).

RMS is defined as the square root of the average of the squared signal amplitude and is commonly used to evaluate human exposure to vibration. RMS and PPV are mathematically related—RMS is typically about 70% of the PPV for certain waveforms (14) (15). However, deriving RMS from PPV requires knowing the full waveform or making assumptions (e.g., sinusoidal or steady-state signals). Without this information, converting PPV to RMS introduces uncertainty and provides limited insight, especially in cases involving transient or impact vibrations (16).

This distinction is important because human annoyance to vibration is often triggered by abrupt, intermittent events, rather than sustained energy levels. Construction-related vibrations are typically impulsive and broadband, in contrast to the continuous, tonal vibrations associated with transit systems. The FTA's RMS-based criteria were developed with train activity in mind and are not well-suited for construction vibration, where perception is driven by factors like suddenness, impact, and repetition (6).

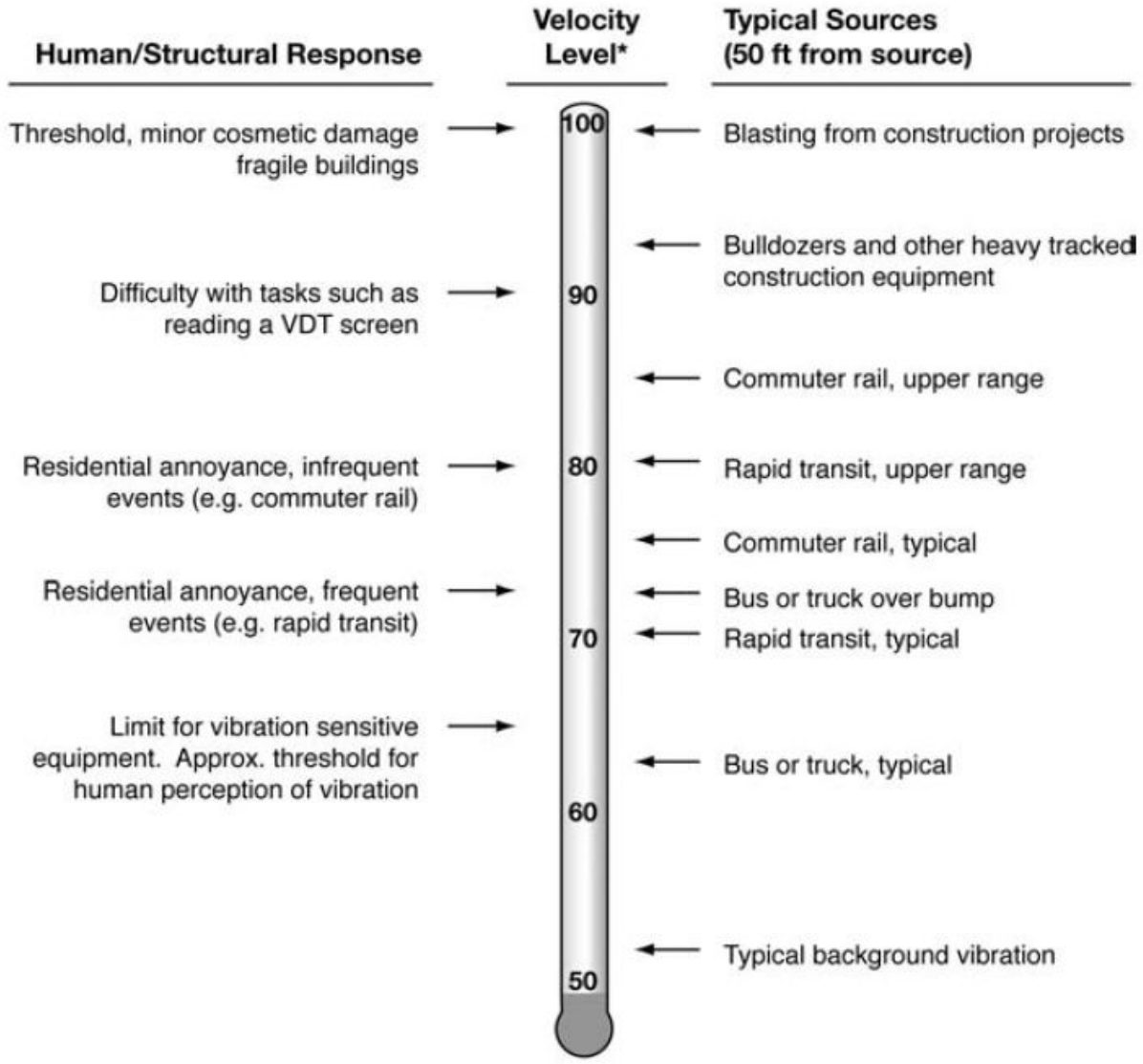
In essence, RMS tends to average out short-duration, high-intensity events—the very events that people find most disturbing. Therefore, for construction activities, PPV-based thresholds, such as

those recommended by Caltrans, are more appropriate for assessing potential human annoyance and structural impact (15).

While not universally accepted, vibration decibel notation (VdB) is another RMS-based vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits (17). Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels.

As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-3 illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-3: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

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3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element, which is to be prepared per guidelines adopted by the Governor's Office of Land Use and Climate Innovation (LCI) (9) The purpose of the Noise Element is to limit the exposure of the community to excessive noise levels. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING STANDARDS CODE

Residential Building Code

The State of California's noise insulation standards for all residential units are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Chapter 12, Section 1206.4, Allowable interior noise level. These noise standards are applied to new construction that contains dwelling units or sleeping units, such as residential and hotel or motel uses, in California, to control interior noise levels resulting from exterior noise sources. For new buildings, the acceptable interior noise limit is 45 dBA CNEL in habitable rooms (10).

3.3 CITY OF RIVERSIDE GENERAL PLAN

The City of Riverside has adopted a Noise Element of the General Plan (11) to control and abate environmental noise, and to protect the citizens of the City of Riverside from excessive exposure to noise. The Noise Element specifies the maximum allowable unmitigated exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses.

The *Noise/Land Use Noise Compatibility Criteria* (Figure N-10) in the City of Riverside General Plan Noise Element provides guidelines to evaluate the land use compatibility of transportation-related noise. The compatibility criteria, shown in Exhibit 3-1, provide the city with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. The *Noise/Land Use Noise Compatibility Criteria* describes categories of compatibility and not specific noise standards. According to these categories of compatibility, the Project's residential land uses are considered *normally acceptable* with unmitigated exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels below 65 dBA CNEL. For *conditionally acceptable* land use, *new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.*

3.3 CITY OF RIVERSIDE SOUND LEVEL LIMITS

To control unnecessary, excessive, and/or annoying noise, the City of Riverside has adopted exterior and interior sound level limits in the Noise Control section (Title 7) of the Municipal Code. Title 7 outlines exterior and interior noise level standards for affected land uses. Title 7 relies on the use of percentile noise descriptors to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project noise activities, the L_{50} or average L_{eq} noise level metrics best describe the Project-related operational noise source activities. The L_{eq} noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median (L_{50}) and the mean (L_{eq}), the L_{eq} will always be larger than or equal to the L_{50}. The more variable the noise becomes, the larger the L_{eq} becomes in comparison to the L_{50}. Therefore, this noise study conservatively relies on the average L_{eq} sound level limits to describe the Project noise levels.

3.3.1 City of Riverside Exterior Noise Standards

Table 7.25.010A identifies exterior noise standards for the daytime (7:00 a.m. to 10:00 p.m.) hours of 55 dBA L_{50} and 45 dBA L_{50} during the nighttime (10:00 p.m. to 7:00 a.m.) hours for residential use as shown on Table 3-1.

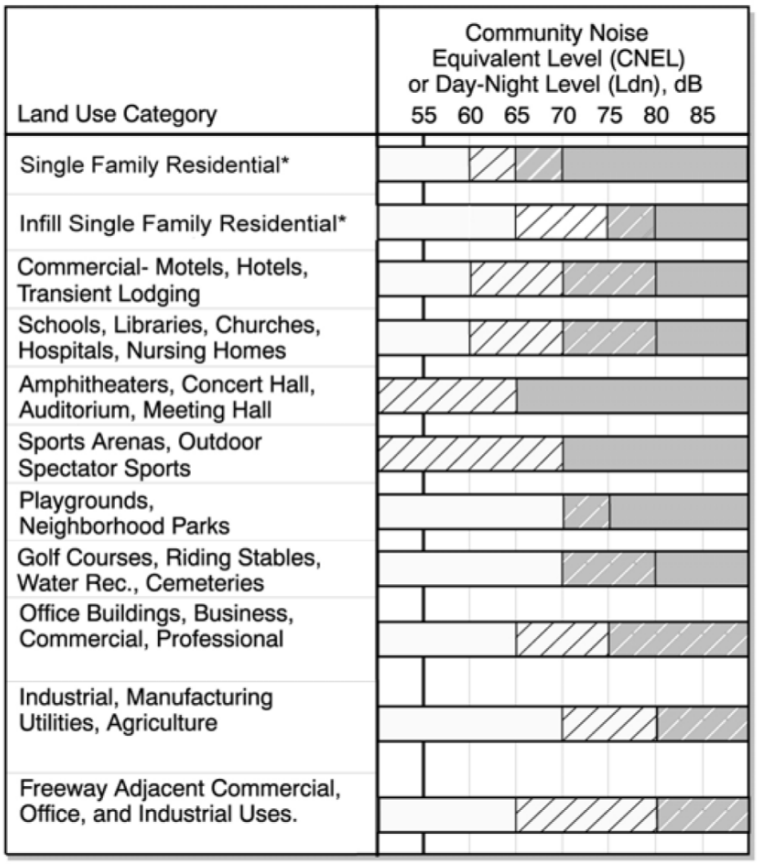
Section 7.25.010 (A) indicates that unless a variance has been granted as provided in this title, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:

1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or

2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or

3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or

EXHIBIT 3-1: NOISE/LAND USE NOISE COMPATIBILITY CRITERIA



Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB
Very noisy urban areas near arterials, freeways or airports.

75+ dB
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

Normally Acceptable

Specific land use is satifactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable

New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air condition-ing, will normally suffice.

Normally Unacceptable

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

Conditionally Unacceptable

New construction or develop-ment should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

* For properties located within airport influence areas, acceptable noise limits for single family residential uses are established by the Riverside County Airport Land Use Compatibility Plan.

SOURCE: STATE DEPARTMENT OF HEALTH,
AS MODIFIED BY THE CITY OF RIVERSIDE

TABLE 3-1: EXTERIOR NOISE STANDARDS

Land Use	Time Period	Exterior Noise Level Standards (dBA)[1]
Residential	Daytime (7:00 a.m. to 10:00 p.m.)	55
	Nighttime (10:00 p.m. to 7:00 a.m.)	45
Office/Commercial	Any time	65
Industrial	Any time	70
Community Support	Any time	60
Public Recreation Facility	Any time	65
Nonurban	Any time	70

[1] City of Riverside Municipal Code, Title 7 Noise Control, Section 7.25.010 (A) (Appendix 3.1).
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour; or

5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level, for any period of time.

In addition, Section 7.25.010 (B) indicates that if the existing ambient noise level already exceeds any of the exterior noise level limit categories, then the standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level. According to Section 7.25.010 (C), if possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts. The City of Riverside Municipal Code Title 7 Noise Control section is included in Appendix 3.1.

3.3.2 City of Riverside Interior Noise Standards

To assess the interior noise levels for noise-sensitive residential properties, Table 7.30.015 identifies interior noise standards for the daytime (7:00 a.m. to 10:00 p.m.) hours of 45 dBA L_8 and 35 dBA L_8 during the nighttime (10:00 p.m. to 7:00 a.m.) hours as shown on Table 3-2.

TABLE 3-2: INTERIOR SOUND LEVEL LIMITS

Land Use	Time Period	Interior Noise Level Standards (dBA)[1]
Residential	Daytime (7 a.m. to 10 p.m.)	45
	Nighttime (10 p.m. to 7 a.m.)	35
School	While in Session	45
Hospital	Anytime	45

[1] City of Riverside Municipal Code, Title 7 Noise Control, Section 7.30.015 (A) (Appendix 3.1).
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Section 7.30.015 (A) indicates that no person shall operate or cause to be operated any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school, or hospital, to exceed:

1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;

2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;

3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.

In addition, Section 7.25.015 (B) indicates that if the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level. According to Section 7.25.010 (C), the interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

3.4 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the City of Riverside has established limits to the hours of construction. Section 7.35.020 (G) of the General Noise Regulations indicates that *noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.* Therefore, Project construction noise levels are considered exempt from municipal

regulation if activities occur within the hours specified in Section 7.35.020 (G); provided a permit has been obtained from the City as required.

However, the City of Riverside has not established numeric maximum acceptable construction source noise levels at potentially affected receivers. Therefore, a numerical construction threshold based on the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts. According to the FTA, "local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project". (12) Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a threshold for noise-sensitive residential land use, a noise level of 85 dBA L_{eq} for commercial locations, and 90 dBA L_{eq} for industrial locations. (12 p. 179)

3.5 Construction Vibration Standards

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures, and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment, such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (8) To analyze vibration impacts originating from the operation and construction of the Project, vibration-generating activities are appropriately evaluated against standards established under the Municipal Code if such standards exist. However, the City of Riverside does not identify specific construction vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual* vibration damage threshold is used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise-sensitive buildings adjacent to the Project site is the Edgemont Elementary School. Institutional uses do not have a specific vibration threshold in the *Transportation and Construction Vibration Guidance Manual*; however, for the purposes of this analysis, we have used the threshold for "newer residential structures" with a maximum acceptable continuous vibration threshold of 0.50 PPV (in/sec to conservatively assess the temporary construction vibration related impacts on the Edgemont Elementary School. (13)

3.6 March Air Reserve Base/Inland Port Airport Land Use Compatibility

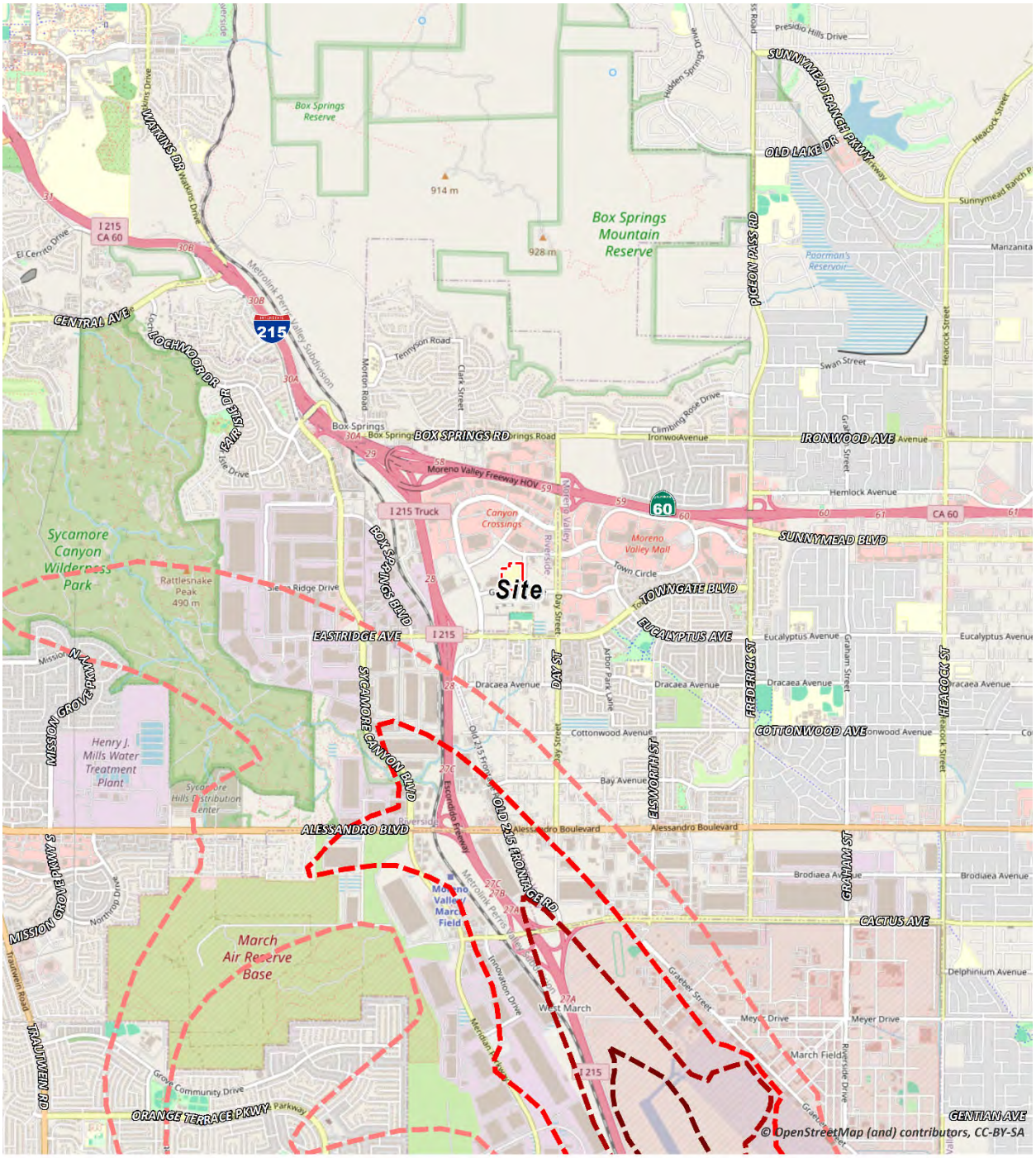
The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 2.7 miles southeast of the Project site.

The *March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan* (MARB/IPA ALUCP) includes the policies for determining the land use compatibility of the Project. (14) The MARB/IPA,

Map MA-1, indicates that the Project site is located within the Flight Corridor Buffer (Compatibility Zone D), and the Table MA-1 Compatibility Zone Factors indicates that this area is considered to have a *moderate to low* noise impact, and is mostly within or near the 55 dBA CNEL noise level contour boundaries. Consistent with the Basic Compatibility Criteria, listed in Table MA-2 of the MARB/IPA ALUCP, only uses that attract very high concentrations of people in confined areas are discouraged, and there are no restrictions on the development of residential uses.

The noise contour boundaries used to determine the potential aircraft-related noise impacts at the Project site are found on Figure 6-9 of the March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study and are presented on Exhibit 3-3 of this report. Based on the 2018 noise level contours for the MARB/IPA, the Project development area is located outside the 60 dBA CNEL noise level contour boundaries. Therefore, based on the Noise Land Use Compatibility Matrix shown in Exhibit 3-1, the Project is considered *normally acceptable.*

EXHIBIT 3-3: MARB/IPA FUTURE AIRPORT NOISE CONTOURS



LEGEND:

N

60 dBA CNEL Noise Level Contour

65 dBA CNEL Noise Level Contour

70 dBA CNEL Noise Level Contour

75 dBA CNEL Noise Level Contour

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes that there is no single noise increase that renders the noise impact significant. (15) This is primarily because of the wide variation in individual thresholds of annoyance and 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 to which one has adapted—the so-called ambient environment.

4.1.1 Noise Sensitive Receivers (Substantial Permanent Noise Level Increase)

The Federal Interagency Committee on Noise (FICON) (16) developed guidance to be used for the assessment of project-generated increases in noise levels that considers the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged.

As previously stated, the approach used in this noise study recognizes that there is no single noise increase that renders a noise impact significant, based on a 2008 California Court of Appeals ruling on Gray v. County of Madera. (15) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a readily perceptible 5 dBA or greater project-related noise level increase is considered a significant impact when the without-project noise levels are

below 60 dBA. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA barely perceptible noise level increase appears to be appropriate for most people. When the without-project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increases in baseline ambient noise levels. Based on the FICON criteria, the amount by which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use-specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or readily perceptible, 3 dBA or barely perceptible, and 1.5 dBA, depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increase and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (17 p. 2_48).

4.1.3 Construction Noise (Substantial Temporary Noise Level Increase)

To evaluate the noise-generating construction activities, the temporary noise level increases over the existing ambient conditions must be considered under CEQA Significance Threshold A. However, as discussed in Section 3.4, the City of Riverside has not established an acceptable construction source noise level limit at potentially affected receivers. Similarly, the City of Riverside has not adopted a noise level increase limit for construction sources. The City of Los Angeles has adopted such a standard for purposes of CEQA analysis. Since the City of Riverside has not adopted its own numeric threshold for temporary construction noise level increases over existing ambient conditions, for purposes of this analysis, the City of Los Angeles CEQA threshold is used. The City of Los Angeles CEQA threshold was developed based on input from technical experts, including a Technical Advisory Committee consisting of noise consultants and experts with decades of experience in preparing noise studies, and included a public process and review of noise thresholds used by other state and local agencies. The threshold was adopted by the City of Los Angeles in 2024 and supported by substantial evidence. (18) According the City of Los Angeles Construction Noise and Vibration Update to Thresholds and Methodology (LA Construction Thresholds Update), "the construction noise thresholds are focused on impacts to…single-family and multi-unit dwellings, long-term care facilities (including convalescent and retirement facilities), dormitories, motels, hotels, transient lodging, and other residential uses; places of assembly including churches or houses of worship; hospitals; libraries; schools; auditoriums; concert halls; outdoor theaters; nature and wildlife preserves; and parks." The LA Construction Thresholds Update uses a two-part threshold: the relative increase and the absolute noise level limit.

For the relative increase over ambient the LA Construction Thresholds Update states that, "for construction activities that occur between 7:00 a.m. and 7:00 p.m. Monday through Friday, and between 8:00 a.m. and 6:00 p.m. on Saturdays, there is no numerical threshold above ambient noise levels." This threshold is supported by various factors such as ambient noise levels are higher during daytime hours, daytime construction activities are temporary and periodic, and daytime activities are not expected to result in sleep disruption. For the absolute noise level limit threshold, the LA Construction Thresholds Update states that, "on- and off-site construction noise during daytime

hours (7:00 a.m. and 7:00 p.m. Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturdays) are limited to a maximum 80 dBA $L_{eq(8\text{-}hour)}$ absolute threshold at sensitive uses (at the property line or at the exterior of the building), including outdoor public recreational areas owned or maintained by a public agency. This standard does not apply to private residential balconies, which may or may not extend past the exterior of a building, or to private residential recreational areas." LA Construction Thresholds Update also includes nighttime construction noise level thresholds, with an exemption for mat pour activities and other types of concrete pour that require an extended continuous pour beyond the allowable construction hours of less than five days. However, the Project is not anticipated to have nighttime construction activities, and as such, analysis of nighttime construction activities is not necessary.

Therefore, if the Project-related construction generates a temporary noise level exceeding 80 dBA Leq at a noise-sensitive receiver, then the Project construction noise levels will be considered a *significant* impact.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.4, the vibration impacts originating from the construction of the Project, vibration-generating activities are appropriately evaluated using standards established by the Caltrans *Transportation and Construction Vibration Guidance Manual*, Table 19. The Caltrans' vibration thresholds for building damage are used in this noise study to assess potential operational and temporary construction-related impacts at adjacent building locations. A maximum acceptable continuous vibration threshold of 0.50 PPV (in/sec) is used to describe the nearest residential buildings adjacent to the Project site.

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or airstrips and focuses on land use compatibility of the Project to nearby airports and airstrips. The closest major airport is the March Reserve Air Force Base located 2.7 miles southeast of the Project site. As discussed in Section 3.6 the Project is outside of the 60 dBA Noise contour and is considered normally acceptable. Therefore, impacts are considered less than significant, and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
On-Site	Noise Sensitive	Exterior Noise Level Criteria	See Exhibit 3-1	
		Interior Noise Level Standard[1]	45 dBA CNEL	
Off-Site Traffic	Noise-Sensitive[2]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
Operational	Noise-Sensitive	Residential Exterior Noise Level[3]	55 dBA Leq	45 dBA Leq
		If ambient is < 60 dBA Leq[1]	≥ 5 dBA Leq Project increase	
		If ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA Leq Project increase	
		If ambient is > 65 dBA Leq[1]	≥ 1.5 dBA Leq Project increase	
Construction	Noise-Sensitive	Noise Level Threshold[5]	80 dBA L_{eq}	
		Vibration Level Threshold[6]	0.50 PPV (in/sec)	

[1] California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2
[2] FICON, 1992
[3] City of Riverside Municipal Code, Title 7 Noise Control, Section 7.25.010 (A).
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[5] Caltrans Traffic Noise Analysis Protocol, April 2020.
[6] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at three locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-1 provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, long-term noise level measurements were collected by Urban Crossroads, Inc. on Thursday, April 3, 2025. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

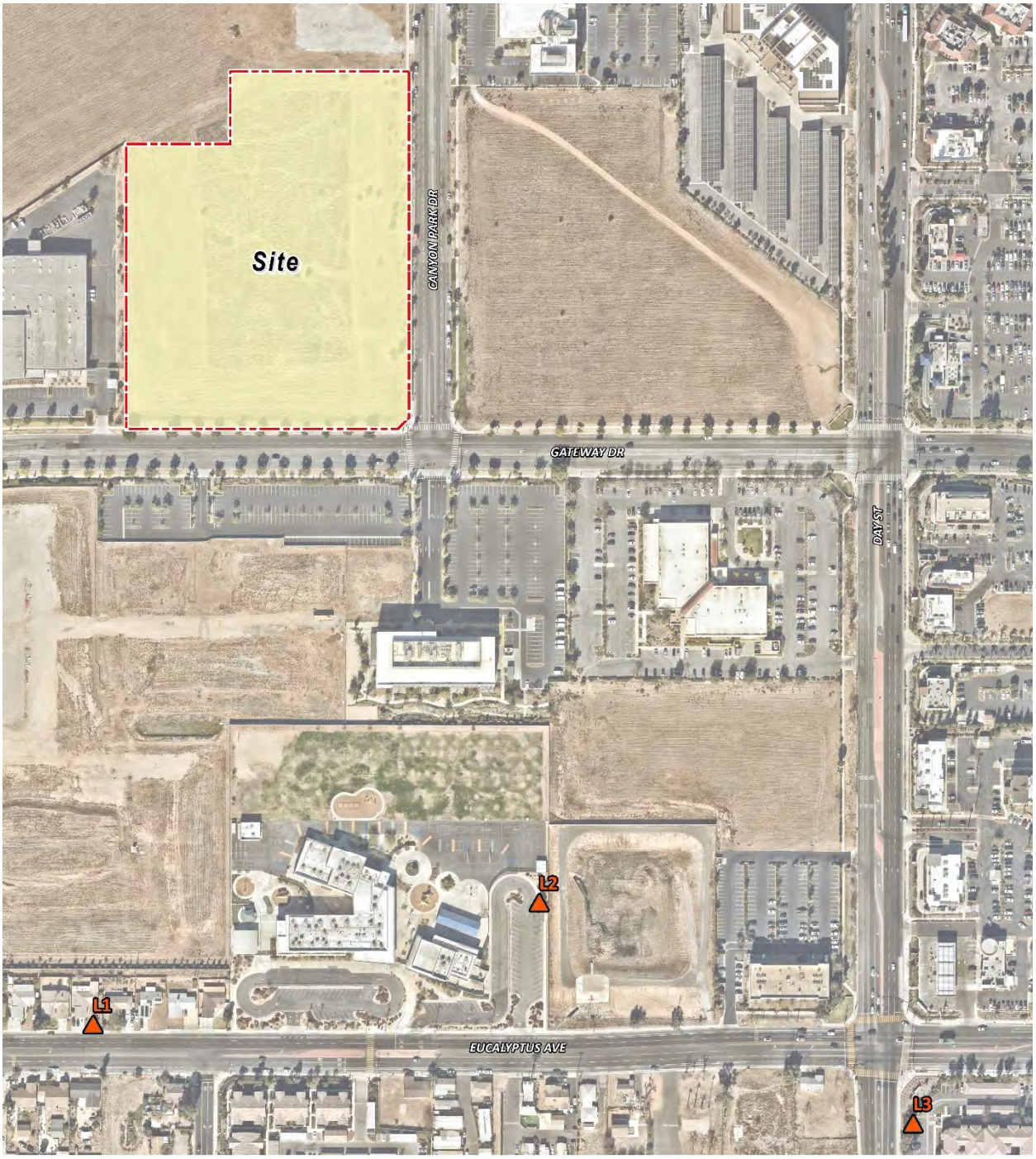
To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels. The long-term noise readings were recorded using a Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing equivalent hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines, which indicate that sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources. (2) Further, FTA guidance states that it is neither necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community. (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence because each receiver measurement represents a group of buildings that share acoustical equivalence. (8) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise-sensitive areas and are used to estimate the future noise level impacts.

EXHIBIT 5-1: NOISE MEASUREMENT LOCATIONS



Collecting noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before-and-after Project noise levels and is necessary to assess potential noise increase due to the Project's contribution to ambient noise levels. This approach is necessary to calculate the temporary or permanent increase in ambient noise levels as required by the CEQA Guidelines Environmental Checklist.

5.3 Noise Measurement Results

The noise measurements presented below focus on the equivalent or the hourly energy average sound levels (Leq) to describe the existing ambient conditions. Table 5-1 provides the (energy average) noise levels used to describe the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. The equivalent sound level (Leq) represents a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. The daytime and nighttime equivalent noise levels represent the average of all hourly noise levels observed during these time periods, expressed as a single number.

Table 5-1: Ambient Noise Level Measurements

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located south of the site near the residence at 21710 Eucalyptus Ave	67.4	61.4
L2	Located south of the site near the residence at 21790 Eucalyptus Ave	57.1	48.3
L3	Located southeast of the site near the residence at 13024 Day St.	67.3	61.2

[1] See Exhibit 5-1 for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the equivalent noise levels used to describe the daytime and nighttime ambient conditions for each of the measurements. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L1, L2, L5, L8, L25, L50, L90, L95, and L99 percentile noise levels observed during the daytime and nighttime periods.

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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction – Model - FHWA-RD-77-108. (20) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California, the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (21) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major, or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

6.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters, including the average daily traffic (ADT) volumes used for this study, presented in Table 6-1, are based on the City of Riverside General Plan 2025 Program Transportation Study. (22) To predict the future on-site noise environment at the Project site, parameters, including roadway classification, were obtained from the City of Riverside General Plan Circulation and Community Mobility Element, (23) and vehicle speeds were based on posted speed limits for each roadway. The traffic volumes shown in Table 6-1 reflect future long-range traffic conditions used to assess the on-site traffic noise environment and to identify the appropriate noise mitigation measures that address the worst-case future conditions. Soft site conditions were used to analyze the traffic noise impacts within the Project study area, which account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Research conducted by Caltrans shows that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (24)

TABLE 6-1: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification[1]	Roadway Capacity[2]	Design Speed (MPH)[3]	Site Conditions
Canyon Park Drive	4	Local	8,750	45	Soft
Gateway Drive	4	Local	8,750	45	Soft

[1] Source: City of Riverside General Plan, Circulation Element, Figure CCM-4
2 Source: City of Riverside General Plan 2025 Program Transportation Study.
3 Source: Posted spe[e]d limits.

Table 6-2 presents the time-of-day vehicle splits by vehicle type, and the total traffic flow distributions (vehicle mixes) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA Model based on roadway types.

TABLE 6-2: TIME OF DAY VEHICLE SPLITS

Time of Day	Vehicle Mix[1]			Time of Day Split[1]
	Autos[2]	Medium Trucks[3]	Heavy Trucks[4]	
Daytime	75.50%	1.56%	0.64%	77.70%
Evening	12.57%	0.09%	0.02%	12.68%
Nighttime	9.35%	0.19%	0.08%	9.62%
Daily	97.42%	1.84%	0.74%	100.00%

[1] Source: Typical Southern California Mix
[2] All vehicles with two axles and four wheels designed primarily for transportation of nine or fewer passengers (automobiles) or transportation of cargo (light trucks).
[3] All vehicles with two axles and six wheels designed for transportation of cargo.
[4] All vehicles with three or more axles designed for the transportation of cargo.

To predict the future noise environment at the Project site, coordinate information was collected to identify the noise transmission path between the noise source and receiver. The coordinate information is based on the Project site plan and its relationship to the adjacent roadways. The site plan is used to identify the relationship between the roadway centerline elevation, the pad elevation, the centerline distance to potential noise barriers, and the building façade. The backyard locations use a receiver height of five feet above the pad elevation, located ten feet away from potential barrier locations. First-floor receivers are similarly modeled 5 feet above the pad elevation. Second-floor receivers are modeled at a receiver height of 14 feet above pad elevation. All first- and second-floor receivers were located at the building façade.

7 ON-SITE TRAFFIC NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the traffic noise exposure and to identify potentially necessary noise abatement measures for the Project. It is expected that the primary source of noise impacts to the Project site will be traffic noise from Canyon Park Drive and Gateway Drive. The Project will also experience some background traffic noise impacts from other local roads; however, due to low traffic volume/speeds, traffic noise from these roads will not make a significant contribution to the noise environment. On-site receivers representing locations within the Project site are shown in Exhibit 7-1.

7.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 6-1 and 6-2, the expected future exterior noise levels for the Project were calculated. As shown in Table 7-1, the unabated exterior noise levels are estimated to range from 58.0 to 58.1 dBA CNEL in outdoor living spaces (e.g., patios) of the nearest Canyon Park Drive and Gateway Drive. All other lots would be located at a greater distance and would experience lower traffic noise from Canyon Park Drive and Gateway Drive. The future long-range exterior traffic noise analysis calculations are included in Appendix 7.1.

This noise analysis shows that the Project will satisfy the City of Riverside 65 dBA CNEL exterior noise level standards for all residential lots.

TABLE 7-1: FUTURE EXTERIOR NOISE LEVELS

Receiver	Roadway	Unabated Exterior Noise Level (dBA CNEL)[1]
O1	Canyon Park Drive	58.1
O2	Canyon Park Drive	58.1
O3	Canyon Park Drive	58.1
O4	Canyon Park Drive	58.1
O5	Gateway Drive	58.0
O6	Gateway Drive	58.0
O7	Gateway Drive	58.0

[1] Outdoor environment limited to the private patios of the multi-family.

7.2 ON-SITE INTERIOR NOISE ANALYSIS

To verify that the interior noise levels will comply with the City of Riverside 45 dBA CNEL interior noise standard, future exterior noise levels were calculated at the first- and second-floor building façade locations. Based on the site plans provided, the Project will provide air conditioning; thus, a "windows closed" condition was assumed for the purposes of this interior noise analysis.

EXHIBIT 7-1: ON-SITE RECEIVER LOCATIONS



7.2.1 Interior Noise Level Assessment

Tables 7-2 and 7-3 show the estimated interior noise levels using windows with a minimum STC rating of 27. Table 7-2 shows that the future noise levels at the first- and second-floor building façade locations are expected to range from 58.0 to 58.1 dBA CNEL, and the interior noise levels will range from 13.0 to 13.1 dBA CNEL with standard construction and windows in the closed position.

Table 7-3 shows that the future noise levels at the first- and second-floor building façade locations are expected to range from 57.8 to 58.0 dBA CNEL, and the interior noise levels will range from 12.8 to 13.0 dBA CNEL with standard construction and windows in the closed position.

The interior noise level assessment demonstrates that standard construction with windows in the closed position will satisfy the City of Riverside 45 dBA CNEL interior noise standard within all units, and no noise abatement measures are recommended.

TABLE 7-2: FIRST FLOOR INTERIOR NOISE IMPACTS

Receiver	Roadway	Noise Level at Façade	Required Interior Noise Reduction[1]	Minimum Noise Reduction[2]	Upgraded Windows[3]	Interior Noise Level[4]
O1	Canyon Park Drive	58.1	13.1	25	No	33.1
O2	Canyon Park Drive	58.1	13.1	25	No	33.1
O3	Canyon Park Drive	58.1	13.1	25	No	33.1
O4	Canyon Park Drive	58.1	13.1	25	No	33.1
O5	Gateway Drive	58.0	13.0	25	No	33.0
O6	Gateway Drive	58.0	13.0	25	No	33.0
O7	Gateway Drive	58.0	13.0	25	No	33.0

[1] Noise level reduction required to satisfy the 45 dBA CNEL interior noise standards.
[2] Estimate exterior to interior noise level reduction with standard building construction, with a 25 dBA CNEL reduction and "windows closed".
[3] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[4] Estimated interior noise level with standard building construction, with a windows closed condition and an STC rating of 27 for all windows.

TABLE 7-3: SECOND FLOOR INTERIOR NOISE IMPACTS

Units	Roadway	Noise Level at Façade	Required Interior Noise Reduction[1]	Minimum Noise Reduction[2]	Upgraded Windows[3]	Interior Noise Level[4]
O1	Canyon Park Drive	58.0	13.0	25	No	33.0
O2	Canyon Park Drive	58.0	13.0	25	No	33.0
O3	Canyon Park Drive	58.0	13.0	25	No	33.0
O4	Canyon Park Drive	58.0	13.0	25	No	33.0
O5	Gateway Drive	57.9	12.9	25	No	32.9
O6	Gateway Drive	57.9	12.9	25	No	32.9
O7	Gateway Drive	57.8	12.8	25	No	32.8

[1] Noise level reduction required to satisfy the 45 dBA CNEL interior noise standards.
[2] Estimate exterior to interior noise level reduction with standard building construction, with a 25 dBA CNEL reduction and "windows closed".
[3] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[4] Estimated interior noise level with standard building construction, with a windows closed condition and an STC rating of 27 for all windows.

8 OFF-SITE TRANSPORTATION NOISE IMPACTS

The Project is anticipated to generate a maximum of 1,025 daily vehicle trips. (25) Canyon Park Drive has approximately 1,680 daily vehicle trips, and Gateway Drive. has approximately 4,500 daily vehicle trips based on counts included in the Independence at Canyon Springs Transportation Impact Analysis. (25) The increase in daily traffic volumes will result in a 10 dBA CNEL increase along Gateway Drive and up to a 2.1 dBA increase along Canyon Park Drive, which is not expected to be a perceptible noise level increase (i.e., less than 3 dBA CNEL) on nearby roadways, Canyon Park Drive, and Gateway Drive. Furthermore, there are no sensitive land uses along Canyon Park Drive or Gateway Drive near the Project site, and the nearest noise-sensitive uses, including the Edgemont Elementary School, are adjacent to roads that are not expected to receive a significant amount of project-related traffic. Therefore, due to the low traffic volumes generated by the Project, and non-sensitive uses along Canyon Park Drive and Gateway Drive, the off-site traffic noise levels generated by the Project are considered less than significant.

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9 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following receiver locations, as shown in Exhibit 9-1, were identified as representative locations for analysis. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, outpatient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

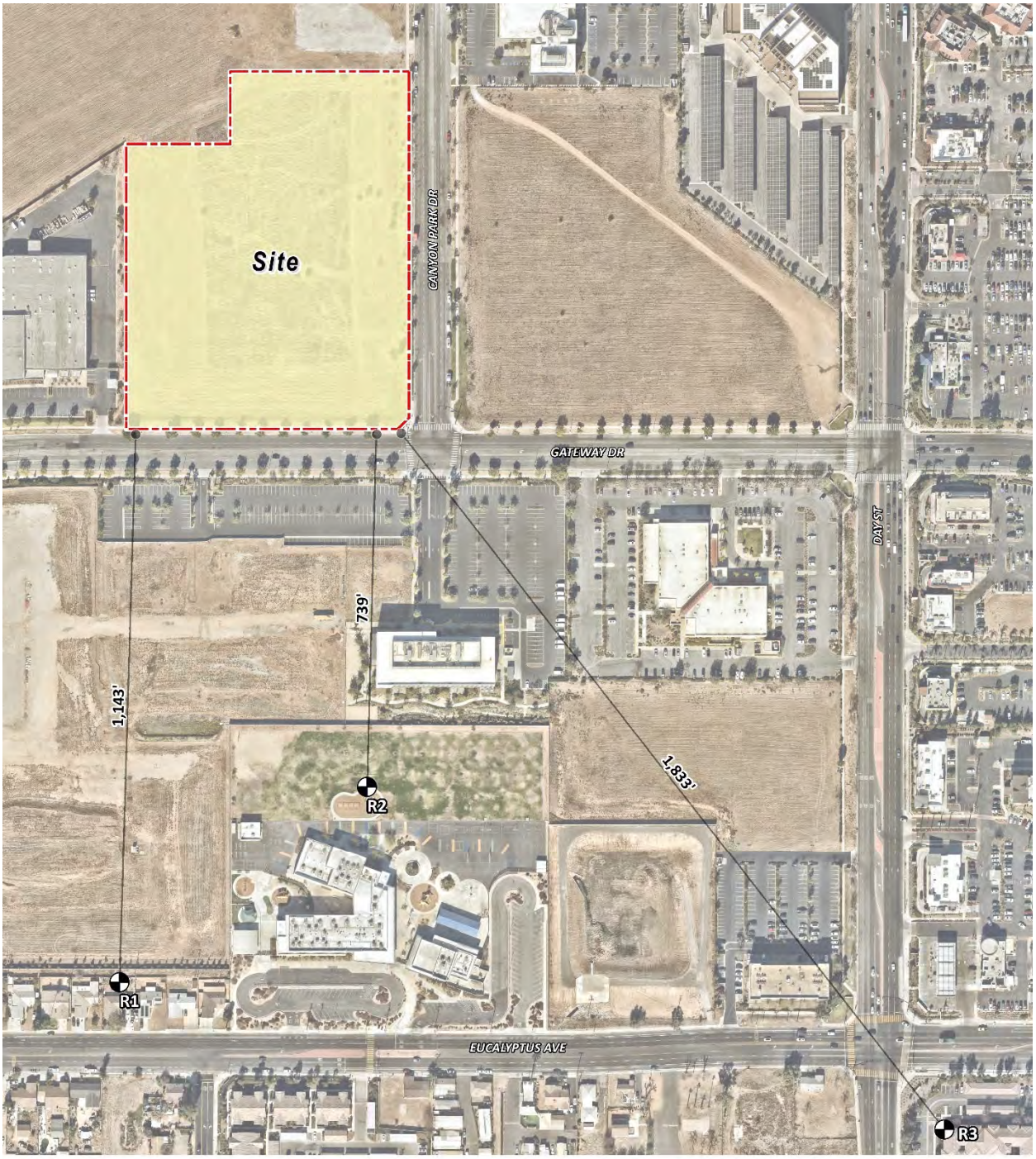
To describe the potential off-site Project noise levels, three receiver locations in the vicinity of the Project site were identified. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the Project boundary to each receiver location.

R1: Location R1 represents the existing residence at 21710 Eucalyptus Avenue, approximately 1,143 feet south of the Project site. Receiver R1 is placed in the private outdoor living area (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing Edgemont Elementary School, approximately 739 feet south of the Project site. Receiver R2 is placed in the private outdoor living area (backyard) facing the Project site.. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing residence at 22215 Eucalyptus Avenue, approximately 1,833 feet southeast of the Project site. Receiver R3 is placed at the building façade facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

EXHIBIT 9-1: RECEIVER LOCATIONS



10 OPERATIONAL NOISE ANALYSIS

The Project is considered a noise-sensitive receiving land use and is not expected to include any specific type of operational noise levels beyond those typically associated with residential land uses in the Project study area. Additionally, Section 21085 of the California Public Resources Code states in part, "...for residential projects, the effects of noise generated by project occupants and their guests on human beings is not a significant effect on the environment." (26) A review of the legislative record indicates the author's intent for Section 21085 was to "remove the potential for litigants to challenge residential development based on the speculation that the new residents will create unwanted noises. It would also reestablish existing precedent that minor and intermittent noise nuisances, such as from unamplified human voices, be addressed through local nuisance ordinances and not via CEQA." Consequently, activities solely associated with occupants and guests, such as the swimming pool/spa activities, dog park activities, and outdoor activities in common spaces, are not considered part of this operational noise analysis for CEQA. Based on the intent of the author of Section 21085, the operational noise sources are limited to the mechanical and non-verbal noise sources that occur onsite.

Therefore, this section analyzes the potential operational noise impacts at the nearby receiver locations, identified in Section 9, resulting from the operation of ground mounted air conditioning units. Exhibit 10-1 identifies the noise source locations used to assess the equivalent L_{eq} operational noise levels

10.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical residential activities at the Project site. The operational noise sources of concern would be the ground mounted air conditioning units associated with each dwelling unit are evaluated against standards established in the City of Riverside Municipal Code, 7.25.010 (A), and the relative increase in noise levels at each existing sensitive receiver.

10.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities or equipment to represent the noise levels expected with the development of the Project. This section provides a detailed description of the reference noise level measurements shown in Table 10-1, used to estimate the Project's operational noise impacts.

10.2.1 Ground-mounted Air Conditioning Units

To assess the noise levels created by the air conditioning units, reference noise levels were taken from equipment specifications for a 2- to 5-ton residential packaged air conditioning unit (Carrier 50VR-A). The manufacturer's specifications are included in Appendix 10.1. At a uniform reference distance of 50 feet, the units would generate a reference noise level of 44.4 dBA L_{eq}. The air conditioning units were modeled 3 feet above the ground level, operating 45 minutes per hour during

the daytime and 30 minutes at nighttime, which represents the typical maximum operating time for properly sized AC systems.

EXHIBIT 10-1: OPERATIONAL NOISE SOURCE LOCATIONS



TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Reference Noise Source	Noise Source Height (Feet)	Min./ Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
		Day	Night		
Ground Mounted Air Conditioning U'its	3'	45	30	44.4	76.0

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project "site. "Daytime" = 7:00–a.m. - 10:00 ".m.; "Nighttime" = 10:00–p.m. - 7:00 a.m.

[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

10.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels. Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of the noise level at each receiver and the partial noise level contributions by noise source.

Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., Leq) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (Lw) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 10.2 includes the detailed noise dBA L_{eq} model inputs used to estimate the Project operational noise levels presented in this section.

10.4 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the unmitigated Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Riverside exterior noise level standards at nearby receiver locations. Table 10-2 shows that the unmitigated operational noise levels associated with the Project will not exceed the City of Riverside daytime and nighttime exterior noise level standards at the existing nearby noise-sensitive receiver locations.

Therefore, the mitigated operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 10-2: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	22.1	19.3	55.0	45.0	No	No
R2	26.0	23.2	55.0	45.0	No	No
R3	18.9	16.2	55.0	45.0	No	No

[1] See Exhibit 9-1 for the receiver locations.
[2] Proposed Project unmitigated operational noise levels .
[3] Exterior noise level standards, as shown in Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards? "Daytime" = 7:00–a.m. - 10:00 ".m.; "Nighttime" = 10:00–p.m. - 7:00 a.m.

10.5 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise level measurements for the nearby receiver locations that may be potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented in Table 10- 2. As indicated in Table 10-3, the Project will generate daytime operational noise increases up to 0.0 dBA L_{eq} at the nearest receiver locations. Table 10-4 shows that the Project will generate nighttime operational noise level increases up to 0.0 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases would not exceed the operational noise level increase significance criteria presented in Table 4-1. Therefore, Project-related operational noise level increases at the sensitive receiver locations will be *less than significant.*

TABLE 10-3: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	22.1	L1	67.4	67.4	0.0	1.5	No
R2	26.0	L2	57.1	57.1	0.0	5.0	No
R3	18.9	L3	67.3	67.3	0.0	1.5	No

[1] See Exhibit 9-1 for the receiver locations.
[2] Total Project daytime operational noise levels as shown in Table 10-2.
[3] Reference noise level measurement locations as shown in Exhibit 5-1.
[4] Observed daytime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown in Table 4-1.

TABLE 10-4: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	19.3	L1	61.4	61.4	0.0	5.0	No
R2	23.2	L2	48.3	48.3	0.0	5.0	No
R3	16.2	L3	61.2	61.2	0.0	5.0	No

[1] See Exhibit 9-1 for the receiver locations.
[2] Total Project nighttime operational noise levels as shown in Table 10-2.
[3] Reference noise level measurement locations as shown in Exhibit 5-1.
[4] Observed nighttime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown in Table 4-1.

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11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-1 shows the on-site construction noise source activity, including the off-site roadway and utility improvements in relation to the nearest sensitive receiver locations previously described in Section 9. Section 7.35.020 (G) of the General Noise Regulations indicates that *noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.* (27)

11.1 CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

- Site Preparation and Grading
- Foundation
- On-site Wet and Dry Utilities
- Curb & Gutter and Paving
- Framing and Architectural Coating

11.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA), which published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (28) The RCNM equipment database provides a comprehensive list of the noise-generating characteristics of specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. According to the EPA, FTA, and FHWA, the overall construction noise level is governed primarily by the noisiest pieces of equipment. The quieter pieces do not affect the overall level, but they do reduce the magnitude of the fluctuations in the noise level. Therefore, a rough estimate of the noise level needs only to include the noisiest pieces of equipment expected at the site. (29) (8) (30) Consistent with FHWA and FTA guidance for detailed construction noise assessment, Table 11-1 presents the combined noise levels for the loudest construction activities expected for each stage, assuming all equipment operates simultaneously.

EXHIBIT 11-1: CONSTRUCTION NOISE SOURCE LOCATIONS

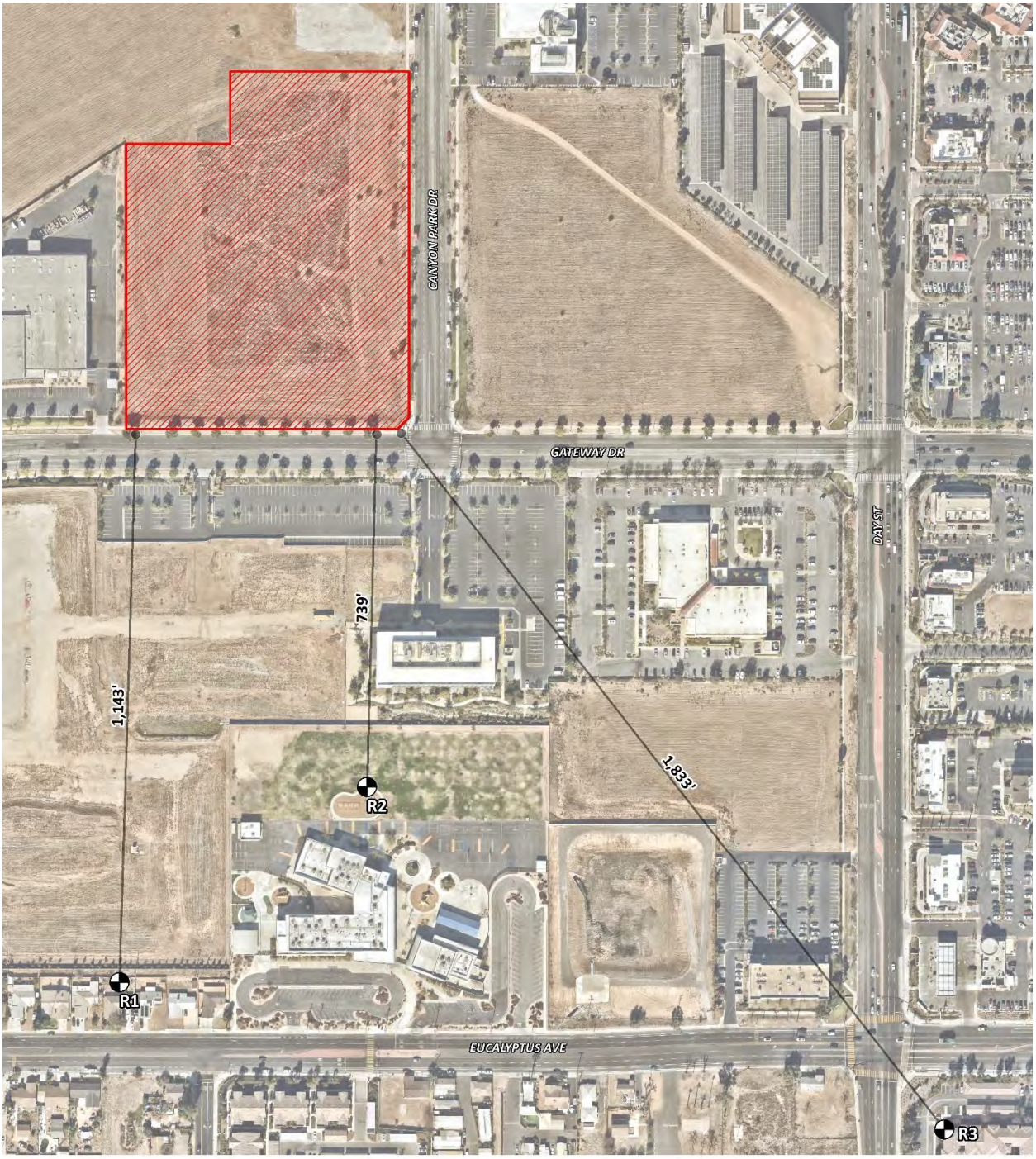


TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Equipmnet[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Composite Reference Noise Level (dBA L_{eq})[2]	Reference Power Level (dBA L_w)[3]
Site Preparation and Grading	Tractor	80	84.0	115.6
	Backhoe	74		
	Grader	81		
Foundation	Scraper	80	83.3	114.9
	Excavator	77		
	Dozer	78		
On-site Wet and Dry Utilities	Crane	73	81.1	112.8
	Tractor	80		
	Welder/Torch	70		
Curb & Gutter and Paving	Paver	74	77.8	109.5
	Dump Truck	72		
	Roller	73		
Framing and Architectural Coating	Man Lift	68	79.8	111.4
	Compressor (air)	74		
	Generator	78		

[1] FHWA Road Construction Noise Model.
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings.

11.3 CONSTRUCTION NOISE ANALYSIS

Construction projects involve various stages, and activities frequently shift from one location to another. For example, during site preparation and grading, noise-generating activities may concentrate in an area for a short period to remove an obstruction, while the majority of the grading involves the equipment moving back and forth in a predictable pattern throughout the site; building construction and foundation work generally concentrate near the building footprint, while paving generally involves a predictable pattern of movement throughout the site. Therefore, construction activities are best evaluated as multiple moving point sources within the construction area since the speed and power of the equipment vary, and the equipment constantly changes position in terms of its distance and direction relative to the receivers. (8) (31) Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts by phase at the nearby sensitive receiver locations were completed. To account for the dynamic nature of construction activities, the CadnaA construction noise analysis evaluates the noise source activities as multiple moving point sources, or construction crews, within the limits of construction. Construction impacts are based on the loudest activity and the highest noise level calculated at each receiver location. As shown in Table 11-2, the construction noise levels

are expected to range from 49.4 to 56.3 dBA L_{eq} at the nearby receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation and Grading	Foundation	On-site Wet and Dry Utilities	Curb & Gutter and Paving	Framing and Architectural Coating	Highest Levels[2]
R1	53.3	52.6	50.4	47.2	49.1	53.3
R2	56.3	55.6	53.4	50.2	52.1	56.3
R3	49.4	48.7	46.5	43.3	45.2	49.4

[1] Construction noise source and receiver locations are shown in Exhibit 11-1.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 11.1.

11.4 PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at the nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will not exceed the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities, as shown in Table 11-3. Therefore, the noise impacts due to the Project construction noise are considered *less than significant* at these receiver locations and will not require mitigation.

TABLE 11-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	53.3	80	No
R2	56.3	80	No
R3	49.4	80	No

[1] Construction noise source and receiver locations are shown in Exhibit 11-1.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations, as shown in Table 11-2.
[3] Construction noise level thresholds as shown in Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. The operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized in Table 11-4. Based on

the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts, the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1}$

TABLE 11-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Using the vibration source level of construction equipment provided in Table 11-4 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 11-5 presents the expected Project-related vibration levels at the nearby receiver locations. At distances ranging from 739 to 1,833 feet from Project construction activities, construction vibration velocity levels are estimated to range from less than 0.1 to 0.01 PPV in/sec. Based on the maximum acceptable continuous vibration threshold of 0.50 PPV (in/sec), the typical Project construction vibration levels will not exceed the vibration thresholds at nearby sensitive receivers. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

TABLE 11-5: PROJECT CONSTRUCTION VIBRATION LEVELS – UNMITIGATED

Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]						Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jack-hammer	Loaded Trucks	Large bulldozer	Vibratory Roller	Highest Vibration Level		
R1	1,143'	0.00	0.00	0.00	0.00	0.00	0.00	0.50	No
R2	739'	0.00	0.00	0.00	0.00	0.01	0.01	0.50	No
R3	1,833'	0.00	0.00	0.00	0.00	0.00	0.00	0.50	No

[1] Construction noise source and receiver locations are shown in Exhibit 11-1.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 11-4).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

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13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 788-1971.

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Professional Affiliations

ASA – Acoustical Society of America
AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
INCE – Institute of Noise Control Engineers

Professional Certifications

Approved Acoustical Consultant • County of San Diego
FHWA Traffic Noise Model of Training • November 2004
CadnaA Basic and Advanced Training Certificate • October 2008.

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APPENDIX 3.1:

CITY OF RIVERSIDE MUNICIPAL CODE

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Title 7 - NOISE CONTROL

Chapter 7.05 - POLICY AND INTENT

7.05.010 - Policy and intent.

It shall be the policy of the City to maintain and preserve the quiet atmosphere of the City, to implement programs aimed at retaining ambient noise levels throughout the City, and to mitigate noise conflicts.

It is determined that certain noise levels are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore, the City Council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner not in conformity with the provisions of this title, is a public nuisance and shall be punishable as such.

In order to control unnecessary, excessive and/or annoying noise in the City, it is declared to be the policy of the City to prohibit such noise generated by the sources specified in this title. It shall be the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment.

(Ord. 7489 § 1, 2019; Ord. 6273 § 1 (part), 1996)

Chapter 7.10 - DEFINITIONS

7.10.010 - Definitions generally.

For the purposes of this title, the words and phrases defined in this chapter shall have the meanings respectively ascribed to them by this chapter.

(Ord. 7489 § 3, 2019)

7.10.015 - A-weighted sound level.

A-weighted sound level" means the sound pressure level in decibels as measured on a sound-level meter using the A-weighing network. The level is designated dB(A) or dBA.

(Ord. 7489 § 4, 2019; Ord. 6273 § 1(part), 1996)

7.10.020 - Agricultural property.

"Agricultural property" means a parcel of real property which is developed for agricultural and incidental residential purposes which is located within any permitted zone.

(Ord. 6273 § 1(part), 1996)

7.10.025 - Ambient noise level.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding an alleged offensive noise, at the location and approximate time at which the comparison with the offensive noise is to be made. The ambient noise level constitutes the normal or existing level of environmental noise at a given location.

(Ord. 6273 § 1(part), 1996)

7.10.030 - Commercial purpose.

"Commercial purpose" means the use, operation or maintenance of any sound amplification equipment for the purpose of advertising any business, goods or services, or for the purposes of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment.

(Ord. 6273 § 1(part), 1996)

7.10.035 - Construction.

"Construction" means any site preparation including grading, building, fabricating, assembly, substantial repair, alteration, blasting, jack hammering, pile drivers and the like.

(Ord. 7489 § 5, 2019; Ord. 6273 § 1(part), 1996)

7.10.036 - Community & Economic Development Director.

"Community & Economic Development Director" means the duly appointed and acting head of the Community & Economic Development Department and/or his/her designee.

(Ord. 7489 § 6, 2019)

7.10.040 - Community support land use category.

"Community support land use category" means areas developed with schools, libraries, fire stations, hospitals and similar uses in any zone.

(Ord. 6273 § 1(part), 1996)

7.10.045 - Cumulative period.

"Cumulative period" means a total period of time composed of time segments which may be continuous or discontinuous.

(Ord. 6273 § 1(part), 1996)

7.10.050 - Decibel (dB).

"Decibel (dB)" means a unit for measuring amplitude of a sound, equal to 20 times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

(Ord. 7489 § 7, 2019; Ord. 6273 § 1(part), 1996)

7.10.055 - Demolition.

"Demolition" means any dismantling, intentional destruction or removal of structures, site improvements, landscaping or utilities.

(Ord. 6273 § 1(part), 1996)

7.10.060 - Emergency.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

(Ord. 6273 § 1(part), 1996)

7.10.065 - Emergency work.

"Emergency work" means work made necessary to restore property to a safe condition following a physical trauma or property damage caused by an emergency or work necessary to prevent or minimize damage from a potential emergency.

(Ord. 6273 § 1(part), 1996)

7.10.070 - Fixed noise source.

"Fixed noise source" means a stationary device which creates sounds from a fixed location, including residential, agricultural, industrial and commercial machinery and equipment, pumps fans, compressors, air conditioners and refrigeration devices.

(Ord. 6273 § 1(part), 1996)

7.10.075 - Grading.

"Grading" means any excavating and/or filling of earth material to prepare a site for construction or the placement of improvements.

(Ord. 6273 § 1(part), 1996)

7.10.080 - Impulsive sound.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples include explosions, drum beats, drop-forge impacts, fire crackers, discharge of firearms and one object striking another.

(Ord. 6273 § 1(part), 1996)

7.10.085 - Industrial land use category.

"Industrial land use category" means any area occupied by land uses whose primary operation involves warehousing, manufacturing, assembling, distributing, packaging or processing goods in the BMP, I, and AIR zones.

(Ord. 6273 § 1(part), 1996)

7.10.090 - Intrusive noise.

"Intrusive noise" means a noise which intrudes over and above the existing ambient noise. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content as well as its relationship to the prevailing ambient noise level.

(Ord. 6273 § 1(part), 1996)

7.10.095 - Minor maintenance.

"Minor maintenance" means work required to keep property used for residential purposes in an existing state.

(Ord. 6273 § 1(part), 1996)

7.10.100 - Mobile noise source.

"Mobile noise source" means any noise source other than a fixed noise source.

(Ord. 6273 § 1(part), 1996)

7.10.105 - Motor vehicle.

"Motor vehicle" means any self-propelled vehicle as defined in the California Vehicle Code, including all on-highway types of motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code.

(Ord. 6273 § 1(part), 1996)

7.10.110 - Muffler or sound dissipative device.

"Muffler or sound dissipative device" means a device for abating the sound of escaping gases from an internal combustion engine.

(Ord. 7489 § 8, 2019; Ord. 6273 § 1(part), 1996)

7.10.115 - Noise.

"Noise" means any sound which exceeds the appropriate actual or presumed ambient noise level or which annoys or tends to disturb humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

(Ord. 6273 § 1(part), 1996)

7.10.120 - Noise Control Officer.

"Noise Control Officer" means the City official(s) or duly authorized representative(s) with the responsibility to enforce the noise ordinance.

(Ord. 6273 § 1(part), 1996)

7.10.125 - Noise disturbance.

"Noise disturbance" means any sound which, as judged by a City police officer or code enforcement officer, annoys or disturbs a reasonable person of normal sensitivities or exceeds a standard set forth in this title.

(Ord. 7489 § 9, 2019; Ord. 6273 § 1(part), 1996)

7.10.130 - Noise source.

"Noise source" means a disturbance causing operation which originates from noise generating mechanism. An example of a noise source is the combination of a motor, pump and compressor.

(Ord. 6273 § 1(part), 1996)

7.10.135 - Noise zone.

"Noise zone" means defined areas of generally consistent land use where the ambient noise levels are generally similar within a range of five decibels.

(Ord. 6273 § 1(part), 1996)

7.10.140 - Nonurban land use category.

"Nonurban land use category" means vacant land or land primarily for agricultural production containing ten acres or more.

(Ord. 6273 § 1(part), 1996)

7.10.145 - Office/commercial land use category.

"Office/commercial land use category" means areas developed with office and/or commercial uses in the O, CRC, CR-NC, CR, and CG zones.

(Ord. 6967 § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.150 - Person.

"Person" means any individual, association, partnership or corporation and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State.

(Ord. 6273 § 1(part), 1996)

7.10.155 - Powered model vehicle.

"Powered model vehicle" means airborne, waterborne or land-borne vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power.

(Ord. 6273 § 1(part), 1996)

7.10.160 - Public recreation facility land use category.

"Public recreation facility land use category" means areas developed with public parks and other public recreational facilities.

(Ord. 6273 § 1(part), 1996)

7.10.165 - Public right-of-way.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a government entity.

(Ord. 6273 § 1(part), 1996)

7.10.170 - Public space.

"Public space" means any real property or structures which are owned or controlled by a government entity.

(Ord. 6273 § 1(part), 1996)

7.10.175 - Residential land use category.

"Residential land use category" means areas primarily used for residential purposes in the RE, RA-5, RR, RC, R-1-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, and R-4 zones.

(Ord. 6967, § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.180 - Sound.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

(Ord. 6273 § 1(part), 1996)

7.10.185 - Sound amplifying equipment.

"Sound amplifying equipment" means any device for the amplification of the human voice, or music, or any other sound, excluding devices in motor vehicles when heard only by the occupants of the vehicle, excluding warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

(Ord. 6273 § 1(part), 1996)

7.10.190 - Sound level.

"Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighing network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof. If the frequency weighing method used is not stated, the A-weighing shall apply.

(Ord. 6273 § 1(part), 1996)

7.10.195 - Sound level meter.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighing networks for the measurement of sound levels which satisfies the requirements for S2A meters in American National Standards Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.

(Ord. 6273 § 1(part), 1996)

7.10.200 - Sound pressure.

"Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy.

(Ord. 6273 § 1(part), 1996)

7.10.205 - Sound pressure level.

"Sound pressure level" means 20 times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated.

(Ord. 7489 § 10, 2019; Ord. 6273 § 1(part), 1996)

7.10.210 - Supplementary definitions of technical terms.

Definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1.1-1961 (R-1971) or the latest revision thereof.

(Ord. 6273 § 1 (part), 1996)

Chapter 7.15 - ADMINISTRATION AND ENFORCEMENT

7.15.005 - Administration and enforcement.

A. The noise regulation shall be enforced by the Code Enforcement Division of the Community & Economic Development Department and/or the Riverside Police Department.

B. It shall be the responsibility of the Code Enforcement Division and/or the Riverside Police Department to enforce the provisions of this title and to perform all other functions required by this title. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations, and providing evidence to the City Attorney for legal action.

C. A violation of these regulations may be prosecuted as a misdemeanor or as an infraction. Each day a violation occurs shall constitute a separate offense and shall be punishable as such. However, nothing in these regulations shall prevent any code compliance officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or education.

(Ord. 7489 § 11, 2019; Ord. 7341 § 6, 2016; Ord. 6959 § 1, 2007; Ord. 6844 § 15, 2006; Ord. 6273 § 1 (part), 1996)

7.15.010 - Fines and penalties.

A. Notwithstanding any other provision of this Code, any violation of this Title shall be subject to fines as follows: Upon a first violation of this Title, a fine of $500.00. Upon a second violation of this Title, a fine of $750.00. Upon a third or subsequent violation of this Title, a fine of $1,000.00.

B. The civil fines and criminal penalties imposed shall be in addition to any other fines and/or penalties imposed for violation of local, State, and/or Federal law.

(Ord. 7703, § 1, 2025; Ord. 7489 § 13, 2019)

7.15.015 - Responsible parties.

Persons responsible for violations of this title shall include the person, persons, entity, or entities responsible for the noise disturbance including, but not limited to, the property owner, business operations, renters, or lessees on whose premises the noise originates.

(Ord. 7489 § 14, 2019)

Chapter 7.20 - SOUND LEVEL MEASUREMENT

7.20.010 - Sound level measurement.

Except as provided by Chapter 17.35, General Noise Regulations, any sound or noise level measurement made to enforce this title shall be measured with a sound level meter using the A-weighting scale at slow response. The exterior noise level shall be measured at the position or positions along the complainant's property line closest to the noise source or where the noise level is highest. If the complaint concerns an interior source, noise measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source with windows opened or closed as would be normal for the season.

(Ord. 7489 § 15, 2019; Ord. 6273 § 1 (part), 1996)

Chapter 7.23 - AMBIENT SOUND LEVELS

Footnotes:
*--- (**1**) ---*
***Editor's note—** Ord. 7489 § 16, adopted Nov. 5, 2019, amended the title of Ch. 7.23 from "Ambient Noise Levels" to "Ambient Sound Levels," as set out herein.*

7.23.010 - Ambient sound levels.

Title 7 - Noise Control of the Riverside Municipal Code shall be consistent with Title 24 of the California Code of Regulations as may be amended from time to time.

(Ord. 7489 § 17, 2019; Ord. 6967 § 3, 2007)

7.23.020 - Mixed use development.

Where a new development proposal includes a mix of residential and nonresidential uses within the same project, the interior ambient noise standard for the residential component of the project may be increased by five decibels.

(Ord. 7489 § 18, 2019; Ord. 6967 § 3, 2007)

7.23.030 - Infill single-family residential development.

Where a new development proposal includes an infill single-family residential use, the interior ambient noise standard for the proposal may be increased by five decibels.

(Ord. 7489 § 19, 2019; Ord. 6967 § 3, 2007)

Chapter 7.25 - NUISANCE EXTERIOR SOUND LEVEL LIMITS

7.25.010 - Exterior sound level limits.

A. Unless a variance has been granted as provided in this title, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:
   1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or
   2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or
   3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
   4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour; or
   5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this title, the exterior noise level when measured at the property line shall not exceed 60 dBA for units installed before 1-1-80 and 55 dBA for units installed after 1-1-80.

Table 7.25.010A

Exterior Noise Standards		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10:00 p.m. to 7:00 a.m.) Day (7:00 a.m. to 10:00 p.m.)	45 dBA 55 dBA
Office/commercial	Any time	65 dBA
Industrial	Any time	70 dBA
Community support	Any time	60 dBA
Public recreation facility	Any time	65 dBA
Nonurban	Any time	70 dBA

Table 7.25.010.B

Land Use Category/Zoning Matrix	
Land Use Category	**Underlying Zone**
Residential	RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4
Office/commercial	O, CRC, CR-NC, CR, CG
Industrial	BMP, I, AIR
Community support	Any permitted zone
Nonurban	Any permitted zone

(Ord. 7489 § 20, 21(Exh. A), 2019; Ord. 6967 § 5, 2007; Ord. 6273 § 1 (part), 1996)

Chapter 7.30 - NUISANCE INTERIOR SOUND LEVEL LIMITS

7.30.015 - Interior sound level limits.

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;
3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.

B.

If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 7.30.015

Interior Noise Standard		
Land Use Category	**Time Period**	**Noise Level**
Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	35 dBA 45 dBA
School	7 a.m. to 10 p.m. (while school is in session)	45 dBA
Hospital	Any time	45 dBA

(Ord. 7489 § 22, 23(Exh. B), 2019; Ord. 6273 § 1 (part), 1996)

Chapter 7.35 - GENERAL NOISE REGULATIONS

7.35.010 - General noise regulations.

A. It is unlawful for any person to make, continue, or cause to be made or continued any noise disturbance, as it is defined in Section 7.10.125, and offends a reasonable person of normal sensitivities. The factors which should be considered in determining whether a violation of this section exists, include the following:

1. The sound level of the objectionable noise.
2. The sound level of the ambient noise.
3. The proximity of the noise to dwelling units, hospital, hotels and the like.
4. The zoning of the area.
5. The population density of the area.
6. The time of day or night.
7. The duration of the noise.
8. Whether the noise is recurrent, intermittent, or constant.
9. Whether the noise is produced by a commercial or noncommercial activity.

10. Whether the nature of the noise is usual or unusual.
11. Whether the noise is natural or unnatural.

B. It is unlawful for any person to make, continue, or cause to be made or continued any noise disturbance.

C. Any noise plainly audible through partitions common to two dwelling units within a building shall be prohibited.

D. The emitting or transmitting of any loud music or noise disturbance from any sound amplifying equipment or live performance, which is plainly audible from a distance of 25 feet or more from the edge of the property, structure, or unit from which the source is located, shall be prohibited.

(Ord. 7703, § 2, 2025; Ord. 7489 § 24, 2019; Ord. 7341 §6, 2016; Ord. 6959 §2, 2007; Ord. 6328 § 1, 1996; Ord. 6273 § 1 (part), 1996)

7.35.020 - Exemptions.

The following activities shall be exempt from the provisions of this title:

A. *Emergency work*. The provisions of this title shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.

B. *School events*. Sanctioned school activities conducted on public or private school grounds including but not limited to school athletic and entertainment events are exempted from the provisions of this chapter conducted between the hours of 7:00 a.m. and 11:00 p.m.

C. *Federal or State preempted activities*. The provisions of this Chapter shall not apply to any other activity the noise level of which is regulated by state or federal law.

D. *Minor maintenance to residential property*. The provisions of this title shall not apply to noise sources associated with minor maintenance to property used for residential purposes, provided the activities take place between the hours of 7:00 a.m. and 10:00 p.m.

E. *Right-of-way construction*. The provisions of this title shall not apply to any work performed in the City right-of-ways when, in the opinion of the Public Works Director or his designee, such work will create traffic congestion and/or hazardous or unsafe conditions.

F. *Public health, welfare and safety activities*. The provisions of this title shall not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring

electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc.

G. *Construction.* Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.

H. *Warning devices.* Warning devices necessary for the protection of public safety, as for example fire, police, and ambulance sirens, including the testing of such devices, are exempted from the provisions of this title.

I. *Agriculture.* Any agricultural activity, operation, or facility, or appurtenances thereof (e.g., wind machines), conducted or maintained for commercial purposes, and in a manner consistent with proper and accepted customs and standards as allowed under California Civil Code Section 3482 as amended from time to time.

(Ord. 7489 § 25, 2019; Ord. 7341 § 6, 2016; Ord. 6917 § 1, 2006; Ord. 6328 § 2, 1996; Ord. 6273 § 1 (part), 1996)

Chapter 7.40 - VARIANCE PROCEDURE

7.40.010 - Variance procedure.

A. The Community & Economic Development Director is authorized to grant variances for exemption from any provision of this title, and may limit area of applicability, noise levels, time limits, and other terms and conditions determined appropriate to protect the public health, safety, and welfare. The provisions of this section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking a variance pursuant to this section shall file an application with the Community & Economic Development Director. The application shall be signed by the property owner or owner's representative using forms supplied by the Community & Economic Development Department-Planning Division. The application shall contain information which demonstrates that bringing the source of the sound or activity into compliance with this title would constitute an unreasonable hardship to the applicant, the community, or other persons. The Community & Economic Development Director may require additional information if it is necessary to make a determination regarding the variance request. The application shall be accompanied by a fee established by resolution of the City Council.

C.

A separate application shall be filed for each noise source; provided, however, several mobile sources under common ownership or several fixed sources on a single property may be combined into one application. Any person who claims to be adversely affected by the allowance of the variance may file a statement with the Community & Economic Development Director containing any information to support his claim. If the Community & Economic Development Director determines that a sufficient controversy exists regarding a variance application, the variance may be set for public hearing before the Planning Commission.

D. Public notice of the consideration of a proposed variance from the standards of this title shall be provided by the Community & Economic Development Director by mailing such notice to property owners within 300 feet of the exterior boundaries of the property under consideration. The notice shall invite interested persons to notify the Planning Division of any concerns or comments within ten days of the date of the notice.

E. In determining whether to grant or deny the application, the Community & Economic Development Director or the Planning Commission shall consider comments received from property owners within 300 feet, hardship on the applicant, the community, or other persons affected and property affected and any other adverse impacts. The requested variance may be granted in whole or in part and upon such terms and conditions as it deems necessary if, from the facts presented on the application, the Community & Economic Development Director or the Planning Commission finds that:

1. The strict application of the provisions of this title would result in practical difficulties or unnecessary hardships inconsistent with the general purpose of this Title; 2. There are exceptional circumstances or conditions applicable to the property involved or to the intended use or development of the property that do not apply generally to other property in the same zone or neighborhood;

3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the zone or neighborhood in which the property is located;

4. The granting of such variance will not be contrary to the objectives of any part of the adopted General Plan.

F. A variance shall be granted by a notice to the applicant containing all the necessary conditions, including any time limits on the permitted activity. The variance shall not become effective until all the conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this title for which the variance was granted.

G.

A variance shall be valid for a period not exceeding one year after the date on which it was granted. Applications for extensions of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances.

H. In the event the Community & Economic Development Director does not approve an application for a variance within ten days after the application is filed it shall be placed on the agenda of the next regularly scheduled Planning Commission, unless the Commission refers the matter to the City Council.

(Ord. 7489 § 26, 2019; Ord. 7341 § 6, 2016; Ord. 6967 § 7, 2007; Ord. 6462 § 8-10, 1999; Ord. 6273 § 1 (part), 1996)

7.40.020 - Appeals.

Any person aggrieved by the approval or disapproval of a variance, may appeal the decision of the Community & Economic Development Director or Planning Commission to the City Council within ten days after the date of such approval or disapproval. The City Council shall hold a hearing thereon, upon notice to the applicant, considering the same criteria presented to the Community & Economic Development Director.

(Ord. 7489 § 27, 2019; Ord. 6462 § 11, 1999; Ord. 6273 § 1 (part), 1996)

Chapter 7.45 - SEVERABILITY

7.45.010 - Severability.

If any section, subsection, sentence, clause or phrase in this title is for any reason held to be invalid or unconstitutional by decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this title. The City Council hereby declares that it would have passed this title and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more other sections, subsections, clauses or phrases may be declared invalid or unconstitutional.

(Ord. 6328 § 3, 1996)

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Appendix 5.1:

Study Area Photos

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16503 - Canyon Springs

16503_L1_A 1.North
33, 55' 53.260000",117, 17' 2.990000"



16503_L1_A 2.South
33, 55' 53.250000",117, 17' 2.990000"



16503_L1_A 3.East
33, 55' 53.220000",117, 17' 2.940000"



16503_L1_A 4.West
33, 55' 53.250000",117, 17' 2.960000"

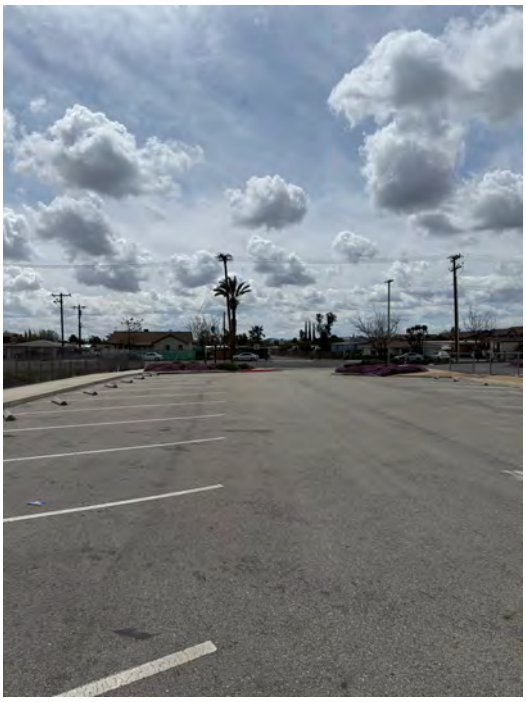


16503 - Canyon Springs

16503_L2_C 1.North
33, 55' 55.580000",117, 16' 52.170000"



16503_L2_C 2.South
33, 55' 55.250000",117, 16' 52.230000"



16503_L2_C 3.East
33, 55' 55.210000",117, 16' 52.200000"



16503_L2_C 4.West
33, 55' 55.280000",117, 16' 52.200000"



16503 - Canyon Springs

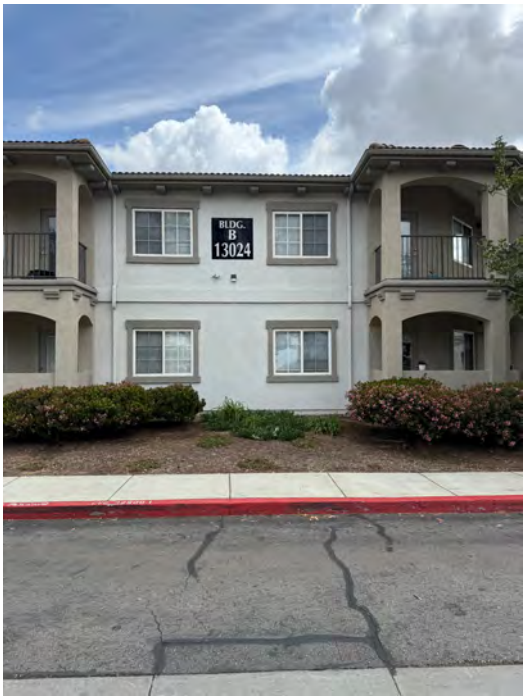
16503_L3_E 1.North
33, 55' 51.410000",117, 16' 42.560000"



16503_L3_E 2.South
33, 55' 51.200000",117, 16' 42.580000"



16503_L3_E 3.East
33, 55' 51.230000",117, 16' 42.580000"



16503_L3_E 4.West
33, 55' 51.200000",117, 16' 42.690000"



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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

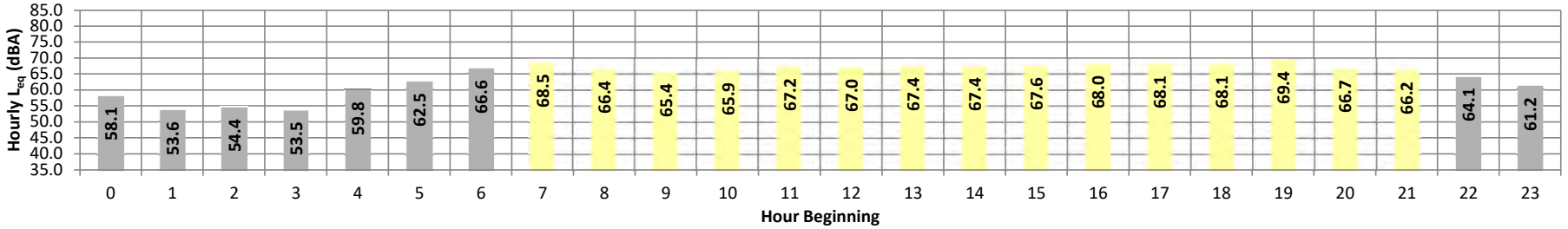
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24-Hour Noise Level Measurement Summary

Date: Thursday, April 3, 2025 | *Location:* L1 - Located south of the site near the residence at 21710 | *Meter:* Piccolo II | *JN:* 16503

Project: Canyon Springs Road | *Source:* Eucalyptus Ave | *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	58.1	70.4	36.1	69.9	69.1	65.9	63.5	54.9	45.9	37.8	36.9	36.3	58.1	10.0	68.1
	1	53.6	65.8	33.4	65.5	65.0	62.1	59.1	48.1	39.3	34.1	33.7	33.5	53.6	10.0	63.6
	2	54.4	66.8	33.3	66.5	66.0	62.8	60.0	48.2	39.4	34.2	33.8	33.4	54.4	10.0	64.4
	3	53.5	65.5	32.9	65.2	64.8	61.8	58.9	49.5	41.7	33.8	33.3	33.0	53.5	10.0	63.5
	4	59.8	70.9	41.6	70.5	69.9	67.1	65.5	58.5	52.2	43.6	42.6	41.8	59.8	10.0	69.8
	5	62.5	72.6	46.2	72.2	71.7	69.8	68.3	62.3	55.6	48.2	47.3	46.3	62.5	10.0	72.5
	6	66.6	75.8	50.2	75.4	74.9	73.0	71.8	67.7	60.7	52.4	51.4	50.4	66.6	10.0	76.6
Day	7	68.5	76.4	50.4	76.0	75.5	74.2	73.4	70.5	64.1	53.0	51.7	50.6	68.5	0.0	68.5
	8	66.4	74.2	46.4	73.9	73.5	72.4	71.6	68.2	61.9	50.1	48.0	46.6	66.4	0.0	66.4
	9	65.4	75.2	46.3	74.7	74.0	71.9	70.8	66.4	58.9	49.2	47.5	46.5	65.4	0.0	65.4
	10	65.9	74.6	47.0	74.2	73.6	71.9	71.0	67.4	61.5	50.4	48.5	47.2	65.9	0.0	65.9
	11	67.2	76.7	49.3	76.4	75.8	73.6	72.2	68.1	61.8	52.9	51.3	49.7	67.2	0.0	67.2
	12	67.0	76.2	47.6	75.7	75.2	73.4	72.3	68.1	61.7	51.3	49.4	47.9	67.0	0.0	67.0
	13	67.4	76.4	51.4	75.9	75.2	73.1	71.9	68.5	64.3	54.9	53.2	51.7	67.4	0.0	67.4
	14	67.4	75.7	49.6	75.4	74.8	73.0	72.0	69.0	64.1	53.1	51.3	49.9	67.4	0.0	67.4
	15	67.6	75.7	50.0	75.3	74.6	72.9	72.0	69.3	64.5	53.4	51.9	50.4	67.6	0.0	67.6
	16	68.0	75.8	50.5	75.4	74.9	73.4	72.6	69.6	65.5	54.2	52.3	50.8	68.0	0.0	68.0
	17	68.1	75.7	49.8	75.4	74.9	73.6	72.7	70.0	65.2	53.6	51.9	50.2	68.1	0.0	68.1
	18	68.1	76.6	51.5	76.2	75.7	73.7	72.7	69.7	64.6	54.8	53.4	51.8	68.1	0.0	68.1
	19	69.4	80.3	50.1	79.9	79.6	76.7	73.6	69.0	63.8	53.6	51.5	50.3	69.4	5.0	74.4
	20	66.7	74.8	50.0	74.5	74.0	72.6	71.7	68.3	62.8	52.5	51.2	50.2	66.7	5.0	71.7
	21	66.2	76.1	50.0	75.7	74.8	72.5	71.1	66.6	61.7	53.3	51.9	50.2	66.2	5.0	71.2
Night	22	64.1	74.3	47.2	73.9	73.2	70.7	69.2	64.3	58.3	50.1	48.5	47.4	64.1	10.0	74.1
	23	61.2	71.4	42.5	71.0	70.6	68.7	67.2	60.3	53.0	44.4	43.5	42.7	61.2	10.0	71.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	65.4	74.2	46.3	73.9	73.5	71.9	70.8	66.4	58.9	49.2	47.5	46.5
	Max	69.4	80.3	51.5	79.9	79.6	76.7	73.6	70.5	65.5	54.9	53.4	51.8
Energy Average		67.4	Average:		75.6	75.1	73.3	72.1	68.6	63.1	52.7	51.0	49.6
Night	Min	53.5	65.5	32.9	65.2	64.8	61.8	58.9	48.1	39.3	33.8	33.3	33.0
	Max	66.6	75.8	50.2	75.4	74.9	73.0	71.8	67.7	60.7	52.4	51.4	50.4
Energy Average		61.4	Average:		70.0	69.5	66.9	64.8	57.1	49.6	42.1	41.2	40.5

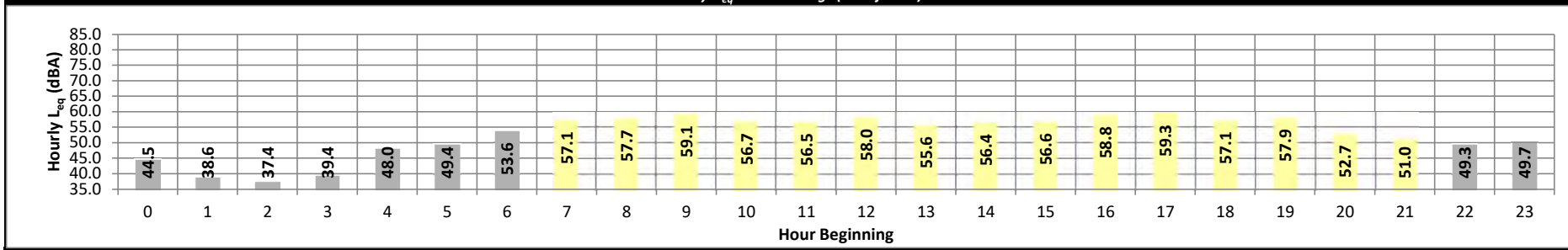
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
70.1	**67.4**	**61.4**

24-Hour Noise Level Measurement Summary

Date: Thursday, April 3, 2025 *Location:* L2 - Located south of the site near the residence at 21790 *Meter:* Piccolo II *JN:* 16503

Project: Canyon Springs Road *Source:* Eucalyptus Ave *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	44.5	56.5	33.1	55.9	55.2	52.1	49.6	41.3	36.4	33.9	33.6	33.2	44.5	10.0	54.5
	1	38.6	49.2	32.9	48.6	47.6	45.6	43.8	36.3	34.3	33.2	33.1	32.9	38.6	10.0	48.6
	2	37.4	48.5	30.6	48.0	47.3	44.8	42.3	34.3	31.4	30.8	30.7	30.6	37.4	10.0	47.4
	3	39.4	51.2	30.0	50.7	50.1	47.6	44.2	35.6	32.2	30.2	30.1	30.0	39.4	10.0	49.4
	4	48.0	60.8	32.1	60.3	59.5	56.5	52.8	42.2	36.5	33.1	32.7	32.2	48.0	10.0	58.0
	5	49.4	59.6	39.2	59.2	58.7	56.5	54.7	48.4	43.9	40.2	39.8	39.3	49.4	10.0	59.4
	6	53.6	61.5	44.3	61.2	60.8	59.4	58.3	54.5	50.5	45.6	45.1	44.5	53.6	10.0	63.6
Day	7	57.1	64.3	49.3	63.7	63.1	61.7	61.0	58.2	55.8	51.0	50.3	49.5	57.1	0.0	57.1
	8	57.7	64.2	50.7	63.6	63.1	61.9	61.0	58.8	56.6	52.6	51.9	51.0	57.7	0.0	57.7
	9	59.1	65.1	51.1	64.7	64.3	63.4	62.7	60.6	57.6	53.3	52.4	51.4	59.1	0.0	59.1
	10	56.7	63.6	48.8	63.0	62.6	61.3	60.5	57.9	55.0	50.8	50.0	49.1	56.7	0.0	56.7
	11	56.5	64.6	48.5	63.8	63.1	61.5	60.3	57.4	54.7	50.2	49.5	48.7	56.5	0.0	56.5
	12	58.0	66.1	49.4	65.6	65.3	64.2	63.1	57.7	54.8	51.3	50.6	49.7	58.0	0.0	58.0
	13	55.6	62.7	48.5	62.3	61.7	60.0	59.0	56.6	54.1	50.2	49.4	48.7	55.6	0.0	55.6
	14	56.4	63.4	50.9	62.7	62.0	60.3	59.4	57.1	55.2	52.3	51.7	51.1	56.4	0.0	56.4
	15	56.6	63.4	49.8	62.9	62.3	60.9	59.8	57.5	55.4	51.7	50.9	50.1	56.6	0.0	56.6
	16	58.8	68.0	49.0	67.4	66.4	63.9	62.5	59.4	56.6	51.3	50.4	49.3	58.8	0.0	58.8
	17	59.3	68.7	50.0	67.9	66.9	64.4	63.3	59.9	57.0	52.4	51.4	50.3	59.3	0.0	59.3
	18	57.1	65.0	46.9	64.6	64.0	62.3	61.4	57.8	54.9	49.5	48.3	47.2	57.1	0.0	57.1
	19	57.9	67.1	46.4	66.8	66.3	64.8	62.9	57.6	54.4	48.9	47.9	46.6	57.9	5.0	62.9
	20	52.7	60.7	40.8	60.3	59.9	58.5	57.5	53.9	49.9	43.0	41.8	41.0	52.7	5.0	57.7
	21	51.0	59.8	38.7	59.4	58.9	57.0	55.7	51.8	47.3	40.7	39.8	38.9	51.0	5.0	56.0
Night	22	49.3	59.0	36.3	58.5	58.0	56.1	54.4	49.5	44.2	38.2	37.4	36.5	49.3	10.0	59.3
	23	49.7	61.5	36.1	61.0	60.6	59.4	53.4	45.5	40.6	37.0	36.5	36.2	49.7	10.0	59.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	51.0	59.8	38.7	59.4	58.9	57.0	55.7	51.8	47.3	40.7	39.8	38.9
	Max	59.3	68.7	51.1	67.9	66.9	64.8	63.3	60.6	57.6	53.3	52.4	51.4
Energy Average		57.1	Average:		63.9	63.3	61.7	60.7	57.5	54.6	50.0	49.1	48.2
Night	Min	37.4	48.5	30.0	48.0	47.3	44.8	42.3	34.3	31.4	30.2	30.1	30.0
	Max	53.6	61.5	44.3	61.2	60.8	59.4	58.3	54.5	50.5	45.6	45.1	44.5
Energy Average		48.3	Average:		55.9	55.3	53.1	50.4	43.1	38.9	35.8	35.4	35.1

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
58.2	**57.1**	**48.3**

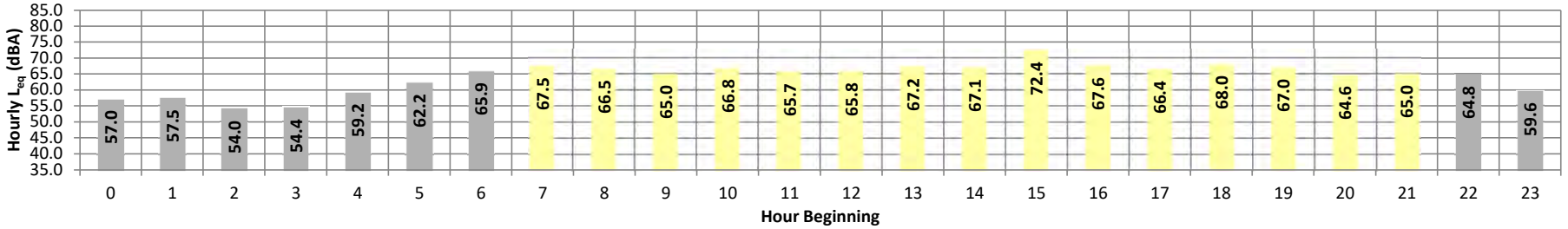
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Thursday, April 3, 2025 *Location:* L3 - Located southeast of the site near the residence at 13024 *Meter:* Piccolo II *JN:* 16503

Project: Canyon Springs Road *Source:* Day St. *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	57.0	67.4	42.4	67.1	66.5	64.2	62.2	56.6	50.6	43.9	43.0	42.5	57.0	10.0	67.0
	1	57.5	68.4	50.5	68.0	67.2	64.4	61.7	55.8	52.7	50.7	50.6	50.5	57.5	10.0	67.5
	2	54.0	64.6	41.0	64.4	63.9	61.8	59.7	52.2	46.8	42.2	41.5	41.1	54.0	10.0	64.0
	3	54.4	63.9	45.7	63.6	63.1	61.2	59.4	53.8	50.1	46.5	46.1	45.7	54.4	10.0	64.4
	4	59.2	67.9	48.7	67.6	67.1	65.6	64.4	59.4	55.3	49.9	49.3	48.8	59.2	10.0	69.2
	5	62.2	71.3	51.1	71.0	70.5	68.6	67.1	62.7	58.5	52.5	51.7	51.2	62.2	10.0	72.2
	6	65.9	75.0	54.2	74.7	74.3	72.4	70.7	66.3	61.8	55.9	55.1	54.3	65.9	10.0	75.9
Day	7	67.5	76.0	55.4	75.7	75.3	73.6	72.1	68.6	63.9	57.5	56.8	55.6	67.5	0.0	67.5
	8	66.5	74.3	55.1	74.0	73.5	72.0	71.1	67.8	63.9	57.3	56.2	55.2	66.5	0.0	66.5
	9	65.0	73.2	54.0	73.0	72.5	70.9	69.8	65.7	61.2	55.7	54.9	54.2	65.0	0.0	65.0
	10	66.8	78.9	54.1	78.1	77.0	72.6	70.6	66.3	62.2	55.6	54.8	54.2	66.8	0.0	66.8
	11	65.7	73.7	55.5	73.3	72.9	71.5	70.4	66.8	62.6	56.8	56.1	55.6	65.7	0.0	65.7
	12	65.8	73.8	55.0	73.5	73.2	71.6	70.7	66.9	62.0	56.4	55.7	55.2	65.8	0.0	65.8
	13	67.2	77.4	56.0	77.0	76.2	73.7	71.4	67.3	63.4	57.8	56.9	56.1	67.2	0.0	67.2
	14	67.1	76.6	56.2	76.1	75.3	72.8	71.0	67.7	64.1	58.0	57.0	56.4	67.1	0.0	67.1
	15	72.4	82.8	56.8	82.4	82.2	80.6	79.1	69.5	65.1	58.8	57.8	57.1	72.4	0.0	72.4
	16	67.6	76.3	57.0	76.0	75.5	73.8	71.9	68.1	64.7	59.1	58.0	57.1	67.6	0.0	67.6
	17	66.4	73.8	55.9	73.5	73.1	71.6	70.7	67.9	64.0	57.5	56.7	56.0	66.4	0.0	66.4
	18	68.0	78.2	56.8	77.7	77.0	74.0	72.0	68.1	64.5	58.4	57.6	56.9	68.0	0.0	68.0
	19	67.0	76.7	54.4	76.5	75.9	73.6	71.7	66.7	62.9	56.4	55.4	54.6	67.0	5.0	72.0
	20	64.6	72.2	53.9	72.0	71.6	70.2	69.2	65.8	61.9	55.5	54.7	54.0	64.6	5.0	69.6
	21	65.0	74.6	54.2	74.2	73.6	71.3	69.6	65.2	61.5	55.8	54.9	54.3	65.0	5.0	70.0
Night	22	64.8	75.8	51.8	75.5	74.8	72.4	69.5	63.7	59.3	53.4	52.6	51.9	64.8	10.0	74.8
	23	59.6	68.8	47.7	68.6	68.2	66.3	64.6	59.7	55.2	49.2	48.5	47.9	59.6	10.0	69.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	64.6	72.2	53.9	72.0	71.6	70.2	69.2	65.2	61.2	55.5	54.7	54.0
	Max	72.4	82.8	57.0	82.4	82.2	80.6	79.1	69.5	65.1	59.1	58.0	57.1
Energy Average		67.3	Average:		75.5	75.0	72.9	71.4	67.2	63.2	57.1	56.2	55.5
Night	Min	54.0	63.9	41.0	63.6	63.1	61.2	59.4	52.2	46.8	42.2	41.5	41.1
	Max	65.9	75.8	54.2	75.5	74.8	72.4	70.7	66.3	61.8	55.9	55.1	54.3
Energy Average		61.2	Average:		69.0	68.4	66.3	64.4	58.9	54.5	49.4	48.7	48.2

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
69.7	**67.3**	**61.2**

URBAN CROSSROADS

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APPENDIX 7.1:

ON-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,575.6 feet
Road Elevation:	1,576.1 feet
Barrier Elevation:	1,576.1 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,578.40		
Heavy Trucks:	1,584.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.735
Heavy Trucks:	58.800

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.65	-1.20	*10.46*	-17.155	-20.155
Medium Trucks:	77.62	-21.26	-1.15	-1.20	*-0.66*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.16	-1.20	*-1.24*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.2	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.3	23.9	22.1	16.1	24.7	25.3
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.3	57.3	49.8	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,575.6 feet
Road Elevation:	1,576.1 feet
Barrier Elevation:	1,576.1 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,578.40		
Heavy Trucks:	1,584.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.735
Heavy Trucks:	58.800

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.65	-1.20	*10.46*	-17.155	-20.155
Medium Trucks:	77.62	-21.26	-1.15	-1.20	*-0.66*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.16	-1.20	*-1.24*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.2	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.3	23.9	22.1	16.1	24.7	25.3
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.3	57.3	49.8	49.5	57.9	58.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,575.6 feet
Road Elevation:	1,576.1 feet
Barrier Elevation:	1,576.1 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,578.40		
Heavy Trucks:	1,584.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.735
Heavy Trucks:	58.800

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.65	-1.20	*10.46*	-17.155	-20.155
Medium Trucks:	77.62	-21.26	-1.15	-1.20	*-0.66*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.16	-1.20	*-1.24*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.2	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.3	23.9	22.1	16.1	24.7	25.3
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.3	57.3	49.8	49.5	57.9	58.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,575.6 feet
Road Elevation:	1,576.1 feet
Barrier Elevation:	1,576.1 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,578.40		
Heavy Trucks:	1,584.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	59.750
Heavy Trucks:	58.949

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.67	-1.20	*6.07*	-15.928	-18.928
Medium Trucks:	77.62	-21.26	-1.26	-1.20	*-4.09*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.18	-1.20	*-5.51*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.0	39.3	33.2	41.8	42.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.4	57.4	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.5	25.1	23.4	17.3	25.9	26.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.6	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,573.8 feet
Road Elevation:	1,573.0 feet
Barrier Elevation:	1,573.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,575.30		
Heavy Trucks:	1,581.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.799
Heavy Trucks:	58.735

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.64	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.16	-1.20	*-0.72*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.33*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.1	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,573.8 feet
Road Elevation:	1,573.0 feet
Barrier Elevation:	1,573.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,575.30		
Heavy Trucks:	1,581.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.799
Heavy Trucks:	58.735

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.64	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.16	-1.20	*-0.72*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.33*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.1	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,573.8 feet
Road Elevation:	1,573.0 feet
Barrier Elevation:	1,573.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,575.30		
Heavy Trucks:	1,581.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.799
Heavy Trucks:	58.735

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.64	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.16	-1.20	*-0.72*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.33*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.1	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,573.8 feet
Road Elevation:	1,573.0 feet
Barrier Elevation:	1,573.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,575.30		
Heavy Trucks:	1,581.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	60.011
Heavy Trucks:	59.086

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.66	-1.20	*5.91*	-15.846	-18.846
Medium Trucks:	77.62	-21.26	-1.29	-1.20	*-4.14*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.19	-1.20	*-5.59*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.2	41.9	42.5
Medium Trucks:	53.9	53.9	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.3	57.4	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.6	25.2	23.4	17.4	26.0	26.6
Medium Trucks:	53.9	53.9	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.2	57.3	49.7	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,571.9 feet
Road Elevation:	1,570.9 feet
Barrier Elevation:	1,571.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,573.20		
Heavy Trucks:	1,578.90	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.813
Heavy Trucks:	58.727

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.63	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.16	-1.20	*-0.70*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.30*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.1	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,571.9 feet
Road Elevation:	1,570.9 feet
Barrier Elevation:	1,571.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,573.20		
Heavy Trucks:	1,578.90	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.813
Heavy Trucks:	58.727

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.63	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.16	-1.20	*-0.70*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.30*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.1	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,571.9 feet
Road Elevation:	1,570.9 feet
Barrier Elevation:	1,571.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,573.20		
Heavy Trucks:	1,578.90	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.813
Heavy Trucks:	58.727

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.63	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.16	-1.20	*-0.70*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.30*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.1	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,571.9 feet
Road Elevation:	1,570.9 feet
Barrier Elevation:	1,571.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,573.20		
Heavy Trucks:	1,578.90	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	60.062
Heavy Trucks:	59.114

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.65	-1.20	*5.91*	-15.846	-18.846
Medium Trucks:	77.62	-21.26	-1.30	-1.20	*-4.09*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.19	-1.20	*-5.53*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.2	41.9	42.5
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.3	57.4	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.6	25.2	23.5	17.4	26.0	26.6
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.6	45.6	46.8	55.2	55.3
Vehicle Noise:	57.2	57.3	49.7	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,569.8 feet
Road Elevation:	1,567.6 feet
Barrier Elevation:	1,569.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,569.90		
Heavy Trucks:	1,575.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.899
Heavy Trucks:	58.699

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.62	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.17	-1.20	*-0.59*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.2	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,569.8 feet
Road Elevation:	1,567.6 feet
Barrier Elevation:	1,569.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,569.90		
Heavy Trucks:	1,575.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.899
Heavy Trucks:	58.699

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.62	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.17	-1.20	*-0.59*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.2	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,569.8 feet
Road Elevation:	1,567.6 feet
Barrier Elevation:	1,569.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,569.90		
Heavy Trucks:	1,575.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	58.899
Heavy Trucks:	58.699

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.62	-1.20	*10.10*	-17.112	-20.112
Medium Trucks:	77.62	-21.26	-1.17	-1.20	*-0.59*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.15	-1.20	*-1.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.4	57.4	50.1	49.6	58.0	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	24.4	24.0	22.2	16.2	24.8	25.4
Medium Trucks:	54.0	54.0	47.6	46.1	54.5	54.8
Heavy Trucks:	54.6	54.6	45.6	46.9	55.2	55.3
Vehicle Noise:	57.3	57.3	49.7	49.5	57.9	58.1

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Canyon Park Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	65.0 feet
Barrier Distance to Observer:	15.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,569.8 feet
Road Elevation:	1,567.6 feet
Barrier Elevation:	1,569.8 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,569.90		
Heavy Trucks:	1,575.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	60.321
Heavy Trucks:	59.265

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.64	-1.20	*5.91*	-15.846	-18.846
Medium Trucks:	77.62	-21.26	-1.33	-1.20	*-3.82*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.21	-1.20	*-5.22*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	53.8	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.6	45.5	46.8	55.2	55.3
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.6	25.2	23.5	17.4	26.0	26.6
Medium Trucks:	53.8	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.6	45.5	46.8	55.2	55.3
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,566.9 feet
Road Elevation:	1,565.0 feet
Barrier Elevation:	1,566.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,567.30		
Heavy Trucks:	1,573.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	59.875
Heavy Trucks:	59.710

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.59	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.28	-1.20	*-0.99*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.51*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,566.9 feet
Road Elevation:	1,565.0 feet
Barrier Elevation:	1,566.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,567.30		
Heavy Trucks:	1,573.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	59.875
Heavy Trucks:	59.710

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.59	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.28	-1.20	*-0.99*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.51*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,566.9 feet
Road Elevation:	1,565.0 feet
Barrier Elevation:	1,566.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,567.30		
Heavy Trucks:	1,573.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	59.875
Heavy Trucks:	59.710

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.59	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.28	-1.20	*-0.99*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.51*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,566.9 feet
Road Elevation:	1,565.0 feet
Barrier Elevation:	1,566.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,567.30		
Heavy Trucks:	1,573.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	61.225
Heavy Trucks:	60.217

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.62	-1.20	*2.80*	-13.340	-16.340
Medium Trucks:	77.62	-21.26	-1.42	-1.20	*-5.57*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.31	-1.20	*-6.91*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	53.7	53.7	47.4	45.8	54.3	54.5
Heavy Trucks:	54.4	54.5	45.4	46.7	55.0	55.2
Vehicle Noise:	57.2	57.2	49.9	49.4	57.8	58.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	28.2	27.8	26.0	19.9	28.6	29.2
Medium Trucks:	53.7	53.7	47.4	45.8	54.3	54.5
Heavy Trucks:	54.4	54.5	45.4	46.7	55.0	55.2
Vehicle Noise:	57.1	57.1	49.5	49.3	57.7	57.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,563.9 feet
Road Elevation:	1,562.1 feet
Barrier Elevation:	1,563.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,564.40		
Heavy Trucks:	1,570.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	59.868
Heavy Trucks:	59.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.58	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.28	-1.20	*-0.99*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.52*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,563.9 feet
Road Elevation:	1,562.1 feet
Barrier Elevation:	1,563.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,564.40		
Heavy Trucks:	1,570.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	59.868
Heavy Trucks:	59.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.58	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.28	-1.20	*-0.99*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.52*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,563.9 feet
Road Elevation:	1,562.1 feet
Barrier Elevation:	1,563.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,564.40		
Heavy Trucks:	1,570.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	59.868
Heavy Trucks:	59.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.58	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.28	-1.20	*-0.99*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.52*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,563.9 feet
Road Elevation:	1,562.1 feet
Barrier Elevation:	1,563.9 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,564.40		
Heavy Trucks:	1,570.10	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	61.205
Heavy Trucks:	60.205

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.61	-1.20	*2.80*	-13.340	-16.340
Medium Trucks:	77.62	-21.26	-1.42	-1.20	*-5.59*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.31	-1.20	*-6.93*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	53.7	53.7	47.4	45.8	54.3	54.5
Heavy Trucks:	54.4	54.5	45.4	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.9	49.4	57.8	58.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	28.2	27.8	26.0	19.9	28.6	29.2
Medium Trucks:	53.7	53.7	47.4	45.8	54.3	54.5
Heavy Trucks:	54.4	54.5	45.4	46.7	55.1	55.2
Vehicle Noise:	57.1	57.1	49.5	49.3	57.7	57.9

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,564.4 feet
Road Elevation:	1,560.6 feet
Barrier Elevation:	1,564.4 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,562.90		
Heavy Trucks:	1,568.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	60.048
Heavy Trucks:	59.704

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.58	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.30	-1.20	*-0.84*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.33*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Backyard With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,564.4 feet
Road Elevation:	1,560.6 feet
Barrier Elevation:	1,564.4 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,562.90		
Heavy Trucks:	1,568.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	60.048
Heavy Trucks:	59.704

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.58	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.30	-1.20	*-0.84*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.33*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: First Floor With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,564.4 feet
Road Elevation:	1,560.6 feet
Barrier Elevation:	1,564.4 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,562.90		
Heavy Trucks:	1,568.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	60.048
Heavy Trucks:	59.704

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.58	-1.20	*5.71*	-15.726	-18.726
Medium Trucks:	77.62	-21.26	-1.30	-1.20	*-0.84*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.26	-1.20	*-1.33*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.4	33.3	41.9	42.5
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.3	57.3	50.0	49.5	57.9	58.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	25.8	25.4	23.6	17.6	26.2	26.8
Medium Trucks:	53.9	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	54.5	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	57.2	57.2	49.6	49.4	57.8	58.0

Tuesday, July 22, 2025

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v5/13/24

Scenario: Second Floor With Wall
Road Name: Gateway Drive
Project Name: Mesa Verde SP
Job Number: 15218
Analyst: B. Lawson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,750 vehicles
Peak Hour Percentage:	7.10%
Peak Hour Volume:	621 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	56.0 feet
Centerline Dist. to Observer:	66.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,564.4 feet
Road Elevation:	1,560.6 feet
Barrier Elevation:	1,564.4 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	1,562.90		
Heavy Trucks:	1,568.60	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	#########
Medium Trucks:	61.669
Heavy Trucks:	60.491

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	-4.02	-22.61	-1.20	*2.80*	-13.340	-16.340
Medium Trucks:	77.62	-21.26	-1.47	-1.20	*-5.15*	0.000	0.000
Heavy Trucks:	82.14	-25.21	-1.34	-1.20	*-6.45*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	41.5	41.1	39.3	33.3	41.9	42.5
Medium Trucks:	53.7	53.7	47.3	45.8	54.2	54.5
Heavy Trucks:	54.4	54.5	45.4	46.7	55.0	55.1
Vehicle Noise:	57.2	57.2	49.9	49.4	57.8	58.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	28.2	27.8	26.0	19.9	28.6	29.2
Medium Trucks:	53.7	53.7	47.3	45.8	54.2	54.5
Heavy Trucks:	54.4	54.5	45.4	46.7	55.0	55.1
Vehicle Noise:	57.1	57.1	49.5	49.3	57.7	57.8

APPENDIX 10.1:

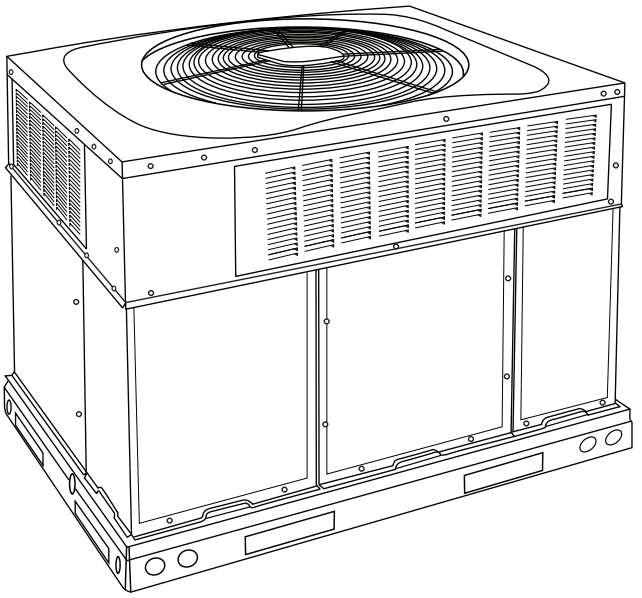
SAMPLE AIR CONDITIONING UNIT

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50VR–A
Performance™ 15 SEER 2–Stage Packaged Heat Pump System with Puron® (R–410A) Refrigerant
Single and Three Phase
2 to 5 Nominal Tons (Sizes 24–60)

Carrier
turn to the experts

Product Data



A09033

Fig. 1 - Unit 50VR-A

Single-Packaged Products with Energy-Saving Features and Puron® refrigerant.

- 15.0-15.5 SEER / 12.0-12.5 EER at 95°F (35°C) OD
- Factory-Installed TXV
- Multi-speed ECM Blower Motor - Standard
- Sound levels as low as 71dBA
- Two Stages of Cooling/Heating
- Dehumidification Feature

FEATURES/BENEFITS

One-piece heat pump unit with optional electric heater, low sound levels, easy installation, low maintenance, and dependable performance.

Puron Environmentally Sound Refrigerant is Carrier's unique refrigerant designed to help protect the environment. Puron is an HFC refrigerant which does not contain chlorine that can harm the ozone layer. Puron refrigerant is in service in millions of systems proving highly reliable, environmentally sound performance.

Easy Installation

Factory-assembled package is a compact, fully self-contained, electric cooling unit that is prewired, pre-piped, and pre-charged for minimum installation expense. These units are available in a variety of standard cooling sizes with voltage options to meet residential and light commercial requirements. Units are lightweight and install easily on a rooftop or at ground level. The high tech composite base eliminates rust problems associated with ground level applications.

Innovative Unit Base Design

On the inside a high-tech composite material will not rust and incorporates a sloped drain pan which improves drainage and helps inhibit mold, algae and bacterial growth. On the outside metal base rails provide added stability as well as easier handling and rigging.

Convertible duct configuration

Unit is designed for use in either downflow or horizontal applications. Each unit is converted from horizontal to downflow and includes horizontal duct covers. Downflow operation is provided in the field to allow vertical ductwork connections. The basepan seals on the bottom openings to ensure a positive seal in the vertical airflow mode.

Efficient operation High-efficiency design offers SEER (Seasonal Energy Efficiency Ratios) of up to 15.5 and HSPF of 8.5. (See page 4.)

Durable, dependable components

Scroll Compressors have 2 stages of cooling/heating and are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quieter operation. All compressors have internal high pressure and overcurrent protection.

Multi-speed ECM Blower Motor is standard on all 50VR-A.

Direct-drive PSC (Permanent Split Capacitor) condenser-fan motors are designed to help reduce energy consumption and provide for cooing operation down to 40°F (4.4°C) outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

Thermostatic Expansion Valve - A hard shutoff, balance port TXV maintains a constant superheat at the evaporator exit (cooling cycle) resulting in higher overall system efficiency.

Refrigerant system is designed to provide dependability. Liquid filter driers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

High and Low Pressure Switches provide added reliability for the compressor.

Indoor and Outdoor coils are computer-designed for optimum heat transfer and efficiency. The indoor coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The outdoor coil is internally mounted on the top tier of the unit.

Low sound ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 71dBA. (See Page 4.)

Easy to service cabinets provide easy 3 panel accessibility to serviceable components during maintenance and installation. The basepan with integrated drain pan provides easy ground level installation with a mounting pad. A nesting feature ensures a positive basepan to roof curb seal when the unit is roof mounted. A convenient 3/4-in. (19.05 mm) wide perimeter flange makes frame mounting on a rooftop easy.

Dehumidification Feature

This unit has independent fan speeds for low stage cooling and high stage cooling. In addition, 208/230 VAC models have the field-selectable capability to run an enhanced dehumidification ('DHUM') speed on high stage cooling (as low as 320CFM per ton). Coupled with the improved dehumidification associated with low stage cooling, the DHUM speed allows for a complete dehumidification solution independent of cooling stage. The dehumidification control must open the control circuit on humidity rise above the dehumidification set point.

NOTE: The enhanced dehumidification feature on high stage cooling does not support use of an economizer.

Standard horizontal metal duct covers with insulation come with the unit and cover the horizontal duct openings. These can be left in place if the units are converted to downflow.

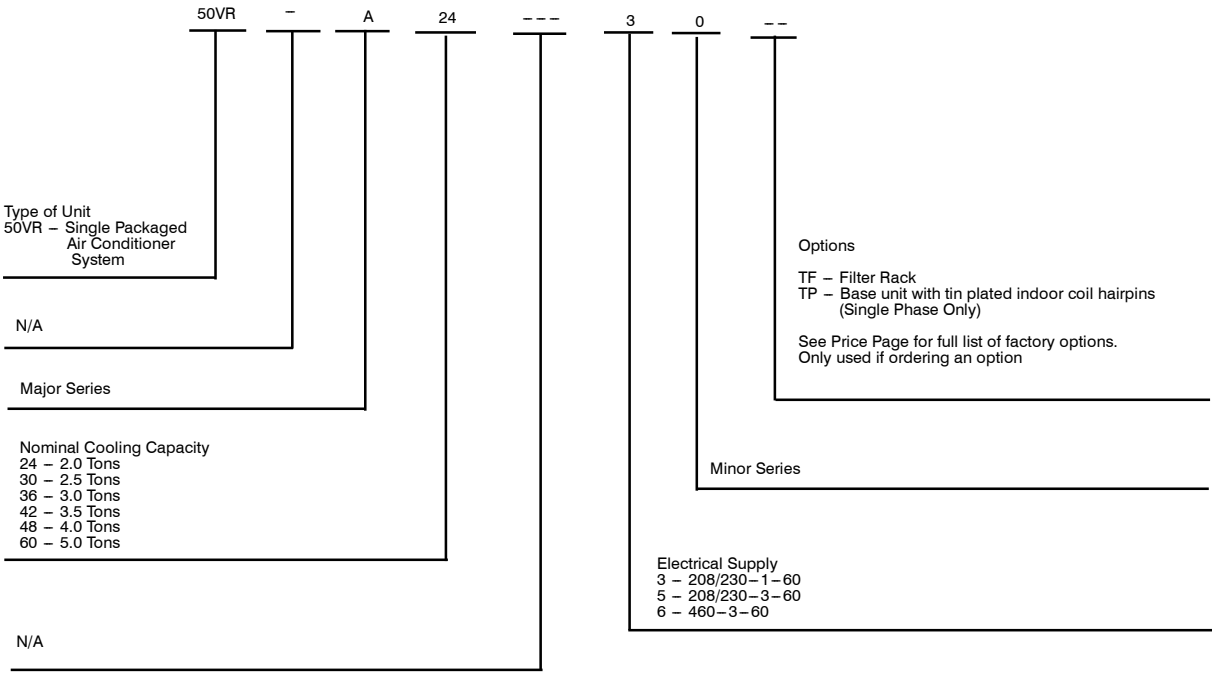
Cabinets are constructed of heavyduty, phosphated, zinc-coated prepainted steel capable of withstanding 500 hours in salt spray. Interior surfaces of the evaporator/electric heater compartment are insulated with foil-faced insulation, which keeps the conditioned air from being affected by the outdoor ambient temperature and provides improved indoor air quality. (Conforms to American Society of Heating, Refrigeration and Air Conditioning Engineers No. 62P.) The sloped drain pan minimizes standing water in the drain. An external drain is provided.

Short-Cycling protection for the compressor is incorporated into our defrost control board ensuring a five minute delay (+/-2 minutes) before restarting compressor after shutdown for any reason.

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MODEL NUMBER NOMENCLATURE



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

AHRI* CAPACITIES

Cooling Capacities and Efficiencies

Unit Model 50VR-A	Nominal Tons	Standard CFM (High / Low Stage)	Net Cooling Capacities - Btuh (High Stage)	EER @A**	SEER†
24	2	850 / 650	23000	12.0	15.0
30	2-1/2	1000 / 750	30000	12.0	15.0
36	3	1200 / 900	34000	12.0	15.0
42	3-1/2	1400 / 1050	42000	12.0	15.0
48	4	1600 / 1200	47500	12.5	15.5
60	5	1750 / 1200	57000	12.0	15.0

Heat Pump Heating Capacities and Efficiencies

Unit Model 50VR-A	Heating Capacity (BTUH) @ 47_F (8.3_C)	COP @ 47_F (8.3_C)	Heating Capacity (BTUH) @ 17_F (---8.3_C)	COP @ 17_F (---8.3_C)	HSPF	Heating Cd
24	23,000	3.8	11200	2.2	8.0	0.25
30	29,000	3.8	15400	2.3	8.0	0.25
36	34,000	3.7	17200	2.3	8.0	0.25
42	42,000	3.6	24000	2.5	8.0	0.25
48	47,000	3.7	26000	2.3	8.0	0.25
60	57,000	3.5	32400	2.4	8.5	0.25

LEGEND
dB–Sound Levels (decibels)
db—Dry Bulb
SEER—Seasonal Energy Efficiency Ratio
wb—Wet Bulb
COP–Coefficient of Performance
* Air Conditioning, Heating & Refrigeration Institute.
**At "A" conditions–80°F (26.7°C) indoor db/67°F (19.4°C) indoor wb & 95°F (35°C) outdoor db.
† Rated in accordance with U.S. Government DOE Department of Energy) test procedures and/or AHRI Standards 210/240.

Notes:
1. Ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on:
Cooling Standard: 80°F (26.7°C) db, 67°F wb (19.4°C) indoor entering–air temperature and 95°F db (35°C) outdoor entering–air temperature.
2. Before purchasing this appliance, read important energy cost and efficiency information available from AHRIdirectory.org.

A-WEIGHTED SOUND POWER LEVEL (dBA)

Model 50VR-A	Sound Ratings (dBA)	TYPICAL OCTAVE BAND SPECTRUM(dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24	73	58.5	65	66.5	67	62	57.5	54.5
30	76	59	63	69	70	63.5	59	53.5
36	73	64	63.5	68	68	65.5	60.5	52.5
42	71	64	62	65	66	63.5	59.5	52.5
48	74	59.5	65	70	67	64.5	60.5	52.5
60	73	68	63	66	66	65	59.5	52.5

NOTE: Tested in accordance with AHRI Standard 270 (not listed in AHRI).

PHYSICAL DATA

UNIT SIZE	24	30	36	42	48	60
NOMINAL CAPACITY (ton)	2	2–1/2	3	3–1/2	4	5
SHIPPING WEIGHT lb.	356	364	420	466	462	511
SHIPPING WEIGHT (kg)	162	165	191	212	210	232
COMPRESSORS	Scroll					
Quantity	1					
REFRIGERANT (R–410A)						
Quantity lb	9.0	10.0	11.0	14.6	12.0	14.8
Quantity (kg)	4.1	4.5	5.0	6.6	5.4	6.7
REFRIGERANT METERING DEVICE	TXV, Indoor TXV					
ORIFICE						
ID (in.)	.032 (2)	.040 (2)	.042 (2)	.042 (2)	.042 (2)	.052 (2)
ID (mm)	0.81 (2)	1.02 (2)	1.07 (2)	1.07 (2)	1.07 (2)	1.32 (2)
OUTDOOR COIL						
Rows...Fins/in.	2...21	2...21	2...21	2...21	2...21	2...21
Face Area (sq ft)	13.6	15.3	13.6	19.4	17.5	23.3
OUTDOOR FAN						
Nominal Cfm	2100	2500	3000	3000	3300	3600
Diameter in.	24	24	26	26	26	26
Diameter (mm)	609.6	609.6	660.4	660.4	660.4	660.4
Motor Hp (Rpm)	1/12 (800)	1/8 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)
INDOOR COIL						
Rows...Fins/in.	3...17	3...17	3...17	3...17	3...17	4...17
Face Area (sq ft)	3.7	3.7	4.7	4.7	5.7	5.7
INDOOR BLOWER						
Nominal Low Stage Cooling Airflow (Cfm)	650	750	900	1050	1200	1400
Nominal High Stage Cooling Airflow (Cfm)	850	1000	1200	1400	1600	1750
Size in.	10x10	10x10	11x10	11x10	11x10	11x10
Size (mm.)	254x254	254x254	279.4x254	279.4x254	279.4x254	279.4x254
Motor HP (RPM)	1/2 (1050)	1/2 (1050)	3/4 (1000)	3/4 (1075)	1.0 (1075)	1.0 (1075)
HIGH–PRESSURE SWITCH (psig) Cut–out Reset (Auto)	650 +/– 15 420 +/– 25					
LOW–PRESSURE SWITCH (psig) cut–out Reset (auto)	20 +/– 5 45 +/– 5					
RETURN–AIR FILTERS†‡						
Throwaway Size in.	20x20x1	20x24x1	24x30x1		24x36x1	
Throwaway Size (mm)	508x508x25	508x610x25	610x762x25		610x914x25	

† Required filter sizes shown are based on the larger of the AHRI (Air Conditioning Heating and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/minute for throwaway type or 450 ft/minute for high–capacity type. Air filter pressure drop for non–standard filters must not exceed 0.08 in. W.C.

‡ If using accessory filter rack refer to the filter rack installation instructions for correct filter sizes and quantity.

Electric Heat Pressure Drop Tables (IN. W.C.)

Small Cabinet: 24–30

STATIC	STANDARD CFM (SCFM)											
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
5 kW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07
10 kW	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07	0.09	0.10	0.11
15 kW	0.00	0.00	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
20 kW	0.00	0.00	0.02	0.04	0.06	0.08	0.09	0.11	0.13	0.15	0.17	0.19

Large Cabinet: 36–60

STATIC	STANDARD CFM (SCFM)														
	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
5 kW	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
10 kW	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
15 kW	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15
20 kW	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16

OPTIONS AND ACCESSORIES

ITEM	DESCRIPTION	FACTORY INSTALLED OPTION	FIELD INSTALLED ACCESSORY
Coil Options	Base unit with tin plated indoor coil hairpins	X	
Compressor Start Kit	Compressor Start Kit assists compressor start–up by providing additional starting torque on sing phase units only.		X
Corporate Thermostats	Thermostats provide control for the system heating and cooling functions.		X
Crankcase Heater	Crankcase Heater provides anti–floodback protection for low–load cooling applications.		X*
Economizer	Vertical Economizer with Jade Honeywell W7220 Controller, Honeywell communicating actuator, and dry bulb sensor. (Contact MicroMetl Customer Service at 1–800–662–4822 to order.)		X
	Horizontal Economizer with Jade Honeywell W7220 Controller, Honeywell communicating actuator, and dry bulb sensor. (Contact MicroMetl Customer Service at 1–800–662–4822 to order.)		X
Electric Heaters	Electric Heat Supplement		X
Filter Rack	Filter Rack features easy installation, serviceability, and high–filtering performance for vertical applications. Includes 1–in. filter.	X	X
Flat Roof Curbs	Flat Roof Curbs in both 11–in (279 mm) and 14–in. (356 mm) sizes are available for roof mounted applications.		X
Low Ambient Kit	Low Ambient Kit (Motormaster II Control) allows the use of mechanical cooling down to outdoor temperatures as low as 0°F (–18° C) when properly installed.		X
Manual Outside Air Damper	Manual Outside Air Damper includes hood and filter rack with adjustable damper blade for up to 25% outdoor air.		X
Square–to–Round Duct Transition Kit	Square–to–Round Duct Transition Kit enable 24–48 size units to be fitted to 14 in (356 mm). round ductwork.		X
Time Guard II	Automatically prevents the compressor from restarting for at least 4 minutes and 45 seconds after shutdown of the compressor. Not required when a corporate programmable thermostat is applied or with a RTU–MP control.		X
Dual Point Electric Heaters	Allows you to power the electric heater and unit contactor separately by having two individual field power supply circuits connected respectively.		X

*Refer to Price Page for application detail.

Electric Heaters

CATALOG ORDERING NO.	NOMINAL CAPACITY (kW)	FUSE QTY	USED WITH SIZES					
			24	30	36	42	48	60
ELECTRIC HEATERS (208/230 — SINGLE PHASE — 60 Hz)								
CPHEATER052A00	5.0	–	X	X	X			
CPHEATER064A00	5.0	4	X	X	X	X	X	X
CPHEATER069A00	7.2	–	X					
CPHEATER070A00	7.2	4	X	X	X	X	X	X
CPHEATER050A00	10.0	4	X	X	X	X	X	X
CPHEATER066A00	15.0	4		X	X	X	X	X
CPHEATER054A00	20.0	6				X	X	X
ELECTRIC HEATERS (208/230 — THREE PHASE — 60 Hz)								
CPHEATER055A00	5.0	–		X	X	X	X	X
CPHEATER056A00	10.0	–		X	X	X	X	
CPHEATER068A00	10.0	6		X	X	X	X	X
CPHEATER058A00	20.0	6		X	X	X	X	X
CPHEATER059A01	20.0	6				X	X	X
ELECTRIC HEATERS (460 — THREE PHASE — 60 Hz)								
CPHEATER061A00	10.0	–			X	X	X	X
CPHEATER062A00	15.0	–			X	X	X	X
CPHEATER063A00	20.0	–				X	X	X

NOTE: Electric heaters are rated at 240v. Refer to Multiplication Factors table for other voltages.
X = Approved combinations.

Minimum Airflow for Safe Electric Heater Operation (CFM)

SIZE	24	30	36	42	48	60
Cfm	800	1000	1200	1400	1600	1750

UNIT DIMENSIONS - 50VR-A24-30

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT IN/MM		CENTER OF GRAVITY IN/MM					
		LB	KG	"A"		X		Y		Z	
50VR-A24---30	208/230-1	348	157.9	44-1/8	1121	20-1/2	520.7	15-3/4	400.1	16-5/8	422.3
50VR-A30---(3/5)0	208/230-1, 208/230-3-60	356	161.5	46-1/8	1172	20-1/2	520.7	15-3/4	400.1	17-3/8	441.3

UNIT	VOLTAGE	CORNER WEIGHT LB/KG							
		"1"		"2"		"3"		"4"	
50VR-A24---30	208/230	41.8	23.7	55.7	31.6	83.5	47.4	139.2	55.2
50VR-A30---(3,5)0	208/230	42.7	24.2	57.0	32.3	85.4	48.4	142.4	56.5

NOTE: ALL TABLE DATA RELEVANT FOR ALL FACTORY INSTALLED OPTIONS EXCEPT ECONOMIZER

REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

	INCHES [MM]
TOP OF UNIT	14 [355.6]
DUCT SIDE OF UNIT	2 [50.8]
SIDE OPPOSITE DUCTS	14 [355.6]
BOTTOM OF UNIT	0 [0.0]
ELECTRICAL PANEL	36 [914.4]

NEC. REQUIRED CLEARANCES.

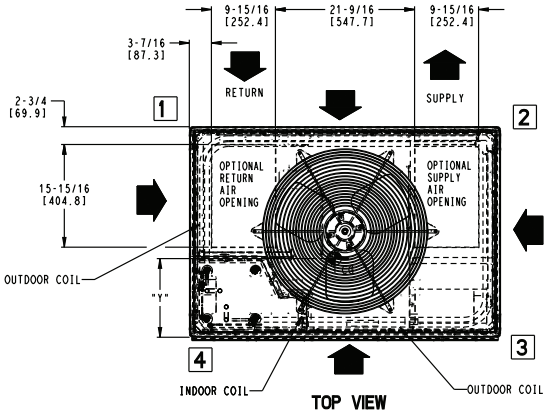
	INCHES [MM]
BETWEEN UNITS, POWER ENTRY SIDE	42 [1066.8]
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE	36 [914.0]
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE	42 [1066.8]

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

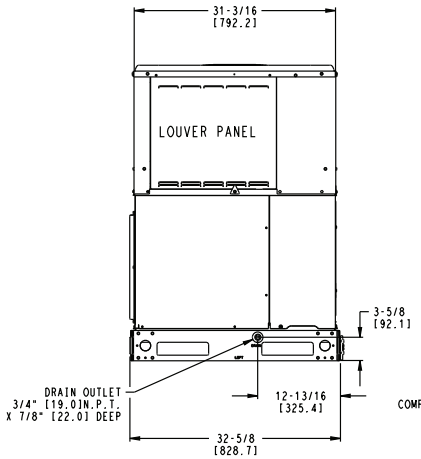
	INCHES [MM]
EVAP. COIL ACCESS SIDE	36 [914.0]
POWER ENTRY SIDE	42 [1066.8]
(EXCEPT FOR NEC REQUIREMENTS)	
UNIT TOP	48 [1219.2]
SIDE OPPOSITE DUCTS	36 [914.0]
DUCT PANEL	12 [304.8]*

*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12 [304.8] FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISED.

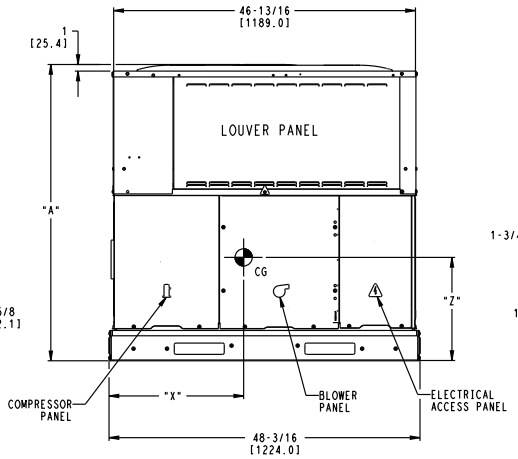
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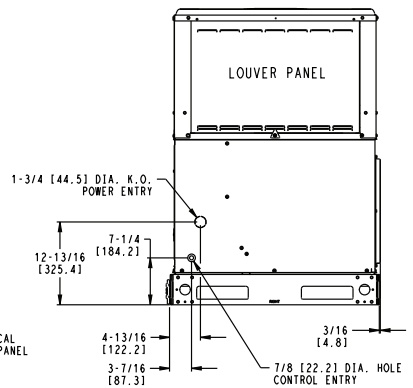
TOP VIEW



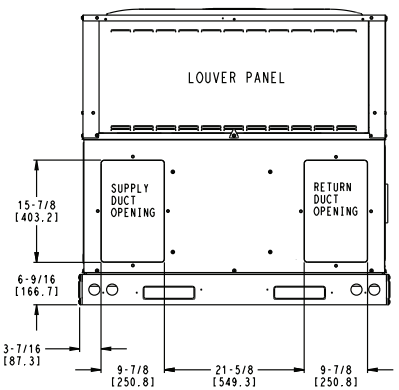
LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW



REAR VIEW

50VR500140	REV -

50VR-A

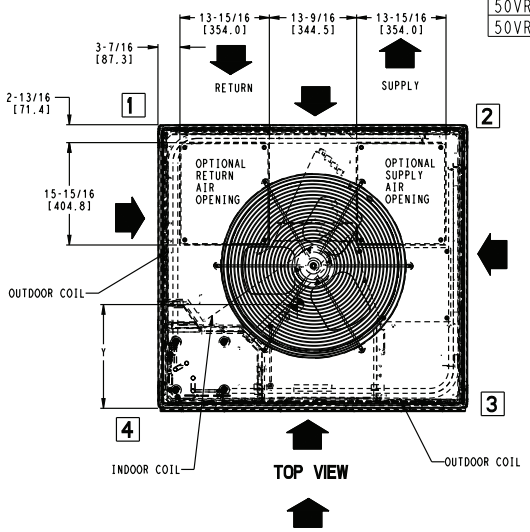
A13172

50VR-A

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT IN/MM		CENTER OF GRAVITY IN/MM					
		LB	KG	"A"		X		Y		Z	
50VR-A36---(3/5/6)0	208/230-1, 208/230-3-60, 460-3	413	187.3	44-3/4	1137	20-1/4	514.4	17-1/2	444.5	17-5/8	447.7
50VR-A42---(3/5/6)0	208/230-1, 208/230-3-60, 460-3	444	201.4	50-3/4	1289	20-1/4	514.4	17-1/2	444.5	17-5/8	447.7
50VR-A48---(3/5/6)0	208/230-1, 208/230-3-60, 460-3	447	202.8	48-3/4	1238	20-1/4	514.4	17-1/2	444.5	17-5/8	447.7
50VR-A60---(3/5/6)0	208/230-1, 208/230-3-60, 460-3	503	228.2	54-3/4	1391	20-1/4	514.4	17-1/2	444.5	18	457.2

UNIT	VOLTAGE	CORNER WEIGHTS LB/KG							
		"1"		"2"		"3"		"4"	
50VR-A36---(3/5/6)0	208/230/460	49.6	28.1	66.1	37.5	99.1	56.2	165.2	65.6
50VR-A42---(3/5/6)0	208/230/460	53.3	30.2	71.0	40.3	106.6	60.4	177.6	70.5
50VR-A48---(3/5/6)0	208/230/460	53.6	30.4	71.5	40.6	107.3	60.8	178.8	71.0
50VR-A60---(3/5/6)0	208/230/460	60.4	34.2	80.5	45.6	120.7	68.4	201.2	79.9

NOTE: ALL TABLE DATA RELEVANT FOR ALL FACTORY INSTALLED OPTIONS EXCEPT ECONOMIZER



TOP VIEW

REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

	INCHES [MM]
TOP OF UNIT	14 [355.6]
DUCT SIDE OF UNIT	2 [50.8]
SIDE OPPOSITE DUCTS	14 [355.6]
BOTTOM OF UNIT	0 [0.0]
ELECTRICAL PANEL	36 [914.4]

NEC. REQUIRED CLEARANCES.

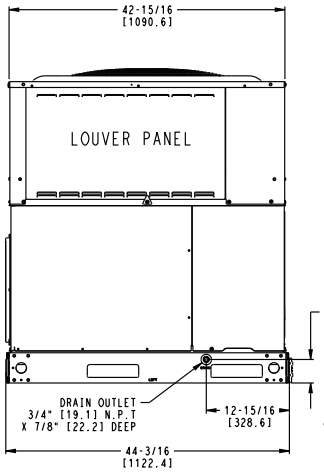
	INCHES [MM]
BETWEEN UNITS, POWER ENTRY SIDE	42 [1066.8]
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE	36 [914.0]
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE	42 [1066.8]

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

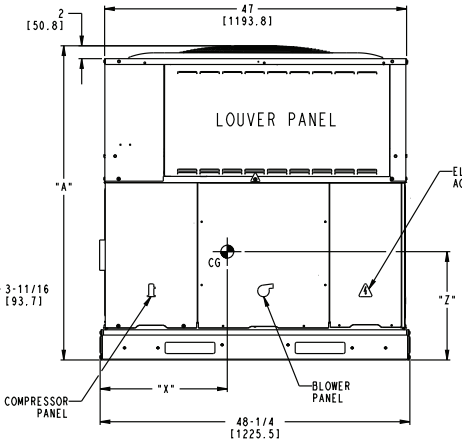
	INCHES [MM]
EVAP. COIL ACCESS SIDE	36 [914.0]
POWER ENTRY SIDE	42 [1066.8]
(EXCEPT FOR NEC REQUIREMENTS)	
UNIT TOP	48 [1219.2]
SIDE OPPOSITE DUCTS	36 [914.0]
DUCT PANEL	12 [304.8]*

*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12 [304.8] FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISED.

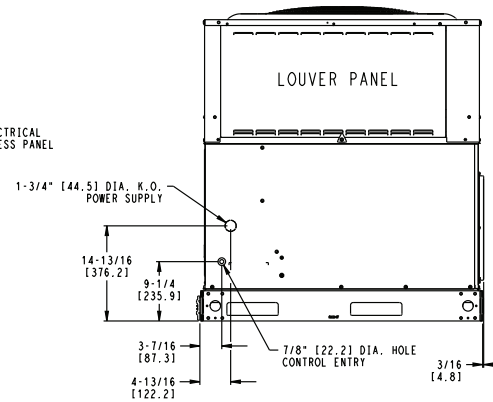
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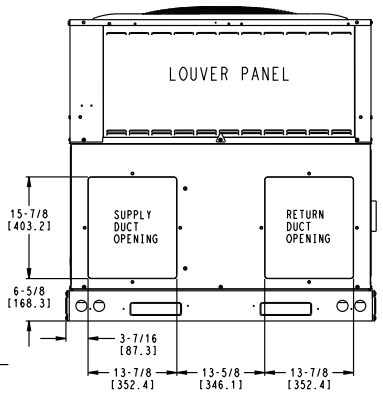
LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW



REAR VIEW

50VR500141	REV -

A13173

APPENDIX 10.2:

CADNAA OPERATIONS NOISE CALCULATIONS

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16503 - Canyon Springs

CadnaA Noise Prediction Model: 16503-02_Operation.cna
Date: 04.06.25
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (ft)	**6561.70**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (ft)	**3280.80**
Min. Length of Section (ft)	**3.30**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**328.08**
Search Radius Rcvr	**328.08**
Max. Distance Source - Rcvr	**3280.84 3280.84**
Min. Distance Rvcr - Reflector	**3.28 3.28**
Min. Distance Source - Reflector	**0.33**
Industrial (ISO 9613 (1996))	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (°F)	**50**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (mph)	**6.7**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates			
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)	
R1		R1	22.1	19.3	26.0	0.0	0.0	0.0		x	Total	5.00	r	6248024.66	2284231.70	5.00	
R2		R2	26.0	23.2	29.9	0.0	0.0	0.0		x	Total	5.00	r	6248535.34	2284635.52	5.00	
R3		R3	18.9	16.2	22.9	0.0	0.0	0.0		x	Total	5.00	r	6249726.49	2283928.40	5.00	

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC001		AC001	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248212.16	2285955.09	3.00
AC002		AC002	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248207.60	2285955.09	3.00
AC003		AC003	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248154.74	2285955.22	3.00
AC004		AC004	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248150.31	2285955.09	3.00
AC005		AC005	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248097.18	2285955.09	3.00
AC006		AC006	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248092.89	2285955.09	3.00
AC007		AC007	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248044.06	2285892.59	3.00
AC008		AC008	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248044.19	2285888.56	3.00
AC009		AC009	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248092.76	2285824.36	3.00
AC010		AC010	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248097.18	2285824.62	3.00
AC011		AC011	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248140.93	2285824.36	3.00
AC012		AC012	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248145.49	2285824.36	3.00
AC013		AC013	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248189.24	2285828.27	3.00
AC014		AC014	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248193.93	2285828.40	3.00
AC015		AC015	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248092.50	2285810.69	3.00
AC016		AC016	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248097.05	2285810.69	3.00
AC017		AC017	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248141.07	2285810.56	3.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC018		AC018	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248145.62	2285810.56	3.00
AC019		AC019	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248189.37	2285810.56	3.00
AC020		AC020	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248193.93	2285810.56	3.00
AC021		AC021	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248044.06	2285746.76	3.00
AC022		AC022	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248044.19	2285742.72	3.00
AC023		AC023	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248092.50	2285678.40	3.00
AC024		AC024	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248096.79	2285678.40	3.00
AC025		AC025	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248140.80	2285678.66	3.00
AC026		AC026	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248145.62	2285678.53	3.00
AC027		AC027	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248189.24	2285678.66	3.00
AC028		AC028	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248193.80	2285678.40	3.00
AC029		AC029	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248193.67	2285664.73	3.00
AC030		AC030	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248189.37	2285664.34	3.00
AC031		AC031	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248145.62	2285664.60	3.00
AC032		AC032	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248140.93	2285664.47	3.00
AC033		AC033	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248097.18	2285664.73	3.00
AC034		AC034	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248092.24	2285664.47	3.00
AC035		AC035	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248043.93	2285600.80	3.00
AC036		AC036	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248044.06	2285596.50	3.00
AC037		AC037	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248092.24	2285532.70	3.00
AC038		AC038	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248096.66	2285532.57	3.00
AC039		AC039	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248140.93	2285532.44	3.00
AC040		AC040	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248145.36	2285532.70	3.00
AC041		AC041	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248189.50	2285532.44	3.00
AC042		AC042	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248193.54	2285532.57	3.00
AC043		AC043	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248193.54	2285518.64	3.00
AC044		AC044	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248189.24	2285518.64	3.00
AC045		AC045	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248145.36	2285518.64	3.00
AC046		AC046	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248141.07	2285518.64	3.00
AC047		AC047	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248096.92	2285518.77	3.00
AC048		AC048	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248092.50	2285518.77	3.00
AC049		AC049	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248043.67	2285454.70	3.00
AC050		AC050	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248043.41	2285450.80	3.00
AC051		AC051	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248094.71	2285386.60	3.00
AC052		AC052	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248094.58	2285382.96	3.00
AC053		AC053	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248143.15	2285387.39	3.00
AC054		AC054	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248142.76	2285383.35	3.00
AC055		AC055	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248191.59	2285386.86	3.00
AC056		AC056	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248191.46	2285383.09	3.00
AC057		AC057	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248309.42	2285414.60	3.00
AC058		AC058	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248309.16	2285419.68	3.00
AC059		AC059	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248309.42	2285474.36	3.00
AC060		AC060	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248309.16	2285478.40	3.00
AC061		AC061	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248401.05	2285478.53	3.00
AC062		AC062	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248400.87	2285474.36	3.00
AC063		AC063	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248400.87	2285419.33	3.00
AC064		AC064	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248400.70	2285414.99	3.00
AC065		AC065	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248294.80	2285601.45	3.00
AC066		AC066	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248290.46	2285583.05	3.00
AC067		AC067	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248330.04	2285581.31	3.00
AC068		AC068	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248452.26	2285605.09	3.00
AC069		AC069	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248452.61	2285598.84	3.00
AC070		AC070	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248483.86	2285476.97	3.00
AC071		AC071	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248483.86	2285473.15	3.00
AC072		AC072	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248484.38	2285416.20	3.00
AC073		AC073	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248483.51	2285412.39	3.00
AC074		AC074	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248607.30	2285414.82	3.00
AC075		AC075	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248606.95	2285419.33	3.00
AC076		AC076	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248612.85	2285458.05	3.00
AC077		AC077	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248608.86	2285458.05	3.00
AC078		AC078	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248612.98	2285506.40	3.00
AC079		AC079	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248608.97	2285506.50	3.00
AC080		AC080	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248612.77	2285554.79	3.00
AC081		AC081	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248608.75	2285554.79	3.00
AC082		AC082	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248472.92	2285592.38	3.00
AC083		AC083	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248476.92	2285592.20	3.00
AC084		AC084	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248472.92	2285640.81	3.00
AC085		AC085	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248476.92	2285640.64	3.00
AC086		AC086	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.03	2285602.97	3.00
AC087		AC087	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248613.37	2285603.14	3.00
AC088		AC088	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248612.68	2285651.75	3.00
AC089		AC089	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.21	2285651.75	3.00
AC090		AC090	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248608.86	2285700.19	3.00
AC091		AC091	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248613.03	2285700.02	3.00
AC092		AC092	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.03	2285748.28	3.00
AC093		AC093	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248612.85	2285748.28	3.00
AC094		AC094	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.21	2285796.72	3.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC095		AC095	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248613.20	2285796.72	3.00
AC096		AC096	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.21	2285845.33	3.00
AC097		AC097	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248613.55	2285845.33	3.00
AC098		AC098	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248488.20	2285692.20	3.00
AC099		AC099	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248488.20	2285687.52	3.00
AC100		AC100	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248439.59	2285691.86	3.00
AC101		AC101	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248440.11	2285687.86	3.00
AC102		AC102	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248391.50	2285692.20	3.00
AC103		AC103	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248391.50	2285688.04	3.00
AC104		AC104	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248343.06	2285692.20	3.00
AC105		AC105	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248343.24	2285688.21	3.00
AC106		AC106	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248294.80	2285692.03	3.00
AC107		AC107	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248294.97	2285688.38	3.00
AC108		AC108	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248292.82	2285822.15	3.00
AC109		AC109	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248296.84	2285822.15	3.00
AC110		AC110	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248296.84	2285828.34	3.00
AC111		AC111	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248292.71	2285828.01	3.00
AC112		AC112	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248341.22	2285828.01	3.00
AC113		AC113	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248345.67	2285828.01	3.00
AC114		AC114	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248340.89	2285822.04	3.00
AC115		AC115	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248345.77	2285822.37	3.00
AC116		AC116	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248389.18	2285828.34	3.00
AC117		AC117	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248393.73	2285827.90	3.00
AC118		AC118	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248389.50	2285822.26	3.00
AC119		AC119	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248393.95	2285822.26	3.00
AC120		AC120	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248437.90	2285828.01	3.00
AC121		AC121	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248442.35	2285828.01	3.00
AC122		AC122	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248438.01	2285821.93	3.00
AC123		AC123	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248442.02	2285821.93	3.00
AC124		AC124	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248486.07	2285828.01	3.00
AC125		AC125	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248490.74	2285828.01	3.00
AC126		AC126	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248486.29	2285821.93	3.00
AC127		AC127	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248490.63	2285821.83	3.00
AC128		AC128	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.39	2285955.42	3.00
AC129		AC129	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248613.29	2285955.42	3.00
AC130		AC130	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.13	2286003.73	3.00
AC131		AC131	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248613.16	2286003.99	3.00
AC132		AC132	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248609.26	2286052.16	3.00
AC133		AC133	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248613.16	2286052.29	3.00
AC134		AC134	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248545.24	2286103.23	3.00
AC135		AC135	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248541.22	2286102.79	3.00
AC136		AC136	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248477.64	2286054.40	3.00
AC137		AC137	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248477.10	2286050.49	3.00
AC138		AC138	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248471.24	2286054.72	3.00
AC139		AC139	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248471.45	2286050.17	3.00
AC140		AC140	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248477.42	2286006.11	3.00
AC141		AC141	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248477.10	2286001.56	3.00
AC142		AC142	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248471.24	2286006.01	3.00
AC143		AC143	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248471.13	2286001.34	3.00
AC144		AC144	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248477.21	2285957.83	3.00
AC145		AC145	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248476.88	2285952.95	3.00
AC146		AC146	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248470.80	2285953.27	3.00
AC147		AC147	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248471.45	2285957.83	3.00
AC148		AC148	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248339.14	2285953.49	3.00
AC149		AC149	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248339.14	2285957.94	3.00
AC150		AC150	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248333.39	2285978.01	3.00
AC151		AC151	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248333.39	2285982.78	3.00
AC152		AC152	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248339.47	2286001.66	3.00
AC153		AC153	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248339.14	2286006.33	3.00
AC154		AC154	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248333.04	2286026.72	3.00
AC155		AC155	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248333.38	2286030.89	3.00
AC156		AC156	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248339.11	2286050.33	3.00
AC157		AC157	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248339.37	2286054.50	3.00
AC158		AC158	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248333.56	2286074.81	3.00
AC159		AC159	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248333.38	2286079.76	3.00
AC160		AC160	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248403.30	2286103.39	3.00
AC161		AC161	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6248407.73	2286103.52	3.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
				left	right		horz.	vert.	Begin	End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
BLDG001			BLDG001	x	0		24.00	r	6248046.49	2285947.03	24.00	0.00
									6248063.42	2285946.82	24.00	0.00
									6248062.55	2285920.99	24.00	0.00
									6248067.54	2285921.21	24.00	0.00
									6248067.33	2285860.44	24.00	0.00
									6248063.20	2285859.79	24.00	0.00
									6248062.99	2285834.62	24.00	0.00
									6248046.28	2285834.40	24.00	0.00
BLDG002			BLDG002	x	0		24.00	r	6248069.50	2285946.60	24.00	0.00
									6248077.74	2285946.60	24.00	0.00
									6248078.18	2285952.89	24.00	0.00
									6248112.68	2285953.54	24.00	0.00
									6248112.25	2285946.82	24.00	0.00
									6248119.63	2285946.16	24.00	0.00
									6248120.28	2285927.50	24.00	0.00
									6248117.02	2285927.07	24.00	0.00
									6248116.37	2285910.36	24.00	0.00
									6248073.84	2285910.36	24.00	0.00
									6248073.62	2285927.50	24.00	0.00
									6248069.71	2285927.28	24.00	0.00
BLDG003			BLDG003	x	0		24.00	r	6248127.22	2285946.60	24.00	0.00
									6248135.25	2285946.16	24.00	0.00
									6248135.25	2285953.11	24.00	0.00
									6248169.54	2285953.33	24.00	0.00
									6248169.76	2285946.60	24.00	0.00
									6248178.00	2285946.60	24.00	0.00
									6248177.57	2285927.07	24.00	0.00
									6248173.88	2285927.50	24.00	0.00
									6248173.66	2285910.14	24.00	0.00
									6248131.35	2285910.36	24.00	0.00
									6248131.13	2285927.28	24.00	0.00
									6248126.79	2285927.28	24.00	0.00
BLDG004			BLDG004	x	0		24.00	r	6248184.30	2285945.95	24.00	0.00
									6248192.76	2285946.16	24.00	0.00
									6248192.54	2285953.11	24.00	0.00
									6248226.61	2285953.54	24.00	0.00
									6248227.27	2285946.38	24.00	0.00
									6248234.86	2285946.38	24.00	0.00
									6248235.08	2285926.63	24.00	0.00
									6248231.17	2285926.63	24.00	0.00
									6248230.74	2285909.92	24.00	0.00
									6248188.85	2285910.36	24.00	0.00
									6248188.20	2285927.72	24.00	0.00
									6248184.51	2285926.85	24.00	0.00
BLDG005			BLDG005	x	0		24.00	r	6248074.27	2285869.78	24.00	0.00
									6248095.10	2285869.34	24.00	0.00
									6248095.10	2285874.12	24.00	0.00
									6248116.37	2285874.33	24.00	0.00
									6248116.37	2285854.15	24.00	0.00
									6248119.84	2285854.15	24.00	0.00
									6248120.71	2285834.62	24.00	0.00
									6248112.25	2285834.40	24.00	0.00
									6248112.03	2285826.37	24.00	0.00
									6248077.53	2285826.37	24.00	0.00
									6248077.74	2285833.10	24.00	0.00
									6248069.71	2285833.53	24.00	0.00
									6248069.71	2285852.41	24.00	0.00
									6248073.84	2285853.07	24.00	0.00
BLDG006			BLDG006	x	0		24.00	r	6248131.13	2285874.33	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248155.87	2285874.77	24.00	0.00
									6248155.87	2285856.75	24.00	0.00
									6248159.34	2285856.75	24.00	0.00
									6248159.77	2285834.62	24.00	0.00
									6248155.87	2285834.84	24.00	0.00
									6248156.30	2285826.59	24.00	0.00
									6248131.56	2285827.02	24.00	0.00
									6248130.69	2285834.62	24.00	0.00
									6248127.22	2285835.27	24.00	0.00
									6248126.57	2285856.32	24.00	0.00
									6248131.13	2285856.97	24.00	0.00
BLDG007			BLDG007	x	0		24.00	r	6248166.28	2285858.06	24.00	0.00
									6248170.41	2285857.84	24.00	0.00
									6248171.28	2285878.46	24.00	0.00
									6248204.48	2285878.46	24.00	0.00
									6248204.26	2285860.88	24.00	0.00
									6248208.17	2285861.09	24.00	0.00
									6248208.17	2285838.74	24.00	0.00
									6248204.48	2285838.96	24.00	0.00
									6248204.48	2285830.28	24.00	0.00
									6248175.18	2285830.06	24.00	0.00
									6248174.53	2285838.74	24.00	0.00
									6248165.85	2285838.96	24.00	0.00
BLDG008			BLDG008	x	0		24.00	r	6248077.53	2285808.58	24.00	0.00
									6248111.81	2285809.01	24.00	0.00
									6248112.03	2285800.11	24.00	0.00
									6248120.50	2285800.11	24.00	0.00
									6248120.93	2285780.80	24.00	0.00
									6248115.94	2285780.80	24.00	0.00
									6248116.59	2285760.83	24.00	0.00
									6248095.32	2285760.40	24.00	0.00
									6248095.32	2285766.04	24.00	0.00
									6248073.84	2285765.83	24.00	0.00
									6248073.62	2285781.23	24.00	0.00
									6248068.63	2285782.10	24.00	0.00
									6248068.85	2285801.63	24.00	0.00
									6248077.74	2285801.85	24.00	0.00
BLDG009			BLDG009	x	0		24.00	r	6248127.01	2285800.11	24.00	0.00
									6248131.13	2285800.11	24.00	0.00
									6248130.91	2285808.58	24.00	0.00
									6248155.65	2285809.01	24.00	0.00
									6248156.09	2285800.11	24.00	0.00
									6248159.12	2285800.33	24.00	0.00
									6248159.77	2285778.41	24.00	0.00
									6248156.30	2285778.63	24.00	0.00
									6248155.87	2285761.70	24.00	0.00
									6248130.69	2285761.49	24.00	0.00
									6248130.26	2285777.98	24.00	0.00
									6248125.92	2285777.98	24.00	0.00
BLDG010			BLDG010	x	0		24.00	r	6248165.85	2285799.68	24.00	0.00
									6248175.18	2285800.55	24.00	0.00
									6248175.18	2285809.01	24.00	0.00
									6248204.48	2285809.01	24.00	0.00
									6248204.26	2285800.55	24.00	0.00
									6248207.73	2285799.90	24.00	0.00
									6248208.17	2285777.76	24.00	0.00
									6248204.26	2285778.20	24.00	0.00
									6248204.26	2285760.62	24.00	0.00
									6248170.41	2285760.62	24.00	0.00
									6248170.63	2285781.23	24.00	0.00
									6248166.28	2285780.80	24.00	0.00
BLDG011			BLDG011	x	0		24.00	r	6248046.15	2285800.98	24.00	0.00
									6248062.86	2285801.42	24.00	0.00
									6248062.86	2285774.94	24.00	0.00
									6248067.41	2285775.37	24.00	0.00
									6248066.98	2285713.96	24.00	0.00
									6248063.07	2285714.39	24.00	0.00
									6248062.86	2285688.13	24.00	0.00
									6248045.71	2285687.92	24.00	0.00
BLDG012			BLDG012	x	0		24.00	r	6248073.49	2285723.51	24.00	0.00
									6248095.41	2285723.51	24.00	0.00
									6248095.19	2285728.28	24.00	0.00
									6248116.24	2285729.15	24.00	0.00
									6248116.24	2285708.10	24.00	0.00
									6248120.58	2285708.10	24.00	0.00
									6248120.36	2285688.79	24.00	0.00
									6248111.68	2285688.35	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248112.34	2285680.76	24.00	0.00
									6248077.61	2285680.32	24.00	0.00
									6248077.18	2285687.48	24.00	0.00
									6248069.15	2285687.92	24.00	0.00
									6248069.15	2285706.80	24.00	0.00
									6248073.49	2285706.80	24.00	0.00
BLDG013			BLDG013	x	0		24.00	r	6248131.43	2285728.50	24.00	0.00
									6248155.74	2285728.50	24.00	0.00
									6248155.96	2285711.36	24.00	0.00
									6248159.43	2285711.14	24.00	0.00
									6248159.21	2285688.57	24.00	0.00
									6248156.39	2285688.57	24.00	0.00
									6248155.96	2285680.54	24.00	0.00
									6248129.91	2285680.76	24.00	0.00
									6248129.48	2285688.13	24.00	0.00
									6248126.66	2285688.79	24.00	0.00
									6248127.31	2285710.70	24.00	0.00
									6248131.00	2285711.14	24.00	0.00
BLDG014			BLDG014	x	0		24.00	r	6248171.15	2285728.50	24.00	0.00
									6248204.13	2285729.15	24.00	0.00
									6248204.13	2285711.14	24.00	0.00
									6248207.82	2285711.36	24.00	0.00
									6248207.60	2285689.00	24.00	0.00
									6248203.92	2285688.35	24.00	0.00
									6248204.57	2285680.76	24.00	0.00
									6248174.84	2285680.11	24.00	0.00
									6248174.40	2285689.00	24.00	0.00
									6248166.59	2285688.79	24.00	0.00
									6248166.37	2285707.45	24.00	0.00
									6248170.71	2285708.32	24.00	0.00
BLDG015			BLDG015	x	0		24.00	r	6248077.86	2285662.27	24.00	0.00
									6248112.49	2285662.53	24.00	0.00
									6248111.97	2285654.19	24.00	0.00
									6248120.31	2285654.19	24.00	0.00
									6248120.31	2285635.18	24.00	0.00
									6248116.14	2285635.18	24.00	0.00
									6248116.14	2285614.09	24.00	0.00
									6248095.31	2285613.83	24.00	0.00
									6248094.79	2285620.08	24.00	0.00
									6248073.95	2285619.82	24.00	0.00
									6248073.69	2285634.92	24.00	0.00
									6248070.05	2285636.49	24.00	0.00
									6248069.79	2285656.02	24.00	0.00
									6248077.34	2285656.02	24.00	0.00
BLDG016			BLDG016	x	0		24.00	r	6248126.56	2285654.45	24.00	0.00
									6248130.72	2285654.71	24.00	0.00
									6248130.72	2285662.53	24.00	0.00
									6248155.98	2285663.05	24.00	0.00
									6248156.24	2285654.19	24.00	0.00
									6248159.11	2285654.19	24.00	0.00
									6248159.63	2285632.06	24.00	0.00
									6248155.72	2285631.54	24.00	0.00
									6248156.24	2285614.87	24.00	0.00
									6248130.98	2285614.61	24.00	0.00
									6248130.98	2285632.84	24.00	0.00
									6248126.82	2285632.06	24.00	0.00
BLDG017			BLDG017	x	0		24.00	r	6248165.88	2285654.71	24.00	0.00
									6248174.21	2285654.45	24.00	0.00
									6248174.99	2285662.01	24.00	0.00
									6248203.90	2285663.05	24.00	0.00
									6248204.68	2285654.45	24.00	0.00
									6248207.81	2285654.45	24.00	0.00
									6248208.07	2285631.54	24.00	0.00
									6248204.42	2285631.54	24.00	0.00
									6248203.90	2285614.61	24.00	0.00
									6248170.83	2285614.87	24.00	0.00
									6248170.31	2285634.92	24.00	0.00
									6248166.14	2285635.18	24.00	0.00
BLDG018			BLDG018	x	0		24.00	r	6248046.09	2285654.97	24.00	0.00
									6248062.75	2285654.97	24.00	0.00
									6248062.75	2285629.19	24.00	0.00
									6248067.18	2285628.67	24.00	0.00
									6248067.44	2285568.26	24.00	0.00
									6248062.75	2285568.00	24.00	0.00
									6248062.75	2285542.21	24.00	0.00
									6248046.09	2285541.95	24.00	0.00
BLDG019			BLDG019	x	0		24.00	r	6248073.69	2285577.89	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248095.05	2285577.63	24.00	0.00
									6248094.79	2285583.36	24.00	0.00
									6248115.88	2285582.84	24.00	0.00
									6248115.88	2285562.79	24.00	0.00
									6248120.31	2285562.53	24.00	0.00
									6248120.31	2285543.00	24.00	0.00
									6248112.49	2285543.00	24.00	0.00
									6248111.97	2285534.66	24.00	0.00
									6248077.08	2285534.66	24.00	0.00
									6248077.08	2285541.69	24.00	0.00
									6248069.27	2285541.43	24.00	0.00
									6248069.79	2285560.96	24.00	0.00
									6248073.69	2285561.22	24.00	0.00
BLDG020			BLDG020	x	0		24.00	r	6248130.72	2285582.58	24.00	0.00
									6248155.72	2285582.84	24.00	0.00
									6248155.72	2285565.39	24.00	0.00
									6248159.11	2285565.39	24.00	0.00
									6248159.37	2285543.26	24.00	0.00
									6248156.24	2285543.26	24.00	0.00
									6248155.46	2285534.92	24.00	0.00
									6248130.72	2285534.66	24.00	0.00
									6248130.46	2285542.74	24.00	0.00
									6248126.82	2285543.00	24.00	0.00
									6248126.82	2285566.17	24.00	0.00
									6248130.72	2285565.91	24.00	0.00
BLDG021			BLDG021	x	0		24.00	r	6248170.83	2285582.84	24.00	0.00
									6248204.42	2285582.84	24.00	0.00
									6248204.16	2285565.39	24.00	0.00
									6248207.81	2285565.65	24.00	0.00
									6248208.33	2285543.26	24.00	0.00
									6248204.94	2285542.74	24.00	0.00
									6248204.16	2285535.18	24.00	0.00
									6248174.21	2285534.92	24.00	0.00
									6248173.95	2285543.26	24.00	0.00
									6248166.66	2285543.26	24.00	0.00
									6248166.66	2285562.27	24.00	0.00
									6248170.31	2285562.27	24.00	0.00
BLDG022			BLDG022	x	0		24.00	r	6248077.60	2285516.69	24.00	0.00
									6248111.71	2285516.95	24.00	0.00
									6248111.71	2285509.14	24.00	0.00
									6248119.79	2285508.36	24.00	0.00
									6248120.31	2285488.83	24.00	0.00
									6248115.36	2285489.35	24.00	0.00
									6248115.88	2285468.78	24.00	0.00
									6248094.79	2285468.52	24.00	0.00
									6248094.53	2285473.72	24.00	0.00
									6248073.95	2285473.72	24.00	0.00
									6248073.95	2285491.43	24.00	0.00
									6248070.05	2285490.65	24.00	0.00
									6248070.31	2285510.18	24.00	0.00
									6248077.60	2285510.18	24.00	0.00
BLDG023			BLDG023	x	0		24.00	r	6248126.82	2285508.36	24.00	0.00
									6248130.46	2285508.62	24.00	0.00
									6248130.20	2285516.69	24.00	0.00
									6248155.72	2285516.95	24.00	0.00
									6248155.72	2285508.36	24.00	0.00
									6248159.37	2285508.36	24.00	0.00
									6248159.37	2285486.22	24.00	0.00
									6248155.98	2285485.96	24.00	0.00
									6248155.98	2285469.04	24.00	0.00
									6248130.72	2285469.04	24.00	0.00
									6248130.46	2285487.01	24.00	0.00
									6248126.82	2285487.01	24.00	0.00
BLDG024			BLDG024	x	0		24.00	r	6248166.14	2285508.10	24.00	0.00
									6248174.47	2285508.62	24.00	0.00
									6248174.21	2285517.21	24.00	0.00
									6248204.16	2285517.21	24.00	0.00
									6248204.68	2285508.36	24.00	0.00
									6248208.07	2285508.62	24.00	0.00
									6248208.07	2285486.49	24.00	0.00
									6248204.16	2285486.49	24.00	0.00
									6248204.16	2285468.52	24.00	0.00
									6248171.09	2285468.78	24.00	0.00
									6248170.05	2285488.57	24.00	0.00
									6248166.14	2285489.09	24.00	0.00
BLDG025			BLDG025	x	0		24.00	r	6248045.83	2285509.14	24.00	0.00
									6248062.75	2285509.14	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248063.02	2285483.10	24.00	0.00
									6248066.92	2285483.36	24.00	0.00
									6248066.92	2285421.90	24.00	0.00
									6248062.75	2285422.16	24.00	0.00
									6248062.49	2285396.90	24.00	0.00
									6248045.83	2285396.12	24.00	0.00
BLDG026			BLDG026	x	0		24.00	r	6248069.27	2285414.61	24.00	0.00
									6248073.69	2285415.13	24.00	0.00
									6248073.43	2285432.32	24.00	0.00
									6248094.79	2285432.32	24.00	0.00
									6248094.79	2285436.75	24.00	0.00
									6248115.88	2285436.75	24.00	0.00
									6248115.88	2285415.91	24.00	0.00
									6248120.05	2285416.17	24.00	0.00
									6248120.57	2285396.90	24.00	0.00
									6248111.45	2285397.16	24.00	0.00
									6248111.71	2285388.83	24.00	0.00
									6248078.38	2285388.57	24.00	0.00
									6248077.86	2285395.86	24.00	0.00
									6248069.00	2285396.12	24.00	0.00
BLDG027			BLDG027	x	0		24.00	r	6248130.72	2285436.75	24.00	0.00
									6248155.98	2285437.01	24.00	0.00
									6248155.98	2285419.30	24.00	0.00
									6248159.89	2285419.82	24.00	0.00
									6248159.11	2285396.90	24.00	0.00
									6248155.46	2285396.38	24.00	0.00
									6248155.46	2285388.83	24.00	0.00
									6248130.46	2285388.83	24.00	0.00
									6248130.46	2285396.90	24.00	0.00
									6248127.08	2285396.90	24.00	0.00
									6248126.82	2285419.30	24.00	0.00
									6248130.46	2285419.56	24.00	0.00
BLDG028			BLDG028	x	0		24.00	r	6248170.83	2285437.27	24.00	0.00
									6248212.75	2285436.75	24.00	0.00
									6248212.49	2285416.17	24.00	0.00
									6248216.66	2285415.91	24.00	0.00
									6248216.66	2285396.64	24.00	0.00
									6248208.59	2285396.38	24.00	0.00
									6248208.85	2285388.57	24.00	0.00
									6248174.47	2285388.83	24.00	0.00
									6248174.21	2285396.90	24.00	0.00
									6248165.88	2285397.16	24.00	0.00
									6248166.14	2285416.43	24.00	0.00
									6248170.31	2285416.43	24.00	0.00
BLDG029			BLDG029	x	0		24.00	r	6248259.63	2285438.31	24.00	0.00
									6248279.42	2285438.57	24.00	0.00
									6248279.68	2285442.47	24.00	0.00
									6248299.21	2285442.74	24.00	0.00
									6248299.21	2285434.40	24.00	0.00
									6248307.55	2285434.14	24.00	0.00
									6248307.55	2285400.03	24.00	0.00
									6248299.21	2285400.29	24.00	0.00
									6248299.21	2285391.69	24.00	0.00
									6248284.11	2285391.43	24.00	0.00
									6248284.63	2285389.35	24.00	0.00
									6248280.20	2285389.09	24.00	0.00
									6248279.94	2285395.60	24.00	0.00
									6248259.37	2285396.38	24.00	0.00
BLDG030			BLDG030	x	0		24.00	r	6248259.63	2285497.68	24.00	0.00
									6248279.94	2285497.94	24.00	0.00
									6248279.68	2285501.59	24.00	0.00
									6248298.43	2285501.85	24.00	0.00
									6248298.95	2285493.52	24.00	0.00
									6248307.03	2285493.52	24.00	0.00
									6248307.29	2285458.88	24.00	0.00
									6248298.69	2285458.10	24.00	0.00
									6248298.95	2285450.81	24.00	0.00
									6248280.20	2285450.81	24.00	0.00
									6248280.20	2285454.71	24.00	0.00
									6248259.11	2285454.71	24.00	0.00
BLDG031			BLDG031	x	0		24.00	r	6248402.86	2285493.26	24.00	0.00
									6248411.19	2285493.26	24.00	0.00
									6248411.71	2285501.59	24.00	0.00
									6248430.98	2285502.37	24.00	0.00
									6248430.72	2285497.68	24.00	0.00
									6248450.78	2285496.90	24.00	0.00
									6248451.30	2285455.24	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248430.46	2285455.76	24.00	0.00
									6248431.24	2285451.07	24.00	0.00
									6248411.45	2285450.81	24.00	0.00
									6248411.19	2285459.66	24.00	0.00
									6248403.12	2285459.66	24.00	0.00
BLDG032			BLDG032	x	0		24.00	r	6248410.93	2285442.21	24.00	0.00
									6248430.98	2285442.47	24.00	0.00
									6248430.98	2285438.57	24.00	0.00
									6248450.78	2285437.27	24.00	0.00
									6248450.78	2285395.86	24.00	0.00
									6248430.72	2285396.12	24.00	0.00
									6248430.98	2285388.31	24.00	0.00
									6248425.52	2285388.57	24.00	0.00
									6248425.52	2285391.17	24.00	0.00
									6248411.19	2285391.17	24.00	0.00
									6248411.45	2285398.99	24.00	0.00
									6248403.90	2285400.03	24.00	0.00
									6248403.12	2285433.88	24.00	0.00
									6248411.71	2285433.62	24.00	0.00
BLDG033			BLDG033	x	0		24.00	r	6248492.96	2285500.29	24.00	0.00
									6248512.75	2285500.55	24.00	0.00
									6248512.23	2285496.90	24.00	0.00
									6248529.16	2285496.64	24.00	0.00
									6248528.90	2285453.67	24.00	0.00
									6248512.23	2285453.67	24.00	0.00
									6248511.97	2285449.77	24.00	0.00
									6248492.96	2285449.51	24.00	0.00
									6248493.22	2285458.36	24.00	0.00
									6248486.45	2285458.62	24.00	0.00
									6248486.19	2285491.69	24.00	0.00
									6248492.70	2285491.69	24.00	0.00
BLDG034			BLDG034	x	0		24.00	r	6248492.96	2285439.35	24.00	0.00
									6248512.23	2285440.13	24.00	0.00
									6248512.75	2285435.44	24.00	0.00
									6248529.16	2285435.18	24.00	0.00
									6248529.16	2285392.74	24.00	0.00
									6248512.23	2285393.26	24.00	0.00
									6248512.23	2285388.83	24.00	0.00
									6248492.44	2285388.31	24.00	0.00
									6248492.70	2285396.90	24.00	0.00
									6248486.45	2285396.90	24.00	0.00
									6248486.19	2285431.02	24.00	0.00
									6248493.22	2285431.28	24.00	0.00
BLDG035			BLDG035	x	0		24.00	r	6248574.21	2285434.40	24.00	0.00
									6248597.13	2285433.62	24.00	0.00
									6248597.13	2285429.97	24.00	0.00
									6248604.94	2285429.71	24.00	0.00
									6248604.68	2285404.45	24.00	0.00
									6248596.61	2285404.45	24.00	0.00
									6248596.87	2285400.81	24.00	0.00
									6248574.47	2285400.81	24.00	0.00
									6248574.47	2285404.19	24.00	0.00
									6248556.50	2285404.71	24.00	0.00
									6248557.03	2285429.97	24.00	0.00
									6248574.73	2285429.71	24.00	0.00
BLDG036			BLDG036	x	0		24.00	r	6248559.11	2285470.86	24.00	0.00
									6248576.56	2285470.86	24.00	0.00
									6248576.30	2285475.03	24.00	0.00
									6248599.21	2285474.51	24.00	0.00
									6248598.69	2285470.60	24.00	0.00
									6248607.29	2285470.34	24.00	0.00
									6248606.77	2285445.60	24.00	0.00
									6248598.69	2285445.86	24.00	0.00
									6248598.95	2285441.69	24.00	0.00
									6248576.82	2285441.69	24.00	0.00
									6248576.04	2285445.34	24.00	0.00
									6248558.85	2285446.12	24.00	0.00
BLDG037			BLDG037	x	0		24.00	r	6248559.11	2285527.37	24.00	0.00
									6248579.68	2285527.63	24.00	0.00
									6248580.20	2285532.06	24.00	0.00
									6248598.69	2285532.06	24.00	0.00
									6248598.95	2285523.46	24.00	0.00
									6248606.50	2285523.20	24.00	0.00
									6248607.03	2285489.35	24.00	0.00
									6248598.69	2285489.35	24.00	0.00
									6248598.95	2285481.02	24.00	0.00
									6248580.20	2285481.02	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248579.42	2285485.44	24.00	0.00
									6248559.11	2285485.44	24.00	0.00
BLDG038			BLDG038	x	0		24.00	r	6248559.37	2285623.99	24.00	0.00
									6248579.94	2285624.25	24.00	0.00
									6248580.46	2285628.67	24.00	0.00
									6248598.95	2285628.67	24.00	0.00
									6248599.21	2285620.08	24.00	0.00
									6248606.77	2285619.82	24.00	0.00
									6248607.29	2285585.96	24.00	0.00
									6248598.95	2285585.96	24.00	0.00
									6248599.21	2285577.63	24.00	0.00
									6248580.46	2285577.63	24.00	0.00
									6248579.68	2285582.06	24.00	0.00
									6248559.37	2285582.06	24.00	0.00
BLDG039			BLDG039	x	0		24.00	r	6248558.85	2285720.86	24.00	0.00
									6248579.42	2285721.12	24.00	0.00
									6248579.94	2285725.55	24.00	0.00
									6248598.43	2285725.55	24.00	0.00
									6248598.69	2285716.95	24.00	0.00
									6248606.24	2285716.69	24.00	0.00
									6248606.77	2285682.84	24.00	0.00
									6248598.43	2285682.84	24.00	0.00
									6248598.69	2285674.51	24.00	0.00
									6248579.94	2285674.51	24.00	0.00
									6248579.16	2285678.93	24.00	0.00
									6248558.85	2285678.93	24.00	0.00
BLDG040			BLDG040	x	0		24.00	r	6248559.11	2285817.74	24.00	0.00
									6248579.68	2285818.00	24.00	0.00
									6248580.20	2285822.42	24.00	0.00
									6248598.69	2285822.42	24.00	0.00
									6248598.95	2285813.83	24.00	0.00
									6248606.50	2285813.57	24.00	0.00
									6248607.03	2285779.71	24.00	0.00
									6248598.69	2285779.71	24.00	0.00
									6248598.95	2285771.38	24.00	0.00
									6248580.20	2285771.38	24.00	0.00
									6248579.42	2285775.81	24.00	0.00
									6248559.11	2285775.81	24.00	0.00
BLDG041			BLDG041	x	0		24.00	r	6248559.11	2285567.21	24.00	0.00
									6248576.30	2285566.69	24.00	0.00
									6248576.56	2285570.34	24.00	0.00
									6248599.73	2285571.12	24.00	0.00
									6248599.21	2285567.21	24.00	0.00
									6248606.50	2285566.69	24.00	0.00
									6248607.03	2285543.00	24.00	0.00
									6248598.95	2285542.21	24.00	0.00
									6248599.21	2285538.57	24.00	0.00
									6248576.82	2285538.31	24.00	0.00
									6248576.56	2285541.95	24.00	0.00
									6248559.37	2285542.47	24.00	0.00
BLDG042			BLDG042	x	0		24.00	r	6248558.85	2285663.57	24.00	0.00
									6248576.04	2285663.05	24.00	0.00
									6248576.30	2285666.69	24.00	0.00
									6248599.47	2285667.47	24.00	0.00
									6248598.95	2285663.57	24.00	0.00
									6248606.24	2285663.05	24.00	0.00
									6248606.77	2285639.35	24.00	0.00
									6248598.69	2285638.57	24.00	0.00
									6248598.95	2285634.92	24.00	0.00
									6248576.56	2285634.66	24.00	0.00
									6248576.30	2285638.31	24.00	0.00
									6248559.11	2285638.83	24.00	0.00
BLDG043			BLDG043	x	0		24.00	r	6248559.37	2285760.96	24.00	0.00
									6248576.56	2285760.44	24.00	0.00
									6248576.82	2285764.09	24.00	0.00
									6248599.99	2285764.87	24.00	0.00
									6248599.47	2285760.96	24.00	0.00
									6248606.77	2285760.44	24.00	0.00
									6248607.29	2285736.75	24.00	0.00
									6248599.21	2285735.96	24.00	0.00
									6248599.47	2285732.32	24.00	0.00
									6248577.08	2285732.06	24.00	0.00
									6248576.82	2285735.70	24.00	0.00
									6248559.63	2285736.22	24.00	0.00
BLDG044			BLDG044	x	0		24.00	r	6248559.63	2285857.84	24.00	0.00
									6248576.82	2285857.32	24.00	0.00
									6248577.08	2285860.96	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248600.25	2285861.75	24.00	0.00
									6248599.73	2285857.84	24.00	0.00
									6248607.03	2285857.32	24.00	0.00
									6248607.55	2285833.62	24.00	0.00
									6248599.47	2285832.84	24.00	0.00
									6248599.73	2285829.19	24.00	0.00
									6248577.34	2285828.93	24.00	0.00
									6248577.08	2285832.58	24.00	0.00
									6248559.89	2285833.10	24.00	0.00
BLDG045			BLDG045	x	0		24.00	r	6248559.63	2286016.69	24.00	0.00
									6248576.82	2286016.17	24.00	0.00
									6248577.08	2286019.82	24.00	0.00
									6248600.25	2286020.60	24.00	0.00
									6248599.73	2286016.69	24.00	0.00
									6248607.03	2286016.17	24.00	0.00
									6248607.55	2285992.47	24.00	0.00
									6248599.47	2285991.69	24.00	0.00
									6248599.73	2285988.05	24.00	0.00
									6248577.34	2285987.79	24.00	0.00
									6248577.08	2285991.43	24.00	0.00
									6248559.89	2285991.95	24.00	0.00
BLDG046			BLDG046	x	0		24.00	r	6248559.37	2285976.07	24.00	0.00
									6248579.94	2285976.33	24.00	0.00
									6248580.46	2285980.76	24.00	0.00
									6248598.95	2285980.76	24.00	0.00
									6248599.21	2285972.16	24.00	0.00
									6248606.77	2285971.90	24.00	0.00
									6248607.29	2285938.05	24.00	0.00
									6248598.95	2285938.05	24.00	0.00
									6248599.21	2285929.71	24.00	0.00
									6248580.46	2285929.71	24.00	0.00
									6248579.68	2285934.14	24.00	0.00
									6248559.37	2285934.14	24.00	0.00
BLDG047			BLDG047	x	0		24.00	r	6248564.45	2286073.46	24.00	0.00
									6248581.37	2286073.59	24.00	0.00
									6248581.50	2286077.89	24.00	0.00
									6248600.52	2286077.89	24.00	0.00
									6248600.39	2286069.30	24.00	0.00
									6248607.16	2286069.56	24.00	0.00
									6248607.29	2286035.31	24.00	0.00
									6248598.95	2286035.44	24.00	0.00
									6248598.95	2286027.24	24.00	0.00
									6248579.81	2286026.98	24.00	0.00
									6248579.81	2286031.15	24.00	0.00
									6248559.50	2286031.15	24.00	0.00
									6248559.37	2286052.37	24.00	0.00
									6248564.97	2286052.50	24.00	0.00
BLDG048			BLDG048	x	0		24.00	r	6248599.60	2286101.20	24.00	0.00
									6248599.73	2286084.14	24.00	0.00
									6248573.82	2286084.14	24.00	0.00
									6248573.95	2286080.11	24.00	0.00
									6248512.62	2286080.11	24.00	0.00
									6248512.49	2286084.14	24.00	0.00
									6248486.84	2286084.53	24.00	0.00
									6248486.97	2286101.20	24.00	0.00
BLDG049			BLDG049	x	0		24.00	r	6248486.58	2286077.89	24.00	0.00
									6248505.20	2286077.76	24.00	0.00
									6248505.33	2286073.59	24.00	0.00
									6248522.13	2286073.46	24.00	0.00
									6248522.39	2286071.64	24.00	0.00
									6248521.61	2286071.51	24.00	0.00
									6248522.00	2286052.50	24.00	0.00
									6248527.08	2286052.24	24.00	0.00
									6248527.47	2286031.28	24.00	0.00
									6248507.03	2286031.54	24.00	0.00
									6248506.90	2286027.11	24.00	0.00
									6248488.02	2286026.85	24.00	0.00
									6248487.49	2286035.44	24.00	0.00
									6248479.55	2286035.44	24.00	0.00
									6248479.55	2286069.56	24.00	0.00
									6248486.32	2286069.56	24.00	0.00
BLDG050			BLDG050	x	0		24.00	r	6248487.75	2286020.73	24.00	0.00
									6248509.89	2286020.60	24.00	0.00
									6248509.89	2286016.43	24.00	0.00
									6248527.34	2286016.30	24.00	0.00
									6248527.47	2285991.30	24.00	0.00
									6248509.89	2285991.43	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248509.89	2285987.66	24.00	0.00
									6248487.89	2285987.53	24.00	0.00
									6248487.75	2285991.04	24.00	0.00
									6248479.42	2285991.43	24.00	0.00
									6248479.68	2286016.69	24.00	0.00
									6248487.89	2286016.56	24.00	0.00
BLDG051			BLDG051	x	0		24.00	r	6248487.62	2285980.63	24.00	0.00
									6248507.03	2285980.89	24.00	0.00
									6248507.03	2285976.85	24.00	0.00
									6248527.86	2285976.72	24.00	0.00
									6248527.60	2285934.40	24.00	0.00
									6248506.77	2285934.53	24.00	0.00
									6248507.03	2285926.85	24.00	0.00
									6248501.95	2285926.85	24.00	0.00
									6248501.95	2285929.84	24.00	0.00
									6248487.36	2285929.84	24.00	0.00
									6248487.62	2285938.31	24.00	0.00
									6248479.16	2285938.44	24.00	0.00
									6248479.42	2285972.42	24.00	0.00
									6248487.62	2285972.29	24.00	0.00
BLDG052			BLDG052	x	0		24.00	r	6248350.12	2285980.97	24.00	0.00
									6248369.53	2285981.23	24.00	0.00
									6248369.53	2285977.20	24.00	0.00
									6248390.36	2285977.07	24.00	0.00
									6248390.10	2285934.75	24.00	0.00
									6248369.27	2285934.88	24.00	0.00
									6248369.53	2285927.20	24.00	0.00
									6248364.45	2285927.20	24.00	0.00
									6248364.45	2285930.19	24.00	0.00
									6248349.86	2285930.19	24.00	0.00
									6248350.12	2285938.66	24.00	0.00
									6248341.66	2285938.79	24.00	0.00
									6248341.92	2285972.77	24.00	0.00
									6248350.12	2285972.64	24.00	0.00
BLDG053			BLDG053	x	0		24.00	r	6248462.10	2286101.55	24.00	0.00
									6248462.23	2286084.49	24.00	0.00
									6248436.32	2286084.49	24.00	0.00
									6248436.45	2286080.45	24.00	0.00
									6248375.12	2286080.45	24.00	0.00
									6248374.99	2286084.49	24.00	0.00
									6248349.34	2286084.88	24.00	0.00
									6248349.47	2286101.55	24.00	0.00
BLDG054			BLDG054	x	0		24.00	r	6248349.08	2286078.24	24.00	0.00
									6248367.70	2286078.11	24.00	0.00
									6248367.83	2286073.94	24.00	0.00
									6248384.63	2286073.81	24.00	0.00
									6248384.89	2286071.99	24.00	0.00
									6248384.11	2286071.86	24.00	0.00
									6248384.50	2286052.85	24.00	0.00
									6248389.58	2286052.59	24.00	0.00
									6248389.97	2286031.62	24.00	0.00
									6248369.53	2286031.88	24.00	0.00
									6248369.40	2286027.46	24.00	0.00
									6248350.52	2286027.20	24.00	0.00
									6248349.99	2286035.79	24.00	0.00
									6248342.05	2286035.79	24.00	0.00
									6248342.05	2286069.91	24.00	0.00
									6248348.82	2286069.91	24.00	0.00
BLDG055			BLDG055	x	0		24.00	r	6248421.87	2285976.42	24.00	0.00
									6248442.44	2285976.68	24.00	0.00
									6248442.96	2285981.10	24.00	0.00
									6248461.45	2285981.10	24.00	0.00
									6248461.71	2285972.51	24.00	0.00
									6248469.27	2285972.25	24.00	0.00
									6248469.79	2285938.40	24.00	0.00
									6248461.45	2285938.40	24.00	0.00
									6248461.71	2285930.06	24.00	0.00
									6248442.96	2285930.06	24.00	0.00
									6248442.18	2285934.49	24.00	0.00
									6248421.87	2285934.49	24.00	0.00
BLDG056			BLDG056	x	0		24.00	r	6248422.13	2286017.04	24.00	0.00
									6248439.32	2286016.52	24.00	0.00
									6248439.58	2286020.17	24.00	0.00
									6248462.75	2286020.95	24.00	0.00
									6248462.23	2286017.04	24.00	0.00
									6248469.53	2286016.52	24.00	0.00
									6248470.05	2285992.82	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248461.97	2285992.04	24.00	0.00
									6248462.23	2285988.40	24.00	0.00
									6248439.84	2285988.13	24.00	0.00
									6248439.58	2285991.78	24.00	0.00
									6248422.39	2285992.30	24.00	0.00
BLDG057			BLDG057	x	0		24.00	r	6248350.25	2286021.08	24.00	0.00
									6248372.39	2286020.95	24.00	0.00
									6248372.39	2286016.78	24.00	0.00
									6248389.84	2286016.65	24.00	0.00
									6248389.97	2285991.65	24.00	0.00
									6248372.39	2285991.78	24.00	0.00
									6248372.39	2285988.00	24.00	0.00
									6248350.39	2285987.87	24.00	0.00
									6248350.25	2285991.39	24.00	0.00
									6248341.92	2285991.78	24.00	0.00
									6248342.18	2286017.04	24.00	0.00
									6248350.39	2286016.91	24.00	0.00
BLDG058			BLDG058	x	0		24.00	r	6248426.95	2286073.81	24.00	0.00
									6248443.87	2286073.94	24.00	0.00
									6248444.00	2286078.24	24.00	0.00
									6248463.02	2286078.24	24.00	0.00
									6248462.89	2286069.65	24.00	0.00
									6248469.66	2286069.91	24.00	0.00
									6248469.79	2286035.66	24.00	0.00
									6248461.45	2286035.79	24.00	0.00
									6248461.45	2286027.59	24.00	0.00
									6248442.31	2286027.33	24.00	0.00
									6248442.31	2286031.49	24.00	0.00
									6248422.00	2286031.49	24.00	0.00
									6248421.87	2286052.72	24.00	0.00
									6248427.47	2286052.85	24.00	0.00
BLDG059			BLDG059	x	0		24.00	r	6248304.03	2286102.94	24.00	0.00
									6248323.13	2286102.76	24.00	0.00
									6248322.95	2286094.08	24.00	0.00
									6248331.64	2286093.91	24.00	0.00
									6248331.46	2286060.23	24.00	0.00
									6248322.78	2286060.40	24.00	0.00
									6248322.78	2286051.89	24.00	0.00
									6248304.20	2286052.07	24.00	0.00
									6248303.68	2286055.89	24.00	0.00
									6248283.20	2286056.06	24.00	0.00
									6248283.54	2286098.42	24.00	0.00
									6248304.38	2286098.59	24.00	0.00
BLDG060			BLDG060	x	0		24.00	r	6248301.08	2286045.47	24.00	0.00
									6248322.78	2286045.30	24.00	0.00
									6248323.13	2286041.65	24.00	0.00
									6248331.46	2286041.48	24.00	0.00
									6248331.46	2286016.30	24.00	0.00
									6248322.95	2286016.30	24.00	0.00
									6248322.95	2286012.14	24.00	0.00
									6248301.43	2286013.00	24.00	0.00
									6248300.73	2286016.65	24.00	0.00
									6248283.20	2286016.30	24.00	0.00
									6248283.72	2286041.82	24.00	0.00
									6248300.73	2286041.65	24.00	0.00
BLDG061			BLDG061	x	0		24.00	r	6248283.89	2286001.89	24.00	0.00
									6248304.03	2286002.24	24.00	0.00
									6248304.03	2286005.89	24.00	0.00
									6248323.48	2286005.71	24.00	0.00
									6248323.13	2285997.55	24.00	0.00
									6248331.64	2285997.55	24.00	0.00
									6248331.29	2285967.34	24.00	0.00
									6248323.13	2285967.87	24.00	0.00
									6248323.13	2285964.22	24.00	0.00
									6248301.08	2285964.22	24.00	0.00
									6248300.91	2285967.69	24.00	0.00
									6248283.37	2285967.69	24.00	0.00
BLDG062			BLDG062	x	0		24.00	r	6248274.13	2285742.19	24.00	0.00
									6248316.01	2285742.19	24.00	0.00
									6248316.01	2285722.01	24.00	0.00
									6248320.35	2285721.79	24.00	0.00
									6248320.35	2285701.82	24.00	0.00
									6248311.89	2285702.47	24.00	0.00
									6248312.11	2285694.01	24.00	0.00
									6248277.82	2285694.01	24.00	0.00
									6248277.60	2285702.91	24.00	0.00
									6248269.35	2285702.91	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248269.35	2285721.79	24.00	0.00
									6248274.35	2285722.22	24.00	0.00
BLDG063			BLDG063	x	0		24.00	r	6248330.55	2285741.97	24.00	0.00
									6248355.29	2285741.97	24.00	0.00
									6248355.94	2285724.39	24.00	0.00
									6248359.42	2285724.18	24.00	0.00
									6248360.28	2285701.82	24.00	0.00
									6248355.29	2285702.47	24.00	0.00
									6248356.16	2285694.45	24.00	0.00
									6248330.99	2285693.79	24.00	0.00
									6248330.55	2285702.04	24.00	0.00
									6248327.08	2285702.04	24.00	0.00
									6248326.86	2285724.83	24.00	0.00
									6248331.20	2285724.83	24.00	0.00
BLDG064			BLDG064	x	0		24.00	r	6248370.92	2285742.19	24.00	0.00
									6248412.80	2285742.19	24.00	0.00
									6248412.80	2285722.01	24.00	0.00
									6248417.14	2285721.79	24.00	0.00
									6248417.14	2285701.82	24.00	0.00
									6248408.68	2285702.47	24.00	0.00
									6248408.89	2285694.01	24.00	0.00
									6248374.61	2285694.01	24.00	0.00
									6248374.39	2285702.91	24.00	0.00
									6248366.14	2285702.91	24.00	0.00
									6248366.14	2285721.79	24.00	0.00
									6248371.13	2285722.22	24.00	0.00
BLDG065			BLDG065	x	0		24.00	r	6248427.34	2285741.97	24.00	0.00
									6248452.08	2285741.97	24.00	0.00
									6248452.73	2285724.39	24.00	0.00
									6248456.20	2285724.18	24.00	0.00
									6248457.07	2285701.82	24.00	0.00
									6248452.08	2285702.47	24.00	0.00
									6248452.95	2285694.45	24.00	0.00
									6248427.78	2285693.79	24.00	0.00
									6248427.34	2285702.04	24.00	0.00
									6248423.87	2285702.04	24.00	0.00
									6248423.65	2285724.83	24.00	0.00
									6248427.99	2285724.83	24.00	0.00
BLDG066			BLDG066	x	0		24.00	r	6248467.92	2285742.41	24.00	0.00
									6248509.81	2285742.41	24.00	0.00
									6248509.81	2285722.22	24.00	0.00
									6248514.15	2285722.01	24.00	0.00
									6248514.15	2285702.04	24.00	0.00
									6248505.68	2285702.69	24.00	0.00
									6248505.90	2285694.23	24.00	0.00
									6248471.61	2285694.23	24.00	0.00
									6248471.39	2285703.13	24.00	0.00
									6248463.15	2285703.13	24.00	0.00
									6248463.15	2285722.01	24.00	0.00
									6248468.14	2285722.44	24.00	0.00
BLDG067			BLDG067	x	0		24.00	r	6248467.71	2285878.69	24.00	0.00
									6248509.59	2285878.69	24.00	0.00
									6248509.59	2285858.51	24.00	0.00
									6248513.93	2285858.29	24.00	0.00
									6248513.93	2285838.33	24.00	0.00
									6248505.47	2285838.98	24.00	0.00
									6248505.68	2285830.51	24.00	0.00
									6248471.39	2285830.51	24.00	0.00
									6248471.18	2285839.41	24.00	0.00
									6248462.93	2285839.41	24.00	0.00
									6248462.93	2285858.29	24.00	0.00
									6248467.92	2285858.72	24.00	0.00
BLDG068			BLDG068	x	0		24.00	r	6248273.91	2285878.47	24.00	0.00
									6248315.80	2285878.47	24.00	0.00
									6248315.80	2285858.29	24.00	0.00
									6248320.14	2285858.07	24.00	0.00
									6248320.14	2285838.11	24.00	0.00
									6248311.67	2285838.76	24.00	0.00
									6248311.89	2285830.30	24.00	0.00
									6248277.60	2285830.30	24.00	0.00
									6248277.38	2285839.19	24.00	0.00
									6248269.14	2285839.19	24.00	0.00
									6248269.14	2285858.07	24.00	0.00
									6248274.13	2285858.51	24.00	0.00
BLDG069			BLDG069	x	0		24.00	r	6248330.34	2285878.26	24.00	0.00
									6248355.08	2285878.26	24.00	0.00
									6248355.73	2285860.68	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248359.20	2285860.46	24.00	0.00
									6248360.07	2285838.11	24.00	0.00
									6248355.08	2285838.76	24.00	0.00
									6248355.94	2285830.73	24.00	0.00
									6248330.77	2285830.08	24.00	0.00
									6248330.34	2285838.33	24.00	0.00
									6248326.86	2285838.33	24.00	0.00
									6248326.65	2285861.11	24.00	0.00
									6248330.99	2285861.11	24.00	0.00
BLDG070			BLDG070	x	0		24.00	r	6248427.12	2285878.26	24.00	0.00
									6248451.86	2285878.26	24.00	0.00
									6248452.51	2285860.68	24.00	0.00
									6248455.99	2285860.46	24.00	0.00
									6248456.85	2285838.11	24.00	0.00
									6248451.86	2285838.76	24.00	0.00
									6248452.73	2285830.73	24.00	0.00
									6248427.56	2285830.08	24.00	0.00
									6248427.12	2285838.33	24.00	0.00
									6248423.65	2285838.33	24.00	0.00
									6248423.43	2285861.11	24.00	0.00
									6248427.78	2285861.11	24.00	0.00
BLDG071			BLDG071	x	0		24.00	r	6248370.70	2285878.47	24.00	0.00
									6248412.58	2285878.47	24.00	0.00
									6248412.58	2285858.29	24.00	0.00
									6248416.92	2285858.07	24.00	0.00
									6248416.92	2285838.11	24.00	0.00
									6248408.46	2285838.76	24.00	0.00
									6248408.68	2285830.30	24.00	0.00
									6248374.39	2285830.30	24.00	0.00
									6248374.17	2285839.19	24.00	0.00
									6248365.93	2285839.19	24.00	0.00
									6248365.93	2285858.07	24.00	0.00
									6248370.92	2285858.51	24.00	0.00
BLDG072			BLDG072	x	0		24.00	r	6248331.42	2285820.31	24.00	0.00
									6248356.16	2285820.10	24.00	0.00
									6248356.81	2285812.07	24.00	0.00
									6248360.50	2285811.85	24.00	0.00
									6248360.72	2285790.15	24.00	0.00
									6248356.81	2285789.71	24.00	0.00
									6248356.59	2285773.66	24.00	0.00
									6248331.20	2285773.00	24.00	0.00
									6248331.42	2285791.02	24.00	0.00
									6248327.73	2285790.15	24.00	0.00
									6248327.73	2285812.28	24.00	0.00
									6248331.42	2285812.50	24.00	0.00
BLDG073			BLDG073	x	0		24.00	r	6248278.47	2285820.53	24.00	0.00
									6248312.54	2285820.96	24.00	0.00
									6248312.76	2285812.28	24.00	0.00
									6248321.44	2285812.07	24.00	0.00
									6248321.00	2285793.40	24.00	0.00
									6248317.32	2285793.40	24.00	0.00
									6248316.88	2285772.14	24.00	0.00
									6248274.13	2285772.57	24.00	0.00
									6248274.35	2285792.97	24.00	0.00
									6248270.01	2285793.19	24.00	0.00
									6248270.44	2285812.28	24.00	0.00
									6248278.25	2285812.50	24.00	0.00
BLDG074			BLDG074	x	0		24.00	r	6248374.39	2285820.75	24.00	0.00
									6248408.46	2285821.18	24.00	0.00
									6248408.68	2285812.50	24.00	0.00
									6248417.36	2285812.28	24.00	0.00
									6248416.92	2285793.62	24.00	0.00
									6248413.24	2285793.62	24.00	0.00
									6248412.80	2285772.35	24.00	0.00
									6248370.05	2285772.79	24.00	0.00
									6248370.27	2285793.19	24.00	0.00
									6248365.93	2285793.40	24.00	0.00
									6248366.36	2285812.50	24.00	0.00
									6248374.17	2285812.72	24.00	0.00
BLDG075			BLDG075	x	0		24.00	r	6248427.34	2285820.53	24.00	0.00
									6248452.08	2285820.31	24.00	0.00
									6248452.73	2285812.28	24.00	0.00
									6248456.42	2285812.07	24.00	0.00
									6248456.64	2285790.37	24.00	0.00
									6248452.73	2285789.93	24.00	0.00
									6248452.51	2285773.87	24.00	0.00
									6248427.12	2285773.22	24.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6248427.34	2285791.23	24.00	0.00
									6248423.65	2285790.37	24.00	0.00
									6248423.65	2285812.50	24.00	0.00
									6248427.34	2285812.72	24.00	0.00
BLDG076			BLDG076	x	0		24.00	r	6248471.18	2285819.88	24.00	0.00
									6248505.25	2285820.31	24.00	0.00
									6248505.47	2285811.63	24.00	0.00
									6248514.15	2285811.42	24.00	0.00
									6248513.71	2285792.75	24.00	0.00
									6248510.02	2285792.75	24.00	0.00
									6248509.59	2285771.49	24.00	0.00
									6248466.84	2285771.92	24.00	0.00
									6248467.05	2285792.32	24.00	0.00
									6248462.71	2285792.54	24.00	0.00
									6248463.15	2285811.63	24.00	0.00
									6248470.96	2285811.85	24.00	0.00
BLDG077			BLDG077	x	0		24.00	r	6248479.29	2285657.60	24.00	0.00
									6248487.63	2285657.77	24.00	0.00
									6248487.63	2285666.28	24.00	0.00
									6248506.90	2285666.28	24.00	0.00
									6248507.07	2285662.11	24.00	0.00
									6248527.21	2285661.59	24.00	0.00
									6248527.04	2285627.91	24.00	0.00
									6248509.50	2285628.43	24.00	0.00
									6248509.85	2285624.26	24.00	0.00
									6248486.93	2285624.44	24.00	0.00
									6248487.11	2285628.08	24.00	0.00
									6248479.12	2285628.08	24.00	0.00
BLDG078			BLDG078	x	0		24.00	r	6248487.63	2285617.15	24.00	0.00
									6248506.55	2285617.67	24.00	0.00
									6248506.72	2285613.50	24.00	0.00
									6248526.86	2285613.33	24.00	0.00
									6248527.04	2285570.62	24.00	0.00
									6248506.90	2285571.31	24.00	0.00
									6248506.55	2285566.80	24.00	0.00
									6248487.11	2285566.80	24.00	0.00
									6248487.63	2285575.30	24.00	0.00
									6248478.43	2285575.30	24.00	0.00
									6248479.12	2285609.33	24.00	0.00
									6248487.80	2285608.99	24.00	0.00
BLDG079			BLDG079	x	0		24.00	r	6248421.83	2285627.56	24.00	0.00
									6248447.87	2285628.08	24.00	0.00
									6248448.39	2285614.71	24.00	0.00
									6248450.47	2285614.89	24.00	0.00
									6248450.13	2285589.37	24.00	0.00
									6248458.46	2285588.85	24.00	0.00
									6248458.81	2285574.78	24.00	0.00
									6248449.95	2285575.13	24.00	0.00
									6248450.65	2285568.88	24.00	0.00
									6248411.07	2285569.75	24.00	0.00
									6248411.07	2285589.37	24.00	0.00
									6248419.22	2285589.19	24.00	0.00
BLDG080			BLDG080	x	0		24.00	r	6248303.43	2285622.35	24.00	0.00
									6248328.25	2285623.05	24.00	0.00
									6248327.91	2285570.44	24.00	0.00
									6248302.91	2285569.92	24.00	0.00
BLDG081			BLDG081	x	0		24.00	r	6248265.75	2285611.07	24.00	0.00
									6248278.43	2285611.07	24.00	0.00
									6248278.60	2285614.37	24.00	0.00
									6248292.49	2285613.50	24.00	0.00
									6248293.18	2285590.93	24.00	0.00
									6248288.84	2285591.45	24.00	0.00
									6248288.50	2285572.87	24.00	0.00
									6248273.39	2285572.70	24.00	0.00
									6248273.74	2285591.45	24.00	0.00
									6248265.23	2285591.45	24.00	0.00

Ground Absorption(s)

Name	Sel.	M.	ID	G	Coordinates	
					x	y
					(ft)	(ft)

Contour(s)

Name	Sel.	M.	ID	OnlyPts	Height		Coordinates		
					Begin	End	x	y	z
					(ft)	(ft)	(ft)	(ft)	(ft)

Vertical Area Source(s)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Rail

Name	Sel.	M.	ID	Lw'		Train Class	Correct.	Vmax
				Day	Night		Track	
				(dBA)	(dBA)		(dB)	(km(mph)

Sound Level Spectra

Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	

Roads

Name	Sel.	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
				Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
				(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)

RoadsGeo

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		

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APPENDIX 11.1:

CADNAA CONSTRUCTION NOISE CALCULATIONS

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16503 - Canyon Springs

CadnaA Noise Prediction Model: 16503-02_Construction.cna
Date: 04.06.25
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (ft)	**6561.70**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (ft)	**3280.80**
Min. Length of Section (ft)	**3.30**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**328.08**
Search Radius Rcvr	**328.08**
Max. Distance Source - Rcvr	**3280.84 3280.84**
Min. Distance Rvcr - Reflector	**3.28 3.28**
Min. Distance Source - Reflector	**0.33**
Industrial (ISO 9613 (1996))	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (°F)	**50**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (mph)	**6.7**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	53.3	-49.7	50.3	0.0	0.0	0.0		x	Total	5.00	r	6248024.66	2284231.70	5.00
R2		R2	56.3	-46.7	53.3	0.0	0.0	0.0		x	Total	5.00	r	6248535.34	2284635.52	5.00
R3		R3	49.4	-53.6	46.4	0.0	0.0	0.0		x	Total	5.00	r	6249726.49	2283928.40	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height	Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night		X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)	(ft)	(ft)	(ft)

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
CA1		CA1	118.6	15.6	15.6	72.9	-30.1	-30.1	PWL-Pt	115.6					8	r

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
CA1	CA1	8.00	r			6248621.83	2286110.56	8.00	0.00
						6248621.88	2285396.83	8.00	0.00
						6248598.88	2285373.83	8.00	0.00
						6248038.15	2285373.78	8.00	0.00
						6248038.11	2285961.09	8.00	0.00
						6248253.11	2285961.11	8.00	0.00
						6248253.10	2286110.53	8.00	0.00

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
				left	right		horz.	vert.	Begin	End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground	
							(ft)	(ft)	(ft)	(ft)	(ft)	

Ground Absorption(s)

Name	Sel.	M.	ID	G	Coordinates	
					x	y
					(ft)	(ft)

Contour(s)

Name	Sel.	M.	ID	OnlyPts	Height		Coordinates		
					Begin	End	x	y	z
					(ft)	(ft)	(ft)	(ft)	(ft)

Vertical Area Source(s)

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)

Rail

Name	Sel.	M.	ID	Lw'		Train Class	Correct.	Vmax
				Day	Night		Track	
				(dBA)	(dBA)		(dB)	(km(mph)

Sound Level Spectra

Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	

Roads

Name	Sel.	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
				Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
				(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)

RoadsGeo

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		

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