TRACT 17168 TWENTYNINE PALMS

NOISE AND VIBRATION ANALYSIS

Prepared By:

Haseeb Qureshi | hqureshi@urbanxroads.com
Noah Johnson | njohnson@urbanxroads.com

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TABLE OF CONTENTS

EXECUTIVE SUMMARY **7**
ES.1 Summary of Findings 7

1 INTRODUCTION **11**
1.1 Site Location 11
1.2 Project Description 11

2 FUNDAMENTALS **15**
2.1 Range of Noise 15
2.2 Noise Descriptors 16
2.3 Sound Propagation 16
2.4 Noise Control 17
2.5 Noise Barrier Attenuation 17
2.6 Land Use Compatibility With Noise 17
2.7 Community Response to Noise 18
2.8 Vibration 18

3 REGULATORY SETTING **21**
3.1 State of California Noise Requirements 21
3.2 State of California Building Standards Code 21
3.3 City of Twentynine Palms General Plan 21
3.4 Construction Noise Standards 24
3.5 Construction Vibration Standards 25

4 SIGNIFICANCE CRITERIA **27**
4.1 Noise Level Increases (Threshold A) 27
4.2 Vibration (Threshold B) 28
4.3 CEQA Guidelines Not Further Analyzed (Threshold C) 29
4.4 Significance Criteria Summary 29

5 EXISTING NOISE LEVEL MEASUREMENTS **31**
5.1 Measurement Procedure and Criteria 31
5.2 Noise Measurement Locations 31
5.3 Noise Measurement Results 33

6 METHODS AND PROCEDURES **35**
6.1 FHWA Traffic Noise Prediction Model 35
6.2 Off-Site Traffic Noise Prediction Model Inputs 35
6.3 On-Site Traffic Noise Prediction Model Inputs 37

7 OFF-SITE TRAFFIC NOISE ANALYSIS **39**
7.1 Traffic Noise Contours 39
7.2 Existing Project Traffic Noise Level Increases 39
7.3 EAC (2027) Project Traffic Noise Level Increases 40

8 ON-SITE TRAFFIC NOISE IMPACTS **45**
8.1 On-Site Exterior Noise Analysis 45
8.2 On-Site Interior Noise Analysis 46

9 RECEIVER LOCATIONS **49**
10 OPERATIONAL NOISE ANALYSIS **51**

10.1 Operational Noise Sources 51
10.2 Reference Noise Levels 51
10.3 CadnaA Noise Prediction Model 53
10.4 Project Operational Noise Levels 54
10.5 Project Operational Noise Level Compliance 54
10.6 Project Operational Noise Level Increases 55

11 CONSTRUCTION IMPACTS 57
11.1 Construction Noise Levels 57
11.2 Construction Reference Noise Levels 57
11.3 Construction Noise Analysis 59
11.4 Project Site Construction Noise Level Compliance 60
11.5 Temporary Construction Noise Level Increases 61
11.6 Construction Vibration Analysis 61

12 REFERENCES 63
13 CERTIFICATION 65

APPENDICES

APPENDIX 3.1: City of Twentynine Palms DEVELOPMENT CODE
APPENDIX 5.1: STUDY AREA PHOTOS
APPENDIX 5.2: NOISE LEVEL MEASUREMENT WORKSHEETS
APPENDIX 6.1: SITE PLAN
APPENDIX 7.1: OFF-SITE NOISE LEVEL CALCULATIONS
APPENDIX 8.1: ON-SITE NOISE LEVEL CALCULATIONS
APPENDIX 10.1: SAMPLE AIR CONDITIONING UNIT
APPENDIX 10.2: CADNAA OPERATIONAL NOISE CALCULATIONS
APPENDIX 11.1: CONSTRUCTION NOISE CALCULATIONS

LIST OF EXHIBITS

EXHIBIT ES-1: SUMMARY OF RECOMMENDATIONS 9
EXHIBIT 1-1: PROJECT LOCATION 12
EXHIBIT 1-2: SITE PLAN 13
EXHIBIT 2-1: TYPICAL NOISE LEVELS 15
EXHIBIT 2-2: NOISE LEVEL INCREASE PERCEPTION 18
EXHIBIT 2-3: TYPICAL LEVELS OF GROUND-BORNE VIBRATION 20
EXHIBIT 3-1: CITY OF TWENTYNINE PALMS NOISE/LAND USE COMPATIBILITY MATRIX 23
EXHIBIT 5-1: NOISE MEASUREMENT LOCATIONS 32
EXHIBIT 9-1: RECEIVER LOCATIONS 50
EXHIBIT 10-1: OPERATIONAL NOISE SOURCE LOCATIONS 52
EXHIBIT 11-1: CONSTRUCTION NOISE SOURCE LOCATIONS 58

LIST OF TABLES

TABLE ES-1: SUMMARY OF SIGNIFICANCE FINDINGS 7
TABLE 3-1: NOISE LEVEL STANDARDS 24
TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY 29
TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS 33
TABLE 6-1: OFF-SITE ROADWAY PARAMETERS 36
TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES 37
TABLE 6-3: TIME OF DAY VEHICLE SPLITS 37
TABLE 6-4: ON-SITE ROADWAY PARAMETERS 38
TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS 40
TABLE 7-2: EXISTING WITH PROJECT CONTOURS 40
TABLE 7-3: EAC (2027) WITHOUT PROJECT CONTOURS 41
TABLE 7-4: EAPC (2027) WITH PROJECT CONTOURS 41
TABLE 7-5: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES 42
TABLE 7-6: EAC (2027) WITH PROJECT TRAFFIC NOISE LEVEL INCREASES 43
TABLE 8-1: EXTERIOR NOISE LEVELS (CNEL) 45
TABLE 8-2: FIRST-FLOOR INTERIOR NOISE IMPACTS (CNEL) 47
TABLE 8-3: SECOND-FLOOR INTERIOR NOISE IMPACTS (CNEL) 47
TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS 53
TABLE 10-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS 54
TABLE 10-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS 54
TABLE 10-4: OPERATIONAL NOISE LEVEL COMPLIANCE 55
TABLE 10-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES 56
TABLE 10-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES 56
TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS 59
TABLE 11-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY 60
TABLE 11-3: CONSTRUCTION NOISE LEVEL COMPLIANCE 60
TABLE 11-4: DAYTIME CONSTRUCTION NOISE LEVEL INCREASES 61
TABLE 11-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT 62
TABLE 11-6: PROJECT CONSTRUCTION VIBRATION LEVELS – UNMITIGATED 62

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
HVAC	Heating, Ventilation, and Air Conditioning
Leq	Equivalent continuous (average) sound level
Lmax	Maximum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Tract 17168 Twentynine Palms
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Tract 17168 Twentynine Palms (Project) in the City of Twentynine Palms. The Project consists of 137 residential dwelling units. This noise study has been prepared to satisfy applicable City of Twentynine Palms 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, Significance Criteria, 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 SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	Less Than Significant	-
On-Site Traffic Noise	8	-	-
Operational Noise	10	Less Than Significant	-
Project 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.

Exterior Noise Abatement

The on-site traffic noise level analysis indicates that the private outdoor area will experience an unabated exterior noise level from 59.1 to 68.9 dBA CNEL and will exceed the City of Twentynine Palms 65 dBA CNEL exterior noise level standard for lots 167. 168, and 170. With the recommended 6-foot-high noise barrier, shown in Exhibit ES-1, along Utah Trail, the exterior noise levels will range from 59.1 to 60.0 dBA CNEL. Therefore, with the recommended noise barriers, the Project can satisfy the City of Twentynine Palms 65 dBA CNEL exterior noise level standard in all private outdoor areas (e.g., backyards).

Interior Noise Abatement

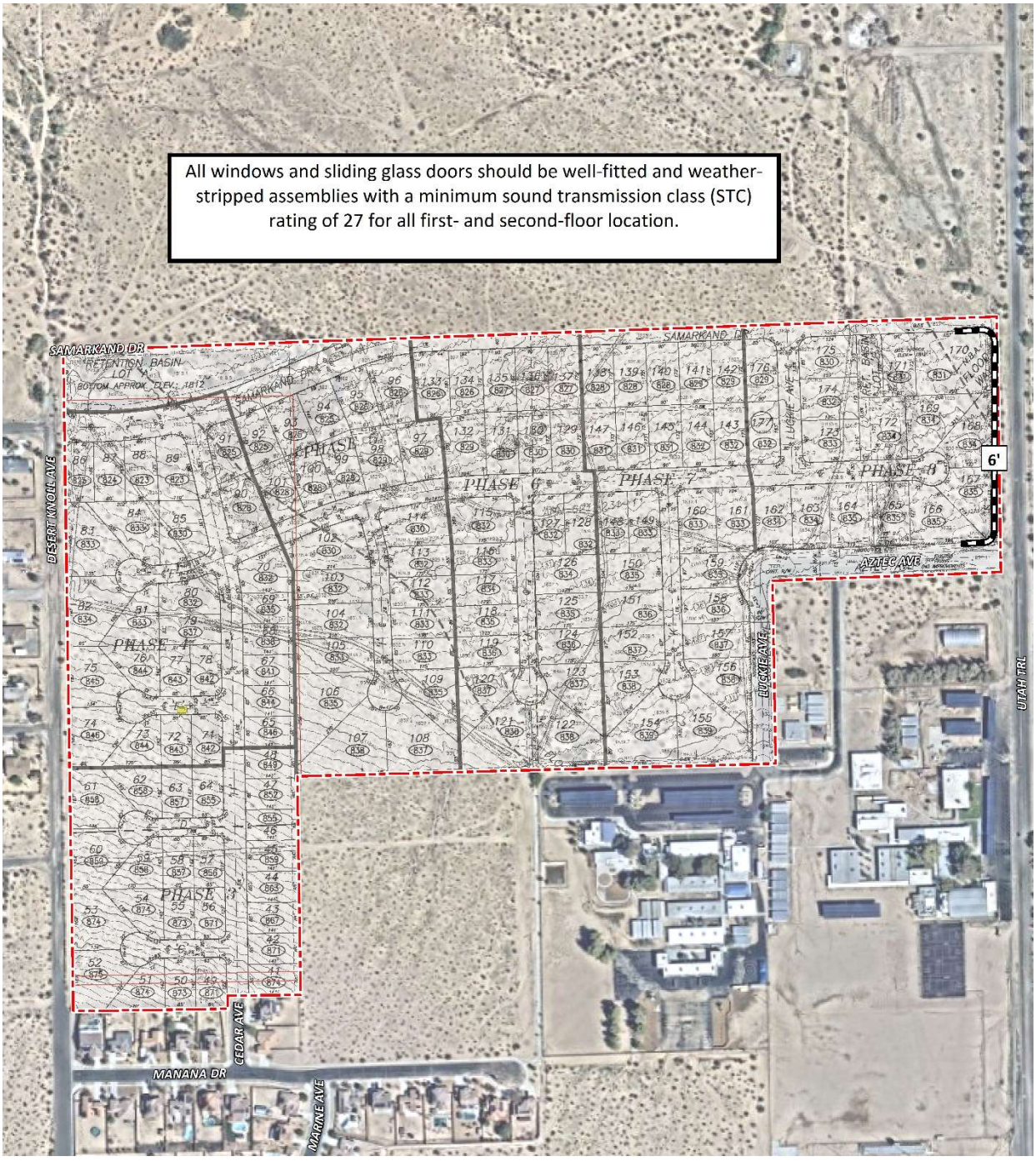
The Project will provide a forced-air circulation system (e.g., air conditioning), allowing exterior doors and windows to be kept closed when the room is in use while still receiving circulated air. Therefore, all units would be capable of a windows-closed condition, and a windows-closed condition was assumed for the interior noise level assessment. The interior analysis shows that all first-, and second-floor locations can satisfy the City of Twentynine Palms 45 dBA CNEL interior noise level standards with standard construction and windows with a minimum STC rating of 27.

Therefore, the following best practices are recommended to meet the City of Twentynine Palms 45 dBA CNEL interior noise standards for residential land uses:

- Windows/Sliding Glass Doors: All windows and sliding glass doors should be well-fitted and weather-stripped assemblies with a minimum sound transmission class (STC) rating of 27 for all first- and second-floor locations.
- Doors (Non-Glass): All doors should be well-fitted and weather-stripped and have minimum STC ratings of 26. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating. (2)
- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal.
- Roof: Roof sheathing of wood construction shall be per the manufacturer's specification or caulked plywood of at least one-half inch thick. Ceilings shall be per the manufacturer's specification or well-sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.

As shown in Section 5, Existing Noise Level Measurements, the Project is expected to satisfy the City of Twentynine Palms 45 dBA CNEL interior noise level standards for residential development.

EXHIBIT ES-1: SUMMARY OF RECOMMENDATIONS



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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 Tract 17168 Twentynine Palms ("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 site is located south of the future extension of Samarkand Drive, between Desert Knoll Avenue and Utah Trail in the City of Twentynine Palms, as shown in Exhibit 1-1. The area surrounding the Project Site includes vacant land to the north and east, residential dwellings to the west and south, and the Twentynine Palms Elementary School and UHS Schools to the south. The nearest airport is the Twentynine Palms Airport, located approximately 5 miles southeast of the Project site

1.2 PROJECT DESCRIPTION

The Project consists of 137 dwelling units within phases 3 to 8 of the approved Tentative Tract Map 17168. A preliminary site plan for the proposed Project is shown in Exhibit 1-2. For analysis purposes, the Project is anticipated to have an Opening Year of 2027.

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EXHIBIT 1-1: PROJECT LOCATION

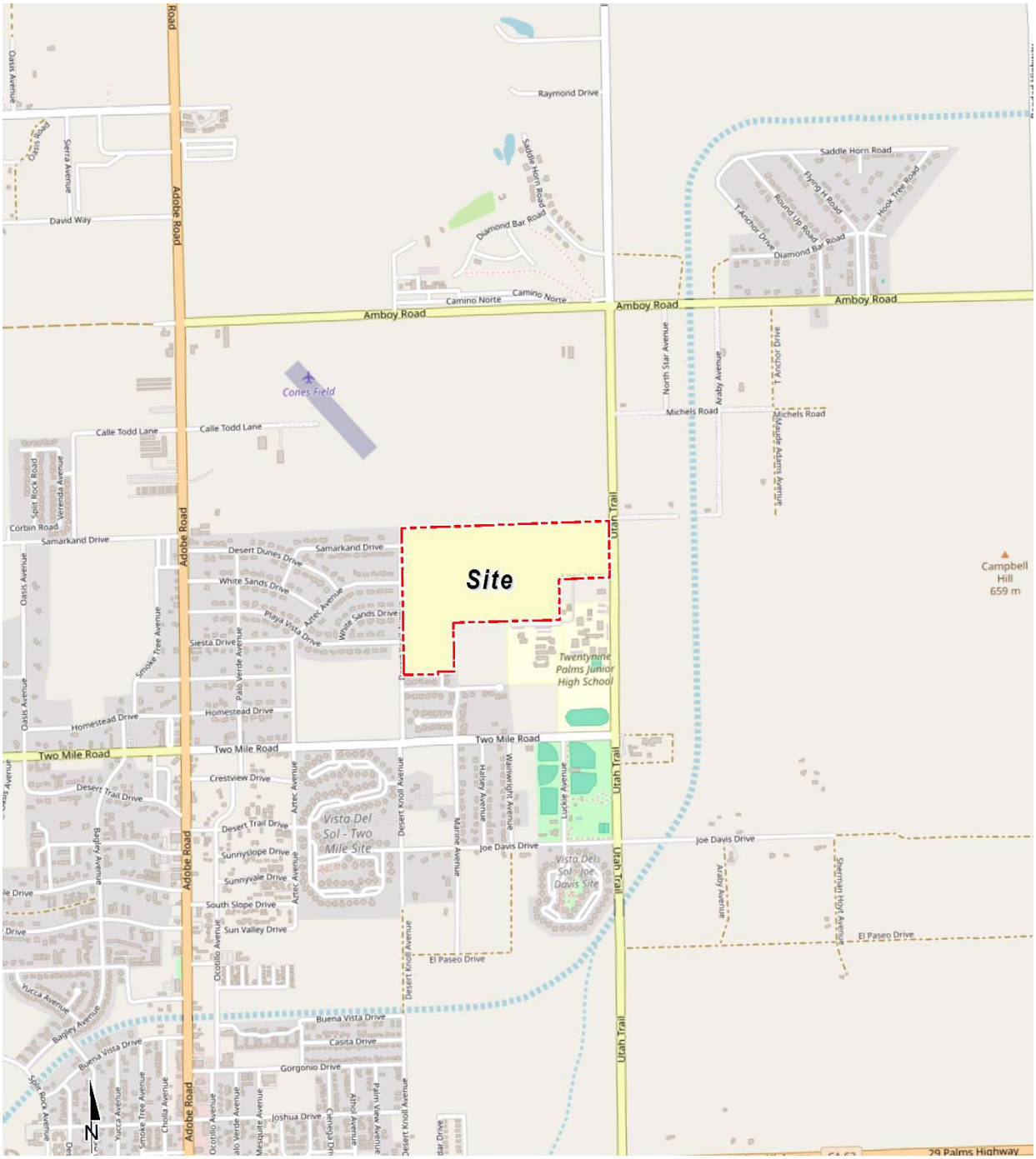
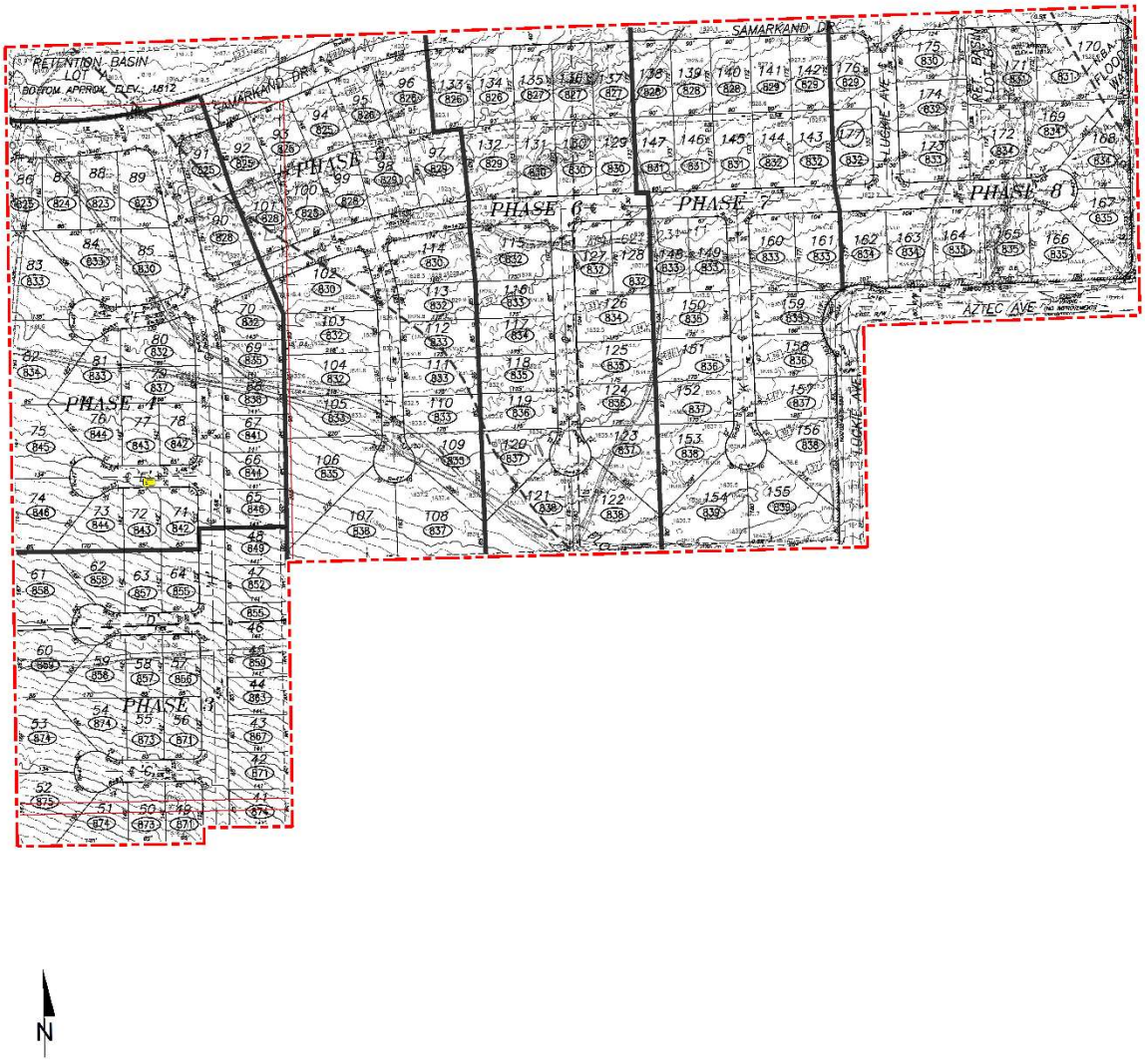


EXHIBIT 1-2: SITE PLAN



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2 FUNDAMENTALS

Noise is defined as "unwanted sound." Sound becomes unwanted when it interferes with everyday activities, causes physical harm, or has adverse health effects. 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 a 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. (3) 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. (4) 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 on 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 Twentynine Palms 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 rate at which noise decreases 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 along a defined path and can therefore be treated as a line source, which approximates the effect of multiple 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. (3)

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 feet. 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. (5)

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. (3)

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. (6)

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

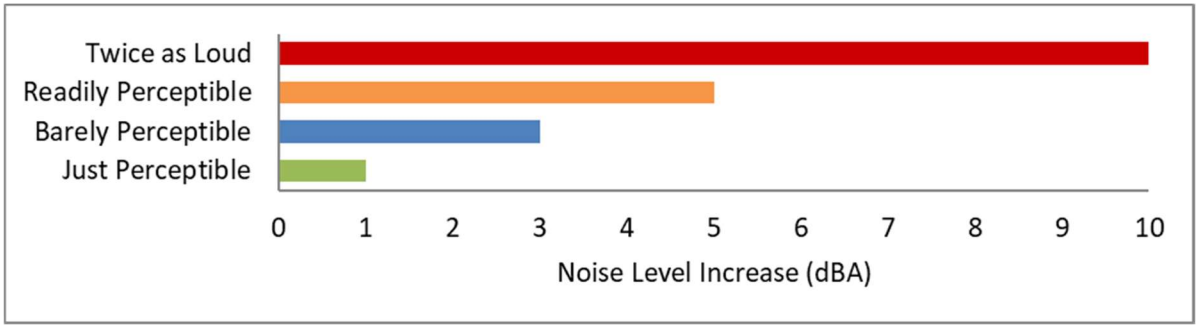
development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop, and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning 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. (7)

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. (8 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. (9) According to research published in the Noise Effects Handbook (8), 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. (5)

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 (9). 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 (9). 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 (10) (9). 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 (9).

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 (11) (12). 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 (13).

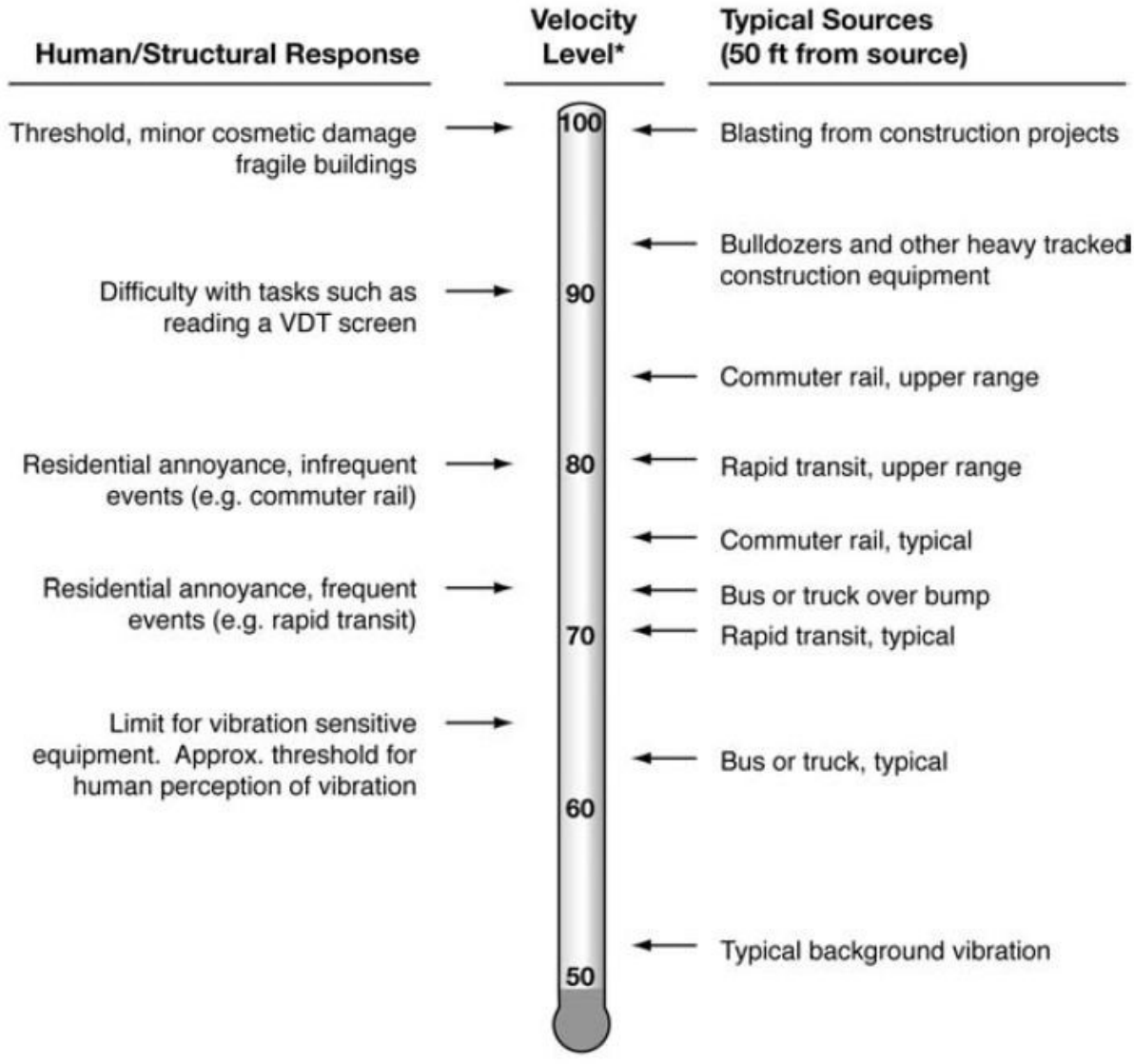
This distinction is important because human annoyance to vibration is often triggered by abrupt, intermittent events, rather than sustained energy levels. Construction-related vibrations are typically impulsive and broadband, in contrast to the continuous, tonal vibrations associated with transit systems. 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 (9).

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 (12).

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 (9). 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.

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 Countywide Plan which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (14) The purpose of the Countywide Plan 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

3.2.1 Residential Construction

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. 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 for controlling interior noise levels resulting from exterior noise sources. For new buildings, the acceptable interior noise limit is 45 dBA CNEL in habitable rooms (15).

3.3 CITY OF TWENTYNINE PALMS GENERAL PLAN

The General Plan is a tool for managing noise by planning for and maintaining compatibility between sensitive land uses and noise sources. (16) The Noise Element of the General Plan includes the following goal and implementation policies: (17)

Goal NS-1: *Noise levels will be addressed prior to the City taking actions on land use proposals and potential conflicts will be avoided or mitigated so that noise levels will not exceed acceptable levels.*

Implementation Policies

NS-1.1: Noise generation impacts will be considered prior to any land use designation change and/or any land use intensification and uses will be located in a manner that minimizes noise impacts. Prior to approval of projects, which may result in significant noise pollution, the City will require noise analysis to ensure that noise levels do not exceed acceptable levels as defined by the City's Development Code. The City will require special design standards for proposed projects with the potential to exceed the noise level requirements. In cases where special design standards are required, the City will require mitigation plans to be certified by a registered acoustician.

NS-1.2: The City will limit the establishment of land uses in the Twentynine Palms Airport flight pattern that would result in noise conflicts.

NS-1.3: Develop a buyer and renter notification program for the persons within the City limits locating under the Sundance Military Operations Area (MOA) airspace. This area experiences occasional high levels of aircraft activity and is bounded roughly by the Marine Base to the north, Indian Trail on the south, Canyon Road on the west and past the limits of the City to the east. The notification program should simply inform persons and businesses moving into that area that they will be exposed to occasional high levels of aircraft activity.

NS-1.4: Require all exterior noise sources (construction operations, air compressors, pumps, fans and leaf blowers) to use available noise suppression devices and techniques to bring exterior noise down to acceptable levels, as defined by the City's Development Code, that are compatible with adjacent land uses.

NS-1.5: Develop a buyer and renter notification program for the persons within the City limits that are determined to be affected by other noise generating uses on the Marine Base. The program shall include measurements of these occasional noise occurrences from other noise generating uses to determine the area impacted. The notification program should simply inform persons and businesses moving into that area that they will be exposed to occasional high levels of noise.

3.3.1 Land Use Compatibility

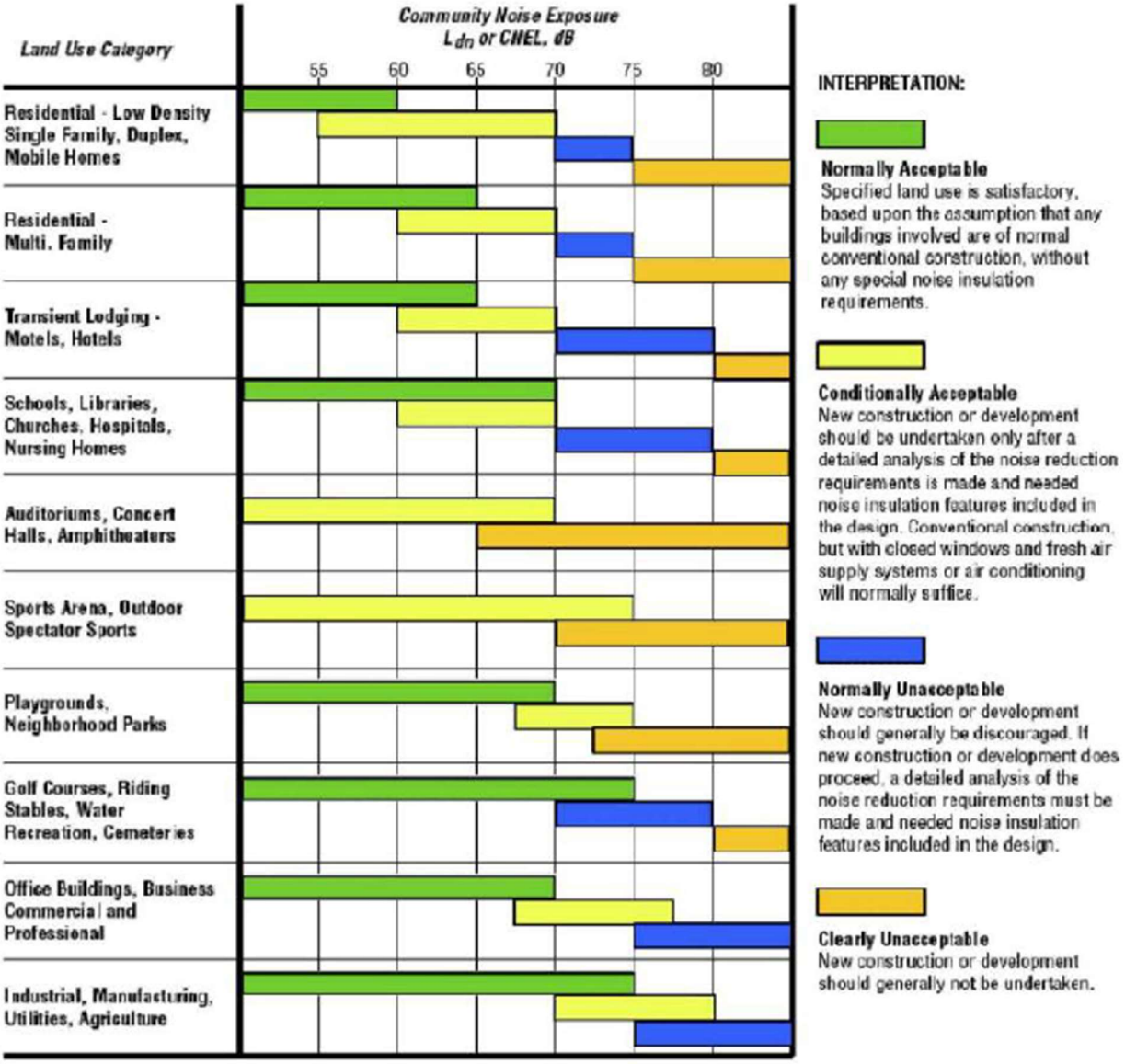
The noise criteria identified in the City of Twentynine Palms Noise Element (Table 4) are guidelines to evaluate the land use compatibility of transportation-related noise. The compatibility criteria, shown on Exhibit 3-1, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Land Use and Noise Compatibility Matrix* describes categories of compatibility and not specific noise standards. The residential land uses of the Project are considered *clearly compatible* with unmitigated exterior noise levels of less than 60 dBA CNEL and *normally compatible* with unmitigated exterior noise levels approaching 70 dBA CNEL, *new construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.* For *normally incompatible* exterior noise levels, exceeding 80 dBA CNEL, *new construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements are made and needed noise insulation features must be included in the design.*

3.3.2 City of Twentynine Palms Development Code

While the City of Twentynine Palms Noise Element provides guidelines and criteria to assess transportation noise on sensitive land uses, the County Code, Title 19 Development Code, Article 4 Site Development Regulations, Chapter 19.80 Noise Control contains the general noise regulation, noise level limits for various land uses from all noise sources, interior noise level limits, prohibitions, and vibration standards. (18)

EXHIBIT 3-1: CITY OF TWENTYNINE PALMS NOISE/LAND USE COMPATIBILITY MATRIX



Source: City of Twentynine Palms General Plan, Noise Element, Exhibit NS-9.

3.3.3 Operational Noise Standards

To analyze noise impacts originating from a designated fixed location or private property such as the Tract 17168 Twentynine Palms Project, stationary-source (operational) noise such as the expected ground-mounted air conditioning units and parking lot vehicle movements are typically evaluated against standards established under a jurisdiction's Municipal Code. The City of Twentynine Palms County Code, Title 19 Development Code, Section 19.80.070(a) establishes the noise level standards for noise sources. Since the Project's land use will potentially impact adjacent noise-sensitive uses in the Project study area, this noise study relies on the more conservative residential noise level standards to describe potential operational noise impacts.

For residential properties, the exterior noise level shall not exceed 65 dBA CNEL. (18) Further, Section 19.80.070(c) indicates that if the existing ambient noise level (17) already exceeds any of the exterior noise level limit categories, then the standard shall be adjusted by 5 dBA to reflect the ambient conditions. The City of Twentynine Palms Noise level standards are shown in Table 3-1 and included in Appendix 3.1.

TABLE 3-1: NOISE LEVEL STANDARDS

Affected Land Use (Receiving Noise)	Noise Level	
	Interior CNEL	Exterior CNEL
Residential Districts (RL, RS, RM, R-HD, OSR)	45 dBA	65 dBA
Residential within Mixed Use	30 dBA Outdoor to Indoor Noise Reduction	-
Office Commercial District (CO)and Public District (P)	45 dBA	-
Other Commercial Districts (CN, CG, CT, CS)	45 dBA	-
Community Industrial (IC)	70 dBA	-
Open Space	-	65 dBA
Military (M)	As determined by Base Command	-

City of Twentynine Palms Municipal Code Chapter 19.80.070(A)

3.4 CONSTRUCTION NOISE STANDARDS

Section 19.80.100 of the City of Twentynine Palms Development Code, provided in Appendix 3.1, indicates that construction activity is considered exempt from the noise level standards between the hours of 7:00 a.m. to 7:00 p.m. except on Sundays and Federal holidays. (18) However, neither the City of Twentynine Palms General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*. Therefore, a numerical construction threshold based on Federal Transit Administration

(FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

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. 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. (9)

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. (9)

The City of Twentynine Palms Development Code, Chapter 19.80.100(a) states that vibration shall be no *greater than or equal to two-tenths inches per second measured at or beyond the lot line*. (18) Therefore, to determine if the vibration levels due to the operation and construction of the Project, the peak particle velocity (PPV) vibration level standard of 0.2 inches per second is used.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on the City of Twentynine Palms noise standards and the currently adopted guidance in 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 existing baseline ambient noise levels, the magnitude of the noise-level increase, and the location of receivers, as well as the agency's noise standards, 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. (19) 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, as well as consideration of the local noise standards adopted by the community.

4.1.1 Noise Sensitive Receivers (Substantial Permanent Noise Level Increase)

The Federal Interagency Committee on Noise (FICON) (20) 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 over a 24-hour period, 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 is likely to be perceived.

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. (19) 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

are 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 range from 60 to 65 dBA, a 3 dBA barely perceptible noise level increase appears to be appropriate for most people. When the 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 a substantial temporary or permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to 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 (5 p. 9) and Caltrans (3).

4.1.2 Construction Noise (Substantial Temporary Noise Level Increase)

To control the noise-generating construction activities, the temporary noise level increases over the existing ambient conditions must be considered under CEQA Significance Threshold A. Although noise ordinances vary across jurisdictions, many cities and counties in California, including Los Angeles, San Diego, and San Francisco, set construction noise limits between 75 and 80 dBA L_{eq} and typically restrict construction activities to the daytime hours. In contrast, everyday noise regulations are more stringent because they apply to continuous, long-term noise sources that can significantly impact the quality of life. As a result, many jurisdictions establish daytime residential noise limits around 55 dBA L_{eq}. This suggests that a reasonable 20 dBA increase over the daytime noise limit can be tolerated without significant adverse effects. This is also illustrated in the adoption of many CEQA documents statewide that use an 80 dBA L_{eq} limit for assessing construction impacts while using everyday noise level limits of local noise ordinances in assessing on-site operational impacts.

Therefore, if the Project-related construction noise levels generate a temporary noise level increase over the existing daytime ambient noise levels more than 20 dBA $L_{eq,}$ then the Project construction noise increases will be considered a *significant* impact.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.5, Construction Vibration Standards, the vibration impacts originating from the construction of the Tract 17168 Twentynine Palms Vibration-generating activities are appropriately evaluated using standards established by the Caltrans *Transportation and Construction Vibration Guidance Manual*, Table 19. (11) The Caltrans' vibration thresholds 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 0.30 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 nearest major public airport is the Twentynine Palms Airport, located approximately 5 miles southeast of the Project site. The Twentynine Palms Airport is located more than 2 miles from the Project; as such, 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 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
Off-Site Traffic	Noise-Sensitive[1]	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	
	Non-Noise Sensitive	If ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
On-Site[2]	Noise-Sensitive	Exterior Noise Level Criteria	65 dBA CNEL	
		Interior Noise Level Standard[3]	45 dBA CNEL	
Operational	Noise-Sensitive	Exterior Noise Level Standards[2]	65 dBA L_{eq}	
		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[3]	80 dBA L_{eq}	
		Exterior Noise Level Increase	20 dBA L_{eq}	
		Vibration Level Threshold[4]	0.20 PPV (in/sec)	

[1] FICON, 1992.
[2] City of Twentynine Palms Municipal Code Chapter 19.80.070(A)
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[4] City of Twentynine Palms Municipal Code 19.80.100(a)
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five 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. Appendix 5.1 includes study area photos. To fully describe the existing noise conditions, long-term noise level measurements were collected by Urban Crossroads, Inc. on Thursday, April 23, 2026. Appendix 5.2 provides summary worksheets of the noise levels.

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 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. (21)

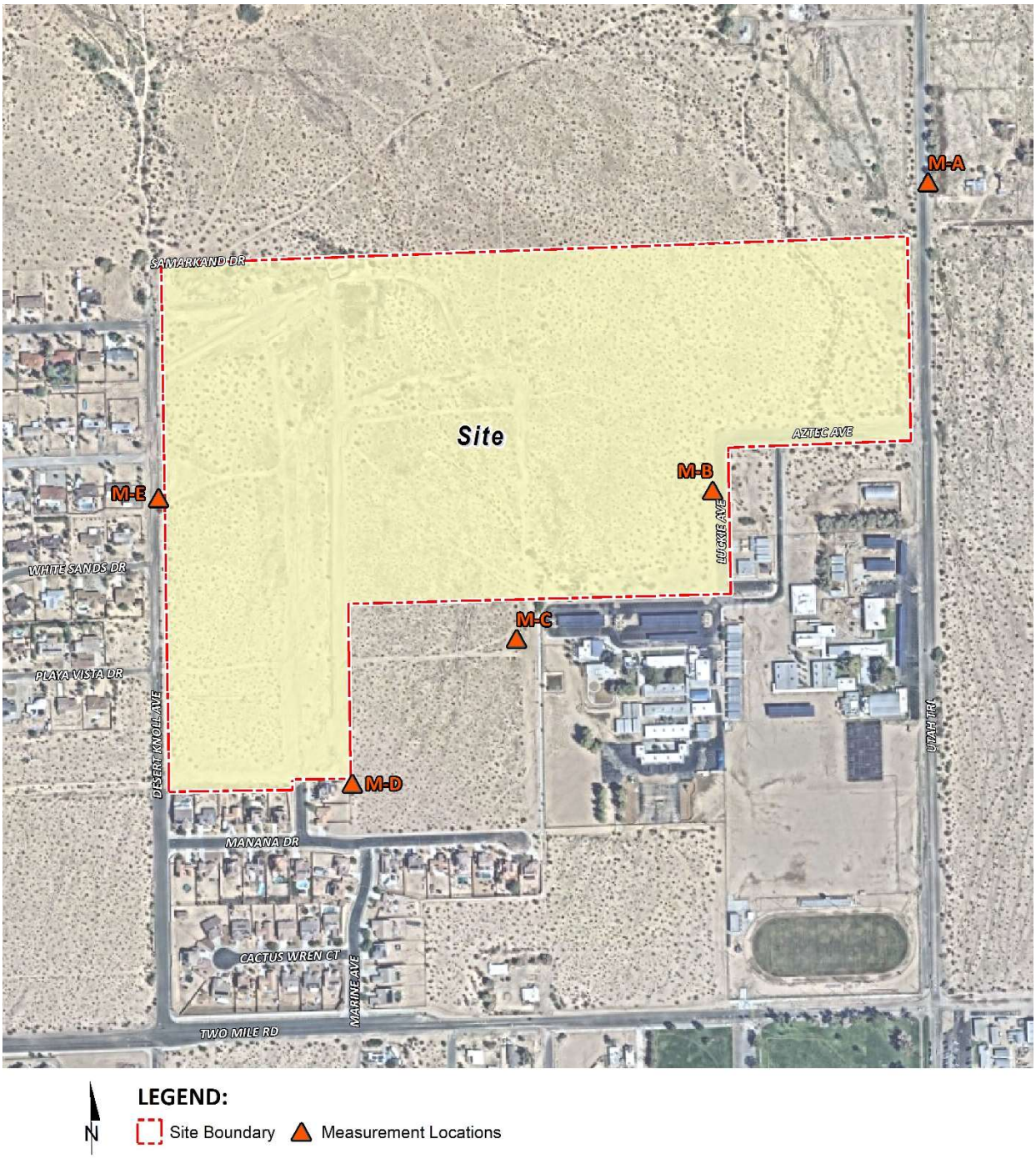
5.2 NOISE MEASUREMENT LOCATIONS

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. Noise-level measurement s ites should avoid locations 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. (3) 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. (9)

Based on recommendations from 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. (9) In other words, if the noise-level measurement location and area represented by the receiver share similar shielding, terrain, and geometric

relationships to the reference noise source, the measurement location and the receiver are acoustically equivalent locations. 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 over the ambient noise levels due to the Project's noise sources. This approach is necessary to calculate the temporary or permanent increase in ambient noise levels as required by the CEQA Guidelines.

5.3 Noise Measurement Results

The noise measurements presented below focus on the equivalent or the hourly energy average sound levels (L_{eq}) to describe the existing ambient conditions. Table 5-1 provides the L_{eq} 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 measurement location. The L_{eq} 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 L_{eq} 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
M-A	Located northeast of the site near the residence at 5285 Utah Trail.	64.9	61.4
M-B	Located east of the site near the residence at 5798 Utah Trail.	56.8	48.6
M-C	Located south of the site near the residence at 74350 Playa Vista Dr.	57.3	49.2
M-D	Located south of the site near the residence at 5595 Cedar Ave.	48.5	49.0
M-E	Located west of the site near the residence at 74087 Aztec Ave.	49.0	43.3

[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 hourly 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. (22) 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. (23) 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 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site dBA CNEL transportation noise impacts. Table 6-1 identifies the off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Twentynine Palms General Plan Circulation Element, and the posted speed limits. The ADT volumes used in this study area, presented in Table 6-2, are based on the Tract 17168 Twentynine Palms Traffic Analysis prepared by Urban Crossroads, Inc. for the following traffic scenarios (24):

- Existing (2025)
- Existing With Project (2025)
- Existing, Ambient and Cumulative (2027) (EAC)
- Existing, Ambient, and Cumulative With Project (2027) (EAPC)

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts at the boundary of the right-of-way of the receiving adjacent land use, without and with Project ADT traffic volumes from the Project traffic analysis. Consistent with the Tract 17168 Twentynine Palms Traffic Analysis. (24)

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Classification[2]	Distance from Centerline to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Desert Knoll Ave.	s/o Samarkand Dr.	Sensitive	Secondary	40'	35
2	Desert Knoll Ave.	s/o Aztec Av.	Sensitive	Secondary	40'	35
3	Desert Knoll Ave.	s/o Manana Dr.	Sensitive	Secondary	40'	35
4	Desert Knoll Ave.	s/o Two Mile Rd.	Sensitive	Secondary	40'	35
5	Adobe Rd.	n/o Two Mile Rd.	Sensitive	Expressway	60'	55
6	Adobe Rd.	s/o Two Mile Rd.	Sensitive	Expressway	60'	55
7	Utah Tr.	n/o Samarkand Dr.	Sensitive	Expressway	60'	45
8	Utah Tr.	s/o Samarkand Dr.	Sensitive	Expressway	60'	45
9	Two Mile Rd.	e/o Marine Av.	Sensitive	Arterial	52'	45
10	Two Mile Rd.	w/o Adobe Rd.	Sensitive	Arterial	52'	45
11	Two Mile Rd.	e/o Adobe Rd.	Sensitive	Arterial	52'	45

[1] Based on a review of existing aerial imagery.
[2] Tentative Tract Map 17168 Phases 3 to 8, Traffic Analysis, Urban Crossroads Inc.
[3] Distance to receiving land use is based upon the right-of-way distances.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes (Actual Vehicles)[1]			
			Existing Without Project	Existing With Project	EAC (2027) Without Project	EAPC (2027) With Project
1	Desert Knoll Ave.	s/o Samarkand Dr.	160	410	166	416
2	Desert Knoll Ave.	s/o Aztec Av.	520	644	541	665
3	Desert Knoll Ave.	s/o Manana Dr.	573	1,071	596	1,094
4	Desert Knoll Ave.	s/o Two Mile Rd.	1,333	1,333	1,387	1,387
5	Adobe Rd.	n/o Two Mile Rd.	14,506	14,568	15,752	15,814
6	Adobe Rd.	s/o Two Mile Rd.	11,746	12,058	13,045	13,357
7	Utah Tr.	n/o Samarkand Dr.	1,944	2,068	2,187	2,311
8	Utah Tr.	s/o Samarkand Dr.	1,944	2,194	2,187	2,437
9	Two Mile Rd.	e/o Marine Av.	2,480	2,604	2,580	2,704
10	Two Mile Rd.	w/o Adobe Rd.	7,986	8,110	8,473	8,597
11	Two Mile Rd.	e/o Adobe Rd.	5,733	6,231	5,965	6,463

[1] Tentative Tract Map 17168 Phases 3 to 8, Traffic Analysis, Urban Crossroads Inc.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits and the traffic flow by vehicle type (vehicle mix) used for all traffic scenarios.

TABLE 6-3: 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] 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.

6.3 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters, including the average daily traffic (ADT) volumes used for this study, are presented in Table 6-4. Classifications for the roadway segments analyzed were taken from the City of Twentynine Palms Circulation Plan.. Future average daily traffic volumes, shown in Table 6-4, were obtained from the County of San Bernardino, Countywide Plan EIR, Transportation Impact Analysis Table 4 soft-site conditions were used to analyze the potential on-site traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over

a reflective surface between the source and the receiver. 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. (25)

TABLE 6-4: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification[1]	Design Capacity[2]	Design Speed (MPH)[3]	Site Conditions
Desert Knoll Av.	2	Secondary	3,000	35	Soft
Utah Trail	2	Expressway	28,800	55	Soft
Samarkand Dr.	2	Secondary	3,000	35	Soft

1 City of Twentynine Palms, Circulation Plan
2 Roadway capacity volumes are based on the County of San Bernardino Countywide Plan, EIR, Transportation Impact Analysis Table 4
3 Posted Speed Limits

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 as shown in Appendix 6.1. 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 5 feet above the pad elevation to represent a resident standing in a private exterior use area (e.g. backyard), 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.

7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with the development of the proposed Project, noise contours were developed based on the Tract 17168 Twentynine Palms Traffic Analysis prepared by Urban Crossroads, Inc. (24)

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 through 7-4 present a summary of the exterior dBA CNEL traffic noise levels for each traffic condition. Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contour worksheets for each of the traffic conditions.

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report to fully analyze all the existing traffic scenarios identified in the traffic study. This condition is provided solely for informational purposes and will not occur, since the Project will not be fully developed and occupied under Existing conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing exterior noise levels are expected to range from 48.2 to 70.0 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows that the Existing with Project conditions will range from 52.2 to 70.0 dBA CNEL. Table 7-5 shows that the Project off-site traffic noise level impacts will range from less than 0.1 to 4.0 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, the off-site traffic noise level increases at sensitive land uses are considered less than significant.

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Desert Knoll Ave.	s/o Samarkand Dr.	Sensitive	48.2	56	122	262
2	Desert Knoll Ave.	s/o Aztec Av.	Sensitive	53.3	RW	111	240
3	Desert Knoll Ave.	s/o Manana Dr.	Sensitive	53.7	RW	75	161
4	Desert Knoll Ave.	s/o Two Mile Rd.	Sensitive	57.4	75	162	350
5	Adobe Rd.	n/o Two Mile Rd.	Sensitive	70.0	75	161	347
6	Adobe Rd.	s/o Two Mile Rd.	Sensitive	69.1	170	367	790
7	Utah Tr.	n/o Samarkand Dr.	Sensitive	59.1	RW	111	240
8	Utah Tr.	s/o Samarkand Dr.	Sensitive	59.1	RW	75	161
9	Two Mile Rd.	e/o Marine Av.	Sensitive	61.1	75	161	347
10	Two Mile Rd.	w/o Adobe Rd.	Sensitive	66.1	170	367	790
11	Two Mile Rd.	e/o Adobe Rd.	Sensitive	64.7	166	358	770

[1] Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Desert Knoll Ave.	s/o Samarkand Dr.	Sensitive	52.2	56	122	262
2	Desert Knoll Ave.	s/o Aztec Av.	Sensitive	54.2	RW	111	240
3	Desert Knoll Ave.	s/o Manana Dr.	Sensitive	56.4	RW	75	161
4	Desert Knoll Ave.	s/o Two Mile Rd.	Sensitive	57.4	75	162	350
5	Adobe Rd.	n/o Two Mile Rd.	Sensitive	70.0	75	161	347
6	Adobe Rd.	s/o Two Mile Rd.	Sensitive	69.2	170	367	790
7	Utah Tr.	n/o Samarkand Dr.	Sensitive	59.4	RW	111	240
8	Utah Tr.	s/o Samarkand Dr.	Sensitive	59.6	RW	75	161
9	Two Mile Rd.	e/o Marine Av.	Sensitive	61.3	75	161	347
10	Two Mile Rd.	w/o Adobe Rd.	Sensitive	66.2	170	367	790
11	Two Mile Rd.	e/o Adobe Rd.	Sensitive	65.1	166	358	770

[1] Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.3 EAC (2027) PROJECT TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the EAC (2027) without Project conditions CNEL noise levels. The EAC (2027) without Project exterior noise levels are expected to range from 48.3 to 70.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows that the EAPC (2027) with Project conditions will range from 52.3 to 70.4 dBA CNEL. Table 7-6

shows that the Project off-site traffic noise level increases will range from less than 0.1 to 4.0 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, the off-site traffic noise level increases at sensitive land uses are considered less than significant.

TABLE 7-3: EAC (2027) WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Desert Knoll Ave.	s/o Samarkand Dr.	Sensitive	48.3	56	122	262
2	Desert Knoll Ave.	s/o Aztec Av.	Sensitive	53.5	RW	111	240
3	Desert Knoll Ave.	s/o Manana Dr.	Sensitive	53.9	RW	75	161
4	Desert Knoll Ave.	s/o Two Mile Rd.	Sensitive	57.5	75	162	350
5	Adobe Rd.	n/o Two Mile Rd.	Sensitive	70.4	75	161	347
6	Adobe Rd.	s/o Two Mile Rd.	Sensitive	69.6	170	367	790
7	Utah Tr.	n/o Samarkand Dr.	Sensitive	59.6	166	358	770
8	Utah Tr.	s/o Samarkand Dr.	Sensitive	59.6	166	358	771
9	Two Mile Rd.	e/o Marine Av.	Sensitive	61.2	269	579	1,248
10	Two Mile Rd.	w/o Adobe Rd.	Sensitive	66.4	269	579	1,248
11	Two Mile Rd.	e/o Adobe Rd.	Sensitive	64.9	269	579	1,248

1 Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EAPC (2027) WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Desert Knoll Ave.	s/o Samarkand Dr.	Sensitive	52.3	56	122	262
2	Desert Knoll Ave.	s/o Aztec Av.	Sensitive	54.3	RW	111	240
3	Desert Knoll Ave.	s/o Manana Dr.	Sensitive	56.5	RW	75	161
4	Desert Knoll Ave.	s/o Two Mile Rd.	Sensitive	57.5	75	162	350
5	Adobe Rd.	n/o Two Mile Rd.	Sensitive	70.4	75	161	347
6	Adobe Rd.	s/o Two Mile Rd.	Sensitive	69.7	170	367	790
7	Utah Tr.	n/o Samarkand Dr.	Sensitive	59.8	166	358	770
8	Utah Tr.	s/o Samarkand Dr.	Sensitive	60.1	166	358	771
9	Two Mile Rd.	e/o Marine Av.	Sensitive	61.4	269	579	1,248
10	Two Mile Rd.	w/o Adobe Rd.	Sensitive	66.5	269	579	1,248
11	Two Mile Rd.	e/o Adobe Rd.	Sensitive	65.2	269	579	1,248

1 Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Desert Knoll Ave.	s/o Samarkand Dr.	Sensitive	48.2	52.2	4.0	5.0	No
2	Desert Knoll Ave.	s/o Aztec Av.	Sensitive	53.3	54.2	0.9	5.0	No
3	Desert Knoll Ave.	s/o Manana Dr.	Sensitive	53.7	56.4	2.7	5.0	No
4	Desert Knoll Ave.	s/o Two Mile Rd.	Sensitive	57.4	57.4	0.0	5.0	No
5	Adobe Rd.	n/o Two Mile Rd.	Sensitive	70.0	70.0	0.0	1.5	No
6	Adobe Rd.	s/o Two Mile Rd.	Sensitive	69.1	69.2	0.1	1.5	No
7	Utah Tr.	n/o Samarkand Dr.	Sensitive	59.1	59.4	0.3	5.0	No
8	Utah Tr.	s/o Samarkand Dr.	Sensitive	59.1	59.6	0.5	5.0	No
9	Two Mile Rd.	e/o Marine Av.	Sensitive	61.1	61.3	0.2	3.0	No
10	Two Mile Rd.	w/o Adobe Rd.	Sensitive	66.1	66.2	0.1	1.5	No
11	Two Mile Rd.	e/o Adobe Rd.	Sensitive	64.7	65.1	0.4	3.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

TABLE 7-6: EAC (2027) WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Desert Knoll Ave.	s/o Samarkand Dr.	Sensitive	48.3	52.3	4.0	5.0	No
2	Desert Knoll Ave.	s/o Aztec Av.	Sensitive	53.5	54.3	0.8	5.0	No
3	Desert Knoll Ave.	s/o Manana Dr.	Sensitive	53.9	56.5	2.6	5.0	No
4	Desert Knoll Ave.	s/o Two Mile Rd.	Sensitive	57.5	57.5	0.0	5.0	No
5	Adobe Rd.	n/o Two Mile Rd.	Sensitive	70.4	70.4	0.0	1.5	No
6	Adobe Rd.	s/o Two Mile Rd.	Sensitive	69.6	69.7	0.1	1.5	No
7	Utah Tr.	n/o Samarkand Dr.	Sensitive	59.6	59.8	0.2	5.0	No
8	Utah Tr.	s/o Samarkand Dr.	Sensitive	59.6	60.1	0.5	5.0	No
9	Two Mile Rd.	e/o Marine Av.	Sensitive	61.2	61.4	0.2	3.0	No
10	Two Mile Rd.	w/o Adobe Rd.	Sensitive	66.4	66.5	0.1	1.5	No
11	Two Mile Rd.	e/o Adobe Rd.	Sensitive	64.9	65.2	0.3	3.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

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8 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 on the Project site will be traffic noise from Desert Knoll Avenue, Utah Trail, and Samarkand Drive. The Project will also experience some background traffic noise impacts from other internal roads; however, due to low traffic volume/speeds, traffic noise from these roads will not make a significant contribution to the noise environment.

8.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 6-3 and 6-4, the expected future exterior noise levels for the Project were calculated. According to the City of Twentynine Palms Noise Element, noise-sensitive exterior areas within the Project are limited to the private yards of single-family homes. As shown in Table 8-1, the unabated exterior noise levels are estimated to range from 59.1 to 68.9 dBA CNEL in outdoor living spaces (e.g., backyards). To satisfy the City of Twentynine Palms 65 dBA CNEL exterior noise level standards for residential land uses, the construction of a 6-foot-high noise barrier is recommended for the outdoor living area (e.g., backyards) of lots 167, 168, and 170 fronting Utah Trail. With the recommended 6-foot-high noise barrier shown in Exhibit ES-1, the future exterior noise levels will range from 59.1 to 60.0 dBA CNEL within the outdoor living areas. This noise analysis shows that with the recommended noise barrier, the Project will satisfy the City of Twentynine Palms 65 dBA CNEL exterior noise level standards for all residential lots. The effective noise barrier height recommendations represent the minimum wall and/or berm combination height required to satisfy the City of Twentynine Palms exterior noise level standards. The on-site transportation noise analysis calculations are provided in Appendix 8.1.

TABLE 8-1: EXTERIOR NOISE LEVELS (CNEL)

Lot	Roadway	Unabated Exterior Noise Level (dBA CNEL)[1]	Abated Exterior Noise Level (dBA CNEL)[1]	Barrier Height (Feet)
83, 86	Desert Knoll Av.	59.5	59.5	0.0
74, 75, 82	Desert Knoll Av.	59.5	59.5	0.0
52, 53, 60, 61	Desert Knoll Av.	60.0	60.0	0.0
167, 168, 170	Utah Trail	68.9	59.6	6.0
86-89	Samarkand Dr.	59.1	59.1	0.0
91-96	Samarkand Dr.	59.1	59.1	0.0
133-137	Samarkand Dr.	59.1	59.1	0.0
138-142	Samarkand Dr.	59.1	59.1	0.0
171, 175, 176	Samarkand Dr.	59.1	59.1	0.0

[1] Outdoor environment limited to private yard of single-family.

8.2 On-Site Interior Noise Analysis

The future noise levels were calculated at the first- and second-floor building façades to ensure that the interior noise levels comply with the City of Twentynine Palms 45 dBA CNEL interior noise standards.

8.2.1 Noise Reduction Methodology

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Typical building construction will provide a Noise

Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." (5) (26) Several methods are used to improve interior noise reduction, including: [1] weather-stripping solid core exterior doors; [2] upgrading windows and glass doors; [3] ensuring exterior wall/roof assemblies are free of cutouts or openings; and [4] providing mechanical ventilation/air conditioning. The Project will provide air conditioning for the residential units; therefore, for the purposes of this analysis, a "windows closed" condition was assumed for all units.

8.2.2 Interior Noise Level Assessment

As shown in Table 8-2, the future noise levels at the first-floor façades are expected to range from 57.8 to 58.8 dBA CNEL. Table 8-2 shows that with the windows in a closed position, the future interior noise levels in the first-floor units are predicted to range from 32.8 to 33.8 dBA CNEL. The first-floor interior noise level analysis shows that the City of Twentynine Palms 45 dBA CNEL interior noise level standards for the planned residential uses can be complied with using standard construction, which assumes windows with a minimum STC rating of 27.

As shown in Table 8-3, the future noise levels at the second-floor façades are expected to range from 57.7 to 68.0 dBA CNEL. Table 8-3 shows that with the windows in a closed position, the future interior noise levels in the second-floor units are predicted to range from 32.7 to 43.0 dBA CNEL. The second-floor interior noise level analysis shows that the City of Twentynine Palms 45 dBA CNEL interior noise level standards for the planned residential uses can be complied with using standard construction, which assumes windows with a minimum STC rating of 27.

TABLE 8-2: FIRST-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Roadway	Noise Level at Façade	Required Interior Noise Reduction[1]	Minimum Noise Reduction[2]	Upgraded Windows[3]	Recommended STC	Interior Noise Level[4]
83, 86	Desert Knoll Av.	58.2	13.2	25	No	27	33.2
74, 75, 82	Desert Knoll Av.	58.2	13.2	25	No	27	33.2
52, 53, 60, 61	Desert Knoll Av.	58.6	13.6	25	No	27	33.6
167, 168, 170	Utah Trail	58.8	13.8	25	No	27	33.8
86-89	Samarkand Dr.	57.8	12.8	25	No	27	32.8
91-96	Samarkand Dr.	57.8	12.8	25	No	27	32.8
133-137	Samarkand Dr.	57.8	12.8	25	No	27	32.8
138-142	Samarkand Dr.	57.8	12.8	25	No	27	32.8
171, 175, 176	Samarkand Dr.	57.8	12.8	25	No	27	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.

TABLE 8-3: SECOND-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Roadway	Noise Level at Façade	Required Interior Noise Reduction[1]	Minimum Noise Reduction[2]	Upgraded Windows[3]	Recommended STC	Interior Noise Level[4]
83, 86	Desert Knoll Av.	58.0	13.0	25	No	27	33.0
74, 75, 82	Desert Knoll Av.	57.7	12.7	25	No	27	32.7
52, 53, 60, 61	Desert Knoll Av.	57.7	12.7	25	No	27	32.7
167, 168, 170	Utah Trail	58.0	13.0	25	No	27	33.0
86-89	Samarkand Dr.	58.4	13.4	25	No	27	33.4
91-96	Samarkand Dr.	68.0	23.0	25	No	27	43.0
133-137	Samarkand Dr.	57.7	12.7	25	No	27	32.7
138-142	Samarkand Dr.	57.7	12.7	25	No	27	32.7
171, 175, 176	Samarkand Dr.	57.7	12.7	25	No	27	32.7

[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.

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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 was based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2, Noise Measurement Locations. 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, out-patient 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, five 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 noise-sensitive residences near 5285 Utah Trail, approximately 254 feet northeast of the Project site. Receiver R1 is placed at the private outdoor use area (e.g., backyard) facing the Project site. A 24-hour noise measurement was taken near this location, M-A, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise-sensitive Twentynine Palms Junior High School, located at 5798 Utah Trail, approximately 26 feet east of the Project site. Receiver R2 is placed at façade facing the Project site. A 24-hour noise measurement was taken near this location, M-B, to describe the existing ambient noise environment.

R3: Location R3 represents the existing noise-sensitive Twentynine Palms Elementary School, located at 74350 Playa Vista Drive , approximately 141 feet south of the Project site. Receiver R3 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, M-C, to describe the existing ambient noise environment.

R4: Location R4 represents the existing noise-sensitive residence at 5595 Cedar Avenue, approximately 27 feet south of the Project site. Receiver R4 is placed at the outdoor use area (e.g., backyard) facing the Project site. A 24-hour noise measurement was taken near this location, M-D, to describe the existing ambient noise environment.

R5: Location R5 represents the existing noise-sensitive residence at 74087 Aztec Avenue, approximately 96 feet west of the Project site. Receiver R5 is placed at the future outdoor use area (e.g., backyard) facing the Project site. A 24-hour noise measurement was taken near this location, M-E, 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. 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." (29) 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 the 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 quests, 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, Receiver Locations, resulting from the operation of ground-mounted air conditioning units and parking lot vehicle movements. Exhibit 10-1 identifies the noise source locations used to assess the 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 are evaluated against standards established in the City of Twentynine Palms Code of Ordinances, Section 19.80070(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 levels shown in Table 10-1 and used to estimate the Project's operational noise impacts.

EXHIBIT 10-1: OPERATIONAL NOISE SOURCE LOCATIONS

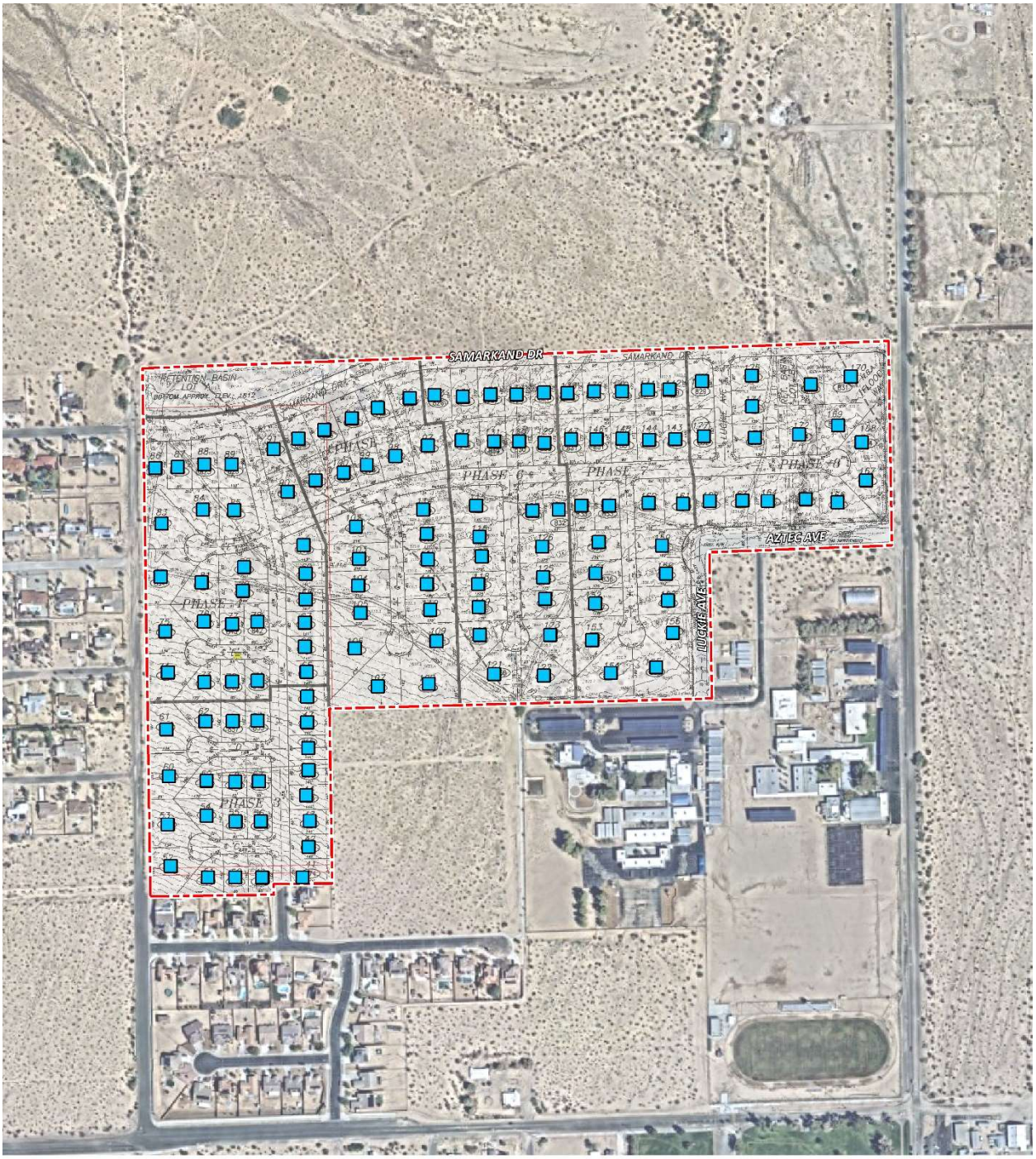


TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

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	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 p.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.

10.2.1 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 1.5- to 5-ton residential packaged air conditioning unit (Carrier 24SCA4). 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.

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 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 (Lw) 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 Levels

Using the reference noise levels to represent the Project operations that include ground-mounted air conditioning units and parking lot vehicle movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 28.0 to 37.5 dBA L_{eq}.

Table 10-2: Daytime Project Operational Noise Levels

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)				
	R1	R2	R3	R4	R5
Ground-Mounted Air Conditioning	28.0	34.2	33.2	37.5	34.9
Total (All Noise Sources)	28.0	34.2	33.2	37.5	34.9

[1] See Exhibit 10-1 for the noise source locations. CadnaA noise model calculations are included in Appendix 10.2.

Table 10-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the existing off-site receiver locations are expected to range from 25.3 to 34.8 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 10-1. Appendix 10.2 includes the detailed noise model inputs.

Table 10-3: Nighttime Project Operational Noise Levels

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)				
	R1	R2	R3	R4	R5
Ground-Mounted Air Conditioning	25.3	31.5	30.5	34.8	32.1
Total (All Noise Sources)	25.3	31.5	30.5	34.8	32.1

[1] See Exhibit 10-1 for the noise source locations. CadnaA noise model calculations are included in Appendix 10.2.

10.5 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 exterior noise level standards at nearby receiver locations. Table 10-4 shows that the mitigated operational noise levels associated with the Project will not exceed the 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 10-4: 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	28.0	25.3	65.0	65.0	No	No
R2	34.2	31.5	65.0	65.0	No	No
R3	33.2	30.5	65.0	65.0	No	No
R4	37.5	34.8	65.0	65.0	No	No
R5	34.9	32.1	65.0	65.0	No	No

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

10.6 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 levels 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. (3) 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 in 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 Tables 10-5 and 10-6, respectively. As indicated in Table 10-5, the Project will generate daytime operational noise increases ranging from less than 0.1 to 0.3 dBA L_{eq} at the nearest receiver locations. Table 10-6 shows that the Project will generate nighttime operational noise level increases ranging from less than 0.1 to 0.3 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 10-5: 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	28.0	M-A	64.9	64.9	0.0	3.0	No
R2	34.2	M-B	56.8	56.8	0.0	5.0	No
R3	33.2	M-C	57.3	57.3	0.0	5.0	No
R4	37.5	M-D	48.5	48.8	0.3	5.0	No
R5	34.9	M-E	49.0	49.2	0.2	5.0	No

[1] See Exhibit 9-1 for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 10-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-1.
[4] Observed daytime ambient noise levels as shown on 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 on Table 4-1.

TABLE 10-6: 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	25.3	M-A	61.4	61.4	0.0	3.0	No
R2	31.5	M-B	48.6	48.7	0.1	5.0	No
R3	30.5	M-C	49.2	49.3	0.1	5.0	No
R4	34.8	M-D	49.0	49.2	0.2	5.0	No
R5	32.1	M-E	43.3	43.6	0.3	5.0	No

[1] See Exhibit 9-1 for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 10-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-1.
[4] Observed nighttime ambient noise levels as shown on 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 on Table 4-1.

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 in relation to the nearest sensitive receiver locations previously described in Section 9, Receiver Locations. Section 19.80.100 of the City of Twentynine Palms Development Code, provided in Appendix 3.1, indicates that construction activity is considered exempt from the noise level standards between the hours of 7:00 a.m. to 7:00 p.m. except on Sundays and Federal holidays. (18) However, neither the City of Twentynine Palms General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual is used for the analysis of daytime construction impacts. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise-sensitive residential land use. (9)

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
- Grading
- Building Construction
- Paving
- 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 FHWA Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (27) 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. (28) (9) (29) 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 Equipment[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	Tractor	80	84.0	115.6
	Backhoe	74		
	Grader	81		
Grading	Scraper	80	83.3	114.9
	Excavator	77		
	Dozer	78		
Building Construction	Crane	73	81.1	112.8
	Tractor	80		
	Welder/Torch	70		
Paving	Paver	74	77.8	109.5
	Dump Truck	72		
	Roller	73		
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. (9) (30) 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 52.2 to 66.2 dBA L_{eq}, and the highest construction levels are expected to range from 58.3 to 66.2 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	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	58.3	57.6	55.4	52.2	54.1	58.3
R2	66.2	65.5	63.3	60.1	62.0	66.2
R3	63.1	62.4	60.2	57.0	58.9	63.1
R4	64.7	64.0	61.8	58.6	60.5	64.7
R5	63.8	63.1	60.9	57.7	59.6	63.8

[1] Construction noise source and receiver locations are shown on 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 satisfy 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 all receiver locations.

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	58.3	80	No
R2	66.2	80	No
R3	63.1	80	No
R4	64.7	80	No
R5	63.8	80	No

[1] Construction noise source and receiver locations are shown on 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 on Table 11-2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 TEMPORARY CONSTRUCTION NOISE LEVEL INCREASES

To describe the temporary Project construction noise level increase associated with Project construction, the Project construction noise levels were combined with the existing ambient noise level measurements at the nearest off-site receiver locations. The difference between the combined Project-construction and ambient noise levels is used to describe the construction noise level contributions. Temporary noise level increases that would be experienced at sensitive receiver locations when the Project construction-source noise is added to the ambient daytime conditions are presented in Table 11-4. A temporary noise level increase of 20 dBA is considered a significant impact based on the substantial noise level increase criteria, which is used to assess the Project-construction noise level increases.

As indicated in Table 11-4, the Project will contribute to construction noise increases ranging from 0.9 to 16.3 dBA L_{eq} during the daytime hours at the nearest receiver locations. The unmitigated construction noise analysis shows that the nearest receiver locations will not exceed the *substantial* 20 dBA L_{eq} noise level increase significance threshold during Project construction activities. The temporary construction noise level increase analysis shows that the noise impacts due to the Project construction noise are considered less than significant.

TABLE 11-4: DAYTIME CONSTRUCTION NOISE LEVEL INCREASES

Receiver Location[1]	Typical Project Construction 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	58.3	M-A	64.9	65.8	0.9	20	No
R2	66.2	M-B	56.8	66.7	9.9	20	No
R3	63.1	M-C	57.3	64.1	6.8	20	No
R4	64.7	M-D	48.5	64.8	16.3	20	No
R5	63.8	M-E	49.0	63.9	14.9	20	No

[1] Construction noise source and receiver locations are shown on Exhibit 11-1.
[2] Typical Project daytime construction noise levels as shown on Table 11-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-1.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project construction activities.
[6] The noise level increase expected with the addition of the proposed Project construction activities.
[7] Reasonable increase that can be tolerated without significant adverse effects.

11.6 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 11-5. 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 Caltrans. To describe the vibration impacts, Caltrans provides the following equation: $PPV\ (in/sec)_{equip} = PPV\ (in/sec)_{ref} \times (25/D)^{1.1}$

TABLE 11-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) (in/sec) (in/sec) (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 11-5 and the construction vibration assessment methodology published by Caltrans, it is possible to estimate the Project vibration impacts. Table 11-6 presents the expected Project-related vibration levels at the nearby receiver locations. At distances ranging from 26 to 254 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.01 to 0.19 PPV (in/sec). Based on the maximum acceptable continuous vibration threshold of 0.20 PPV (in/sec), the typical Project construction vibration levels will not exceed the vibration thresholds. Therefore, the Project-related vibration impacts are considered less than significant during typical construction activities at the Project site.

TABLE 11-6: 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	254'	0.00	0.00	0.00	0.00	0.01	0.01	0.20	No
R2	26'	0.00	0.03	0.07	0.08	0.20	0.20	0.20	No
R3	141'	0.00	0.00	0.01	0.01	0.02	0.02	0.20	No
R4	27'	0.00	0.03	0.07	0.08	0.19	0.19	0.20	No
R5	96'	0.00	0.00	0.01	0.01	0.03	0.03	0.20	No

[1] Construction noise source and receiver locations are shown on 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 11-5).
[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 Tract 17168 Twentynine Palms 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 (949) 660-1994.

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APPENDIX 3.1:

City of Twentynine Palms DEVELOPMENT CODE

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Chapter 19.80 - Noise Control

19.80.010 - Purpose

This Chapter establishes standards to reduce unnecessary, excessive and annoying noise and vibration in the City, maintain quiet in those areas which exhibit low noise levels, and implement programs aimed at reducing noise in those areas in the City where noise levels are above acceptable values.

19.80.020 - Applicability

A. The standards and requirements contained in this Chapter shall apply to all areas within the City limits of Twentynine Palms.

B. Exemptions. The following sources of noise are exempt:

1. Temporary construction, repair or demolition activities between 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays.
2. During the months of May through September of each year, temporary construction, repair or demolition activities shall be permitted during the hours of 6:00 a.m. to 7:00 p.m.

19.80.030 - Definitions

All terminology used in this Chapter, not defined below, shall be in conformance with applicable publications of the American National Standards Institute (ANSI) or its successor body. The following words, phrases and terms as used in this Chapter shall have the meaning as indicated below:

A. A Weighted Sound Level. The sound level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dBA.

B. Ambient Noise Level. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

C. Community Noise Equivalent Level (CNEL). CNEL is a noise rating scale. CNEL is similar to the LDN scale (see Day Night Noise Level, below) except that it includes an additional 5 dBA penalty for events that occur during the evening (7 p.m. to 10 p.m.) time period.

D. Construction. Any site preparation, assembly, erection, substantial repair, alteration, or similar action, for or of public or private rights-of-way, structures, utilities or similar property.

E. Cumulative Period. An additive period of time.

F. Day Night Noise Level (LDN). A 24-hour, time-weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the night (10 p.m. to 7 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where sleep is the most probable activity. LDN is composed of individual time segments which may be continuous or interrupted.

G. Decibel (dBA). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the ratio of the sound measured to the reference pressure, which is 20 micropascals.

H. Demolition. Any dismantling, intentional destruction or removal of structures, utilities, public or private rights-of-way surfaces, or similar existing development.

I. Equivalent Noise Level (LEQ). The "energy" average noise level during the time period of the sample. It is a number that represents a decibel sound level. This constant sound level would contain an equal amount of energy as a fluctuating sound level over a given period of time. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24 hours.

J. Motor Vehicle. Any and all self-propelled vehicles as defined in the California Motor Vehicle Code, including all on-highway type motor vehicles subject to registration under said Code, and all off-highway type motor vehicles subject to identification under said Code.

K. Sound Level Meter. An instrument, including a microphone, an amplifier, an output meter, or frequency weighting networks, for the measurement of sound levels. Such instrument shall meet or exceed the pertinent requirements for type S2A meters contained in the ANSI specifications for sound level meter, S1.4-1971, or the most recent revision thereof.

19.80.040 - Administration

A. Lead Agency. The Community Development Director shall designate a control program established by this Chapter. Such program may designate a specific staff person or persons to administer the noise monitoring and review on behalf of the City.

B. Powers. In order to implement and enforce this Chapter and for the general purpose of noise abatement and control, the City shall have, in addition to any other vested authority, the power to:

1. Conduct or cause to be conducted studies, research, and monitoring related to noise including joint cooperative investigation with public or private agencies, and the application for, and acceptance of, grants.
2. Review all public and private projects which are likely to cause noise in violation of this Chapter and which are subject to mandatory review or approval by other departments. Such review may include, but shall not be limited to:
    a. Review for compliance with the intent and provisions of this Chapter.
    b. Require sound analyses which identify existing and projected noise sources and associated noise levels.
    c. Require the usage of adequate mitigation measures to avoid violation of any provision of this Chapter.
3. Upon presentation of proper credentials, enter and/or inspect any private property, place, report or records at any time when granted permission by the owner or by some other person with authority to act for the owner. When permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction upon a showing of probable cause to believe that a violation of this Chapter may exist. Such inspection may include the administration of any necessary tests.

19.80.050 - General Noise Regulations

Notwithstanding any other provision of this Chapter, and in addition thereto, it shall be unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace and quiet enjoyment of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitivity residing in the area. The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not limited to, the following:

A. The sound level of the objectionable noise.
B. The sound level of the ambient noise.
C. The proximity of the noise to residential sleeping facilities.
D. The nature and zoning of the area within which the noise emanates.
E. The number of persons affected by the noise source.
F. The duration of the noise and its tonal, informational or musical content.
G. Whether the noise is continuous, recurrent or intermittent.
H. Whether the noise is produced by a commercial or noncommercial activity.

19.80.060 - Noise Measurement Procedure

A. Upon receipt of a signed complaint from a citizen or upon direction from the City Council, the City shall investigate the complaint. The investigation shall consist of a measurement of the offending noise and the gathering of data to adequately define the noise problem and shall include the following:
    1. Type of noise source.
    2. Location of noise source relative to complainant's property.
    3. Time period during which noise source is considered by complainant to be intrusive.
    4. Total duration of noise produced by noise source.
    5. Date and time of noise measurement survey.
B. The following procedures shall be followed when taking noise measurements:
    1. Utilizing the A weighting scale of the sound level meter and the "slow-meter response" (use "fast" response for impulsive type sounds), the noise level shall be measured at a position(s) at any point on the receiver's property.
    2. In general, the microphone shall be located 4 or 5 feet above the ground, and 10 feet or more from the nearest reflective surface where possible. However, in those cases where another elevation is deemed appropriate, the latter shall be utilized. If the noise complaint is related to interior noise levels, interior noise measurements shall be made within the affected residential unit. The measurements shall be made at a point at least 4 feet from the wall, ceiling or floor nearest the noise source, with windows in the normal seasonal configuration. Calibration of the measurement equipment utilizing an acoustic calibration shall be performed immediately prior to recording any noise data.

A. Table 19.80.070-1 describes the noise standard for emanations from any source, as it affects adjacent properties:

Table 19.80.070-1
Noise Standards

Affected Land Use (Receiving Noise)	Noise Level	
	Interior CNEL	Exterior CNEL
Residential Districts (RL, RS, RM, R-HD, OSR)	45 dBA [1]	65dBA [2,3]
Residential within Mixed Use	30 dBA Outdoor to Indoor Noise Reduction [4]	-
Office Commercial District (CO) and Public District (P)	45 dBA [1]	-
Other Commercial Districts (CN, CG, CT, CS)	45 dBA [1]	-
Community Industrial (IC)	70 dBA	-
Open Space [5]	-	65 dBA
Military (M)	As determined by Base Command	-

[illegible]

B. *No person shall operate or cause to be operated any source of sound at any location or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:*

1. The noise standard for that receiving land use, as specified in Table 19.80.070-1, for a cumulative period of more than 30 minutes in any hour; or
2. The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour; or
3. The noise standard plus 10 dBA for a cumulative period of more than five minutes in any hour; or

4. The noise standard plus 15 dBA for a cumulative period of more than one minute in any hour; or
5. The noise standard plus 20 dBA for any period of time.

C. If it is determined that the existing noise level exceeds any of the standards contained in Subsection 19.74.070.B (1-5) above, the allowable noise exposure standard for a new project may be increased by 5 dBA in each category.

D. If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 19.80.070-1 shall be reduced by 5 dBA.

19.80.080 - Interior Noise Limits

The maximum permissible interior noise level for residential uses, generated from another property, as measured in a residential living area on the receiving property, shall be as specified in Table 19.80.080-1.

Table 19.80.080-1
Residential Interior Noise Limits

Time Interval	Allowable Interior Noise Level (dBA)
Five (5) minutes in any given hour	45
One (1) minute in any given hour	55
Any length of time	65

19.80.090 - Prohibited Noise and Vibration

A. No person shall unnecessarily make, continue or permit to continue prohibited noise and/or vibration as described herein. Any person(s) so doing shall be in violation of this ordinance.

B. Operating, playing or permitting the operation or playing of any radio, television, sound system, drum, musical instrument or similar device which produces or reproduces sound:

1. Between the hours of 10 p.m. and 7 a.m. in such a manner as to create a noise disturbance across a residential or commercial real property line, except for cases in which an exception has been issued by the City.
2. In such a manner as to exceed the levels set forth for public space in Table 19.80.070-1, measured at a distance of at least 50 feet from such device operating on a public right-of-way or public space.

C. Using or operating for any purpose any loudspeaker system or similar device between the hours of 10 p.m. and 7 a.m. such that the sound therefrom creates a noise disturbance across a residential real property line, except for any noncommercial public speaking, public assembly or other activity for which an exception has been issued by the City.

D. Offering for sale, selling anything, or advertising by shouting or outcry within any residential or commercial area of the City except by variance issued by the City. The provisions of this Section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses or other similar licensed public entertainment events.

E. Owning, possessing or harboring any animal or bird which frequently or for long duration, howls, barks, meows, squawks or makes other sounds which create a noise disturbance across a residential or commercial real property line. This provision shall not apply to public zoos.

F. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between the hours of 10 p.m. and 7 a.m. in such a manner as to cause a noise disturbance across a residential real property line.

19.80.100 - Vibration

A. Vibration Standard. No ground vibration shall be allowed which can be felt without the aid of instruments at or beyond the lot line; nor will any vibration be permitted which produces a particle velocity greater than or equal to 0.2 inches per second measured at or beyond the lot line.

B. Vibration Measurement. Vibration velocity shall be measured with a seismograph or other instrument capable of measuring and recording displacement and frequency, particle velocity or acceleration. Readings are to be made at points of maximum vibration along any lot line.

C. Exempt Vibrations. The following sources of vibration are not regulated by this Code:

1. Motor vehicles not under the control of an industrial use.
2. Temporary construction, maintenance or demolition activities between 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays.

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APPENDIX 5.1:

STUDY AREA PHOTOS

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16894 - Tract 17168 Tentynine Palms

16894_L1_O 1.North
34, 9' 27.330000",116, 2' 11.530000"



16894_L1_O 2.South
34, 9' 27.130000",116, 2' 11.530000"



16894_L1_O 3.East
34, 9' 27.140000",116, 2' 11.510000"



16894_L1_O 4.West
34, 9' 27.140000",116, 2' 11.510000"



16894 - Tract 17168 Tentynine Palms

16894_L2_S 1.North
34, 9' 16.430000",116, 2' 21.230000"



16894_L2_S 2.South
34, 9' 16.380000",116, 2' 21.280000"



16894_L2_S 3.East
34, 9' 16.240000",116, 2' 21.170000"



16894_L2_S 4.West
34, 9' 16.290000",116, 2' 21.230000"

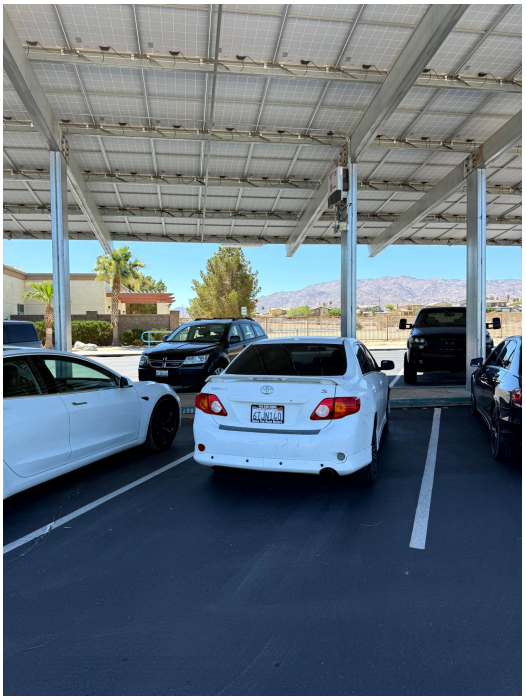


16894 - Tract 17168 Tentynine Palms

16894_L3_T 1.North
34, 9' 15.220000",116, 2' 26.280000"



16894_L3_T 2.South
34, 9' 15.290000",116, 2' 26.340000"



16894_L3_T 3.East
34, 9' 15.290000",116, 2' 26.310000"



16894_L3_T 4.West
34, 9' 15.300000",116, 2' 26.370000"

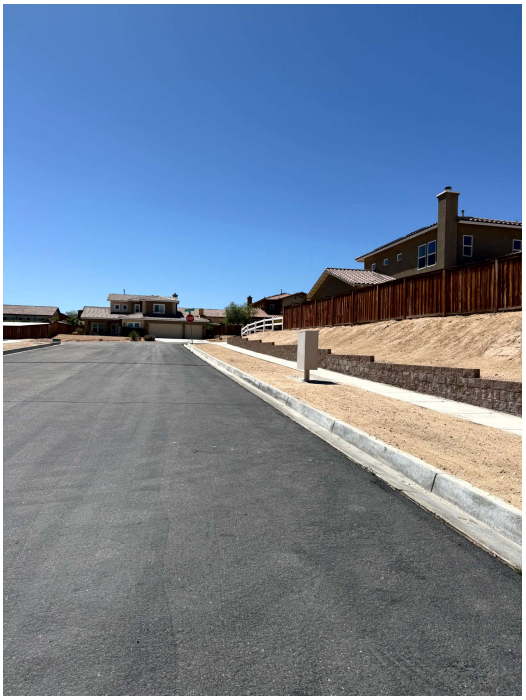


16894 - Tract 17168 Tentynine Palms

16894_L4_V 1.North
34, 9' 9.620000",116, 2' 37.350000"



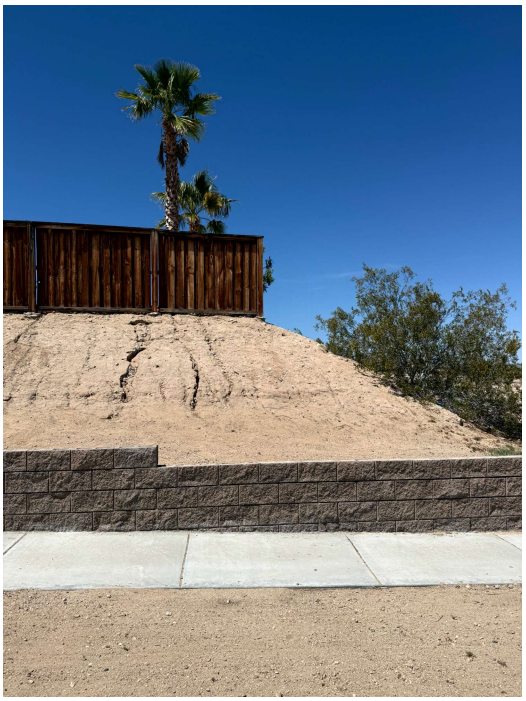
16894_L4_V 2.South
34, 9' 9.490000",116, 2' 37.350000"



16894_L4_V 3.East
34, 9' 9.360000",116, 2' 37.350000"



16894_L4_V 4.West
34, 9' 9.340000",116, 2' 37.350000"



16894 - Tract 17168 Tentynine Palms

16894_L5_Z 1.North
34, 9' 20.850000",116, 2' 43.170000"



16894_L5_Z 2.South
34, 9' 20.670000",116, 2' 43.170000"



16894_L5_Z 3.East
34, 9' 20.660000",116, 2' 43.170000"



16894_L5_Z 4.West
34, 9' 20.660000",116, 2' 43.280000"



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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

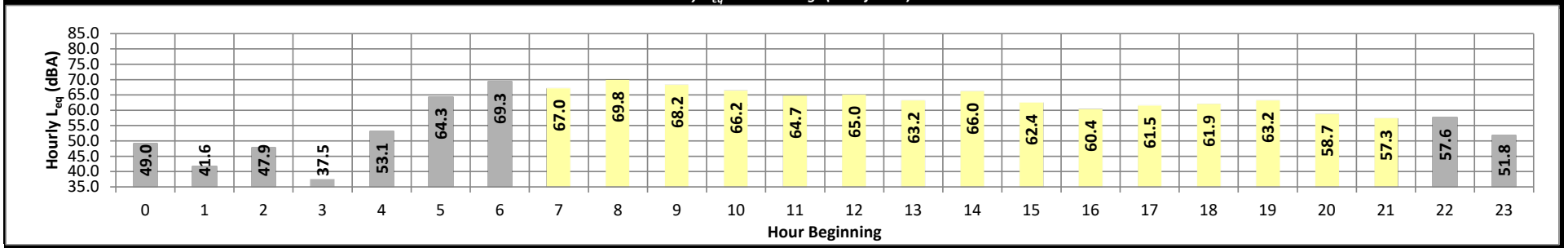
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24-Hour Noise Level Measurement Summary

Date: Thursday, April 23, 2026 *Location:* L1 - Located northeast of the site near the residence at 5285 *Meter:* Piccolo II *JN:* 16894

Project: Twentynine Palms *Source:* Utah Trail. *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	49.0	61.8	32.9	61.4	60.5	57.5	54.1	42.3	34.9	33.4	33.2	32.9	49.0	10.0	59.0
	1	41.6	53.3	31.0	53.0	52.4	49.8	47.1	36.8	33.2	31.4	31.2	31.0	41.6	10.0	51.6
	2	47.9	60.6	30.4	60.3	59.7	56.8	53.3	40.2	33.4	31.0	30.7	30.4	47.9	10.0	57.9
	3	37.5	43.9	33.4	43.6	43.3	42.0	41.0	37.9	36.0	34.1	33.8	33.5	37.5	10.0	47.5
	4	53.1	66.2	34.8	65.9	64.9	61.4	58.0	46.6	40.3	35.6	35.2	34.8	53.1	10.0	63.1
	5	64.3	76.8	43.0	76.4	75.6	71.9	69.0	61.8	54.4	45.4	44.1	43.2	64.3	10.0	74.3
	6	69.3	80.6	52.0	80.2	79.3	76.6	74.5	68.3	63.1	54.9	53.6	52.1	69.3	10.0	79.3
Day	7	67.0	78.8	49.6	78.3	77.2	74.2	72.1	65.9	60.0	52.5	51.2	49.9	67.0	0.0	67.0
	8	69.8	81.7	51.8	81.2	80.3	77.2	74.9	67.9	62.2	54.5	53.3	52.0	69.8	0.0	69.8
	9	68.2	80.3	46.3	79.9	79.2	76.1	73.5	65.2	58.6	50.1	48.3	46.7	68.2	0.0	68.2
	10	66.2	78.5	45.1	78.1	77.1	73.8	71.1	64.0	57.8	48.6	47.0	45.4	66.2	0.0	66.2
	11	64.7	76.1	44.4	75.7	75.0	72.6	70.1	62.6	56.6	47.8	46.0	44.6	64.7	0.0	64.7
	12	65.0	77.5	45.9	76.8	75.7	72.1	69.7	63.0	57.4	49.1	47.8	46.3	65.0	0.0	65.0
	13	63.2	74.6	46.2	74.1	73.1	70.1	67.7	62.4	57.5	49.6	48.0	46.5	63.2	0.0	63.2
	14	66.0	77.2	48.9	76.7	75.9	73.5	71.2	65.2	59.5	51.7	50.4	49.1	66.0	0.0	66.0
	15	62.4	73.3	46.8	73.0	72.2	69.2	67.1	61.7	57.2	49.3	48.1	47.0	62.4	0.0	62.4
	16	60.4	69.5	45.7	69.0	68.4	66.5	65.2	61.1	56.6	48.7	47.3	46.0	60.4	0.0	60.4
	17	61.5	71.8	44.3	71.4	70.5	67.8	66.1	61.8	57.1	47.5	46.0	44.6	61.5	0.0	61.5
	18	61.9	73.7	45.2	72.8	71.5	68.2	66.0	61.7	57.4	48.3	46.7	45.4	61.9	0.0	61.9
	19	63.2	75.1	41.5	74.7	73.9	70.7	67.8	61.4	55.4	46.5	43.7	41.8	63.2	5.0	68.2
	20	58.7	69.5	38.7	69.0	68.2	65.6	63.9	58.5	52.7	41.7	39.9	38.9	58.7	5.0	63.7
	21	57.3	69.1	36.0	68.6	67.6	64.6	62.7	56.0	48.6	38.6	37.5	36.4	57.3	5.0	62.3
Night	22	57.6	70.7	33.7	70.3	69.5	65.7	62.1	51.5	42.6	34.5	34.1	33.8	57.6	10.0	67.6
	23	51.8	64.3	34.9	63.9	63.1	60.3	57.1	46.5	37.9	35.5	35.2	35.0	51.8	10.0	61.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	57.3	69.1	36.0	68.6	67.6	64.6	62.7	56.0	48.6	38.6	37.5	36.4
	Max	69.8	81.7	51.8	81.2	80.3	77.2	74.9	67.9	62.2	54.5	53.3	52.0
Energy Average		64.9	Average:		74.6	73.7	70.8	68.6	62.6	57.0	48.3	46.8	45.4
Night	Min	37.5	43.9	30.4	43.6	43.3	42.0	41.0	36.8	33.2	31.0	30.7	30.4
	Max	69.3	80.6	52.0	80.2	79.3	76.6	74.5	68.3	63.1	54.9	53.6	52.1
Energy Average		61.4	Average:		63.9	63.1	60.2	57.3	48.0	41.8	37.3	36.8	36.3

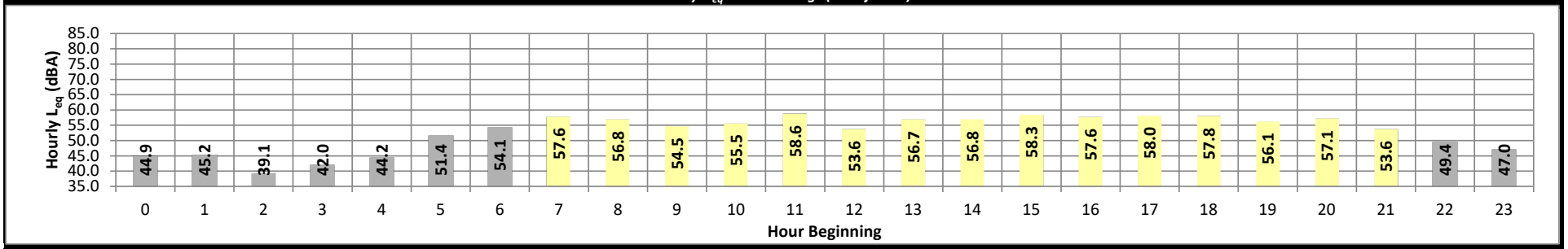
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
68.7	64.9	61.4

24-Hour Noise Level Measurement Summary

Date: Thursday, April 23, 2026 *Location:* L2 - Located east of the site near the residence at 5798 Utah *Meter:* Piccolo II *JN:* 16894

Project: Twentynine Palms *Source:* Trail. *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	44.9	55.7	39.3	54.6	53.7	51.2	49.2	43.7	41.3	39.9	39.7	39.4	44.9	10.0	54.9
	1	45.2	48.8	44.0	48.5	48.3	47.6	46.8	45.3	44.8	44.2	44.1	44.0	45.2	10.0	55.2
	2	39.1	44.0	36.2	43.7	43.4	42.8	42.3	39.7	37.9	36.7	36.5	36.3	39.1	10.0	49.1
	3	42.0	49.3	37.7	49.0	48.7	47.7	45.9	41.5	40.1	38.3	38.0	37.8	42.0	10.0	52.0
	4	44.2	49.8	40.0	49.5	49.1	48.1	47.4	44.7	43.2	41.0	40.6	40.2	44.2	10.0	54.2
	5	51.4	59.8	44.8	59.3	58.9	57.7	56.3	50.9	48.3	46.0	45.6	45.0	51.4	10.0	61.4
	6	54.1	61.8	47.8	61.4	61.1	60.0	58.7	54.2	51.6	48.9	48.5	48.0	54.1	10.0	64.1
Day	7	57.6	64.3	51.7	63.9	63.6	62.4	61.3	58.4	56.0	52.9	52.4	51.9	57.6	0.0	57.6
	8	56.8	64.7	47.6	64.2	63.6	62.4	61.0	57.7	54.2	49.6	48.6	47.8	56.8	0.0	56.8
	9	54.5	62.7	43.5	62.2	61.8	60.7	59.5	55.3	51.0	45.3	44.4	43.7	54.5	0.0	54.5
	10	55.5	63.2	46.2	62.8	62.4	61.3	60.0	56.1	53.1	48.4	47.4	46.5	55.5	0.0	55.5
	11	58.6	69.1	45.6	68.3	67.8	65.6	63.4	58.8	53.1	47.4	46.5	45.8	58.6	0.0	58.6
	12	53.6	61.7	45.3	61.4	61.0	59.5	58.3	54.1	50.8	46.6	46.0	45.5	53.6	0.0	53.6
	13	56.7	65.4	48.7	65.1	64.5	62.8	61.1	57.1	53.8	50.1	49.6	48.9	56.7	0.0	56.7
	14	56.8	65.6	49.1	64.9	64.3	62.2	60.9	57.2	54.4	50.6	49.9	49.2	56.8	0.0	56.8
	15	58.3	65.2	49.4	64.8	64.4	63.4	62.7	59.3	56.1	51.5	50.7	49.6	58.3	0.0	58.3
	16	57.6	65.1	47.7	64.7	64.4	63.2	62.0	58.3	54.9	50.0	49.1	48.0	57.6	0.0	57.6
	17	58.0	65.8	49.1	65.4	65.0	63.7	62.3	58.8	55.6	51.1	50.1	49.3	58.0	0.0	58.0
	18	57.8	66.7	47.5	66.3	65.9	64.4	62.2	58.1	54.6	49.7	48.8	47.8	57.8	0.0	57.8
	19	56.1	66.2	43.3	65.8	65.1	63.2	61.2	56.0	51.4	45.3	44.5	43.5	56.1	5.0	61.1
	20	57.1	68.8	41.2	68.6	68.0	64.8	61.7	54.5	49.9	43.2	42.2	41.4	57.1	5.0	62.1
	21	53.6	62.1	45.5	61.8	61.5	60.3	58.7	53.7	49.8	46.6	46.2	45.6	53.6	5.0	58.6
Night	22	49.4	59.6	40.9	59.0	58.2	56.5	54.6	48.7	45.0	41.7	41.4	41.0	49.4	10.0	59.4
	23	47.0	55.2	41.3	54.8	54.4	52.8	51.6	46.9	44.4	42.2	41.8	41.4	47.0	10.0	57.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	53.6	61.7	41.2	61.4	61.0	59.5	58.3	53.7	49.8	43.2	42.2	41.4
	Max	58.6	69.1	51.7	68.6	68.0	65.6	63.4	59.3	56.1	52.9	52.4	51.9
Energy Average		56.8	Average:		64.7	64.2	62.7	61.1	56.9	53.3	48.6	47.8	47.0
Night	Min	39.1	44.0	36.2	43.7	43.4	42.8	42.3	39.7	37.9	36.7	36.5	36.3
	Max	54.1	61.8	47.8	61.4	61.1	60.0	58.7	54.2	51.6	48.9	48.5	48.0
Energy Average		48.6	Average:		53.3	52.9	51.6	50.3	46.2	44.1	42.1	41.8	41.5

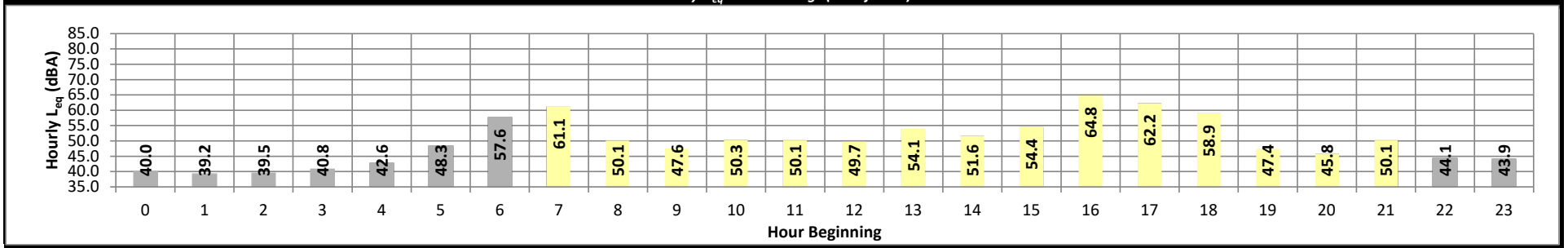
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
58.3	**56.8**	**48.6**

24-Hour Noise Level Measurement Summary

Date: Thursday, April 23, 2026 *Location:* L3 - Located south of the site near the residence at 74350 *Meter:* Piccolo II *JN:* 16894

Project: Twentynine Palms *Source:* Playa Vista Dr. *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	40.0	46.4	36.9	45.5	44.9	43.1	42.5	40.6	39.2	37.5	37.2	37.0	40.0	10.0	50.0
	1	39.2	42.9	37.4	42.5	42.2	41.5	41.0	39.7	38.8	37.8	37.6	37.5	39.2	10.0	49.2
	2	39.5	42.5	37.6	42.3	42.1	41.7	41.4	40.1	39.1	37.9	37.8	37.6	39.5	10.0	49.5
	3	40.8	44.6	38.5	44.3	43.9	43.0	42.6	41.4	40.4	39.0	38.8	38.6	40.8	10.0	50.8
	4	42.6	46.5	39.3	46.0	45.7	45.1	44.7	43.4	42.2	40.3	39.9	39.5	42.6	10.0	52.6
	5	48.3	53.5	44.4	53.1	52.7	51.5	50.9	48.9	47.6	45.8	45.4	44.7	48.3	10.0	58.3
	6	57.6	71.5	49.2	69.7	67.5	63.1	60.3	55.9	52.3	50.3	49.9	49.4	57.6	10.0	67.6
Day	7	61.1	71.5	52.5	70.4	69.2	67.4	66.1	60.6	56.5	53.5	53.1	52.6	61.1	0.0	61.1
	8	50.1	58.0	44.5	57.1	56.3	54.7	53.5	50.6	48.5	45.8	45.3	44.8	50.1	0.0	50.1
	9	47.6	57.4	41.9	56.5	55.3	52.8	50.9	47.5	45.6	43.0	42.6	42.1	47.6	0.0	47.6
	10	50.3	60.0	43.4	58.6	57.5	54.9	53.5	50.8	48.5	45.0	44.3	43.6	50.3	0.0	50.3
	11	50.1	57.2	44.7	56.7	56.1	54.4	53.6	50.8	48.7	45.9	45.5	44.9	50.1	0.0	50.1
	12	49.7	56.8	45.2	56.2	55.6	53.9	53.0	50.2	48.3	46.3	45.8	45.4	49.7	0.0	49.7
	13	54.1	65.2	45.8	64.4	63.1	60.1	58.2	53.3	50.5	47.3	46.7	46.1	54.1	0.0	54.1
	14	51.6	58.1	47.6	57.4	56.8	55.5	54.6	52.0	50.4	48.5	48.2	47.7	51.6	0.0	51.6
	15	54.4	62.4	47.7	61.5	60.9	59.7	59.0	53.7	51.9	49.3	48.7	48.0	54.4	0.0	54.4
	16	64.8	76.5	50.3	75.3	73.8	71.4	69.8	64.2	60.0	53.1	52.1	50.9	64.8	0.0	64.8
	17	62.2	72.5	52.0	71.5	70.5	68.5	66.7	62.2	58.7	54.5	53.7	52.5	62.2	0.0	62.2
	18	58.9	68.9	48.4	67.7	66.4	64.3	63.1	59.3	56.1	51.4	50.3	49.0	58.9	0.0	58.9
	19	47.4	55.3	41.0	54.6	53.7	51.9	51.2	48.0	45.6	42.4	41.9	41.1	47.4	5.0	52.4
	20	45.8	55.0	38.1	54.6	53.9	51.5	49.6	45.8	43.3	39.5	38.8	38.3	45.8	5.0	50.8
	21	50.1	56.2	45.4	56.0	55.7	54.8	54.0	50.7	48.5	46.1	45.8	45.5	50.1	5.0	55.1
Night	22	44.1	50.2	39.8	49.7	49.0	47.9	47.3	45.0	42.9	40.7	40.4	40.0	44.1	10.0	54.1
	23	43.9	49.7	40.4	49.0	48.5	47.6	47.0	44.6	42.8	41.1	40.8	40.5	43.9	10.0	53.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	45.8	55.0	38.1	54.6	53.7	51.5	49.6	45.8	43.3	39.5	38.8	38.3
	Max	64.8	76.5	52.5	75.3	73.8	71.4	69.8	64.2	60.0	54.5	53.7	52.6
Energy Average		57.3	Average:		61.2	60.3	58.4	57.1	53.3	50.7	47.4	46.9	46.2
Night	Min	39.2	42.5	36.9	42.3	42.1	41.5	41.0	39.7	38.8	37.5	37.2	37.0
	Max	57.6	71.5	49.2	69.7	67.5	63.1	60.3	55.9	52.3	50.3	49.9	49.4
Energy Average		49.2	Average:		49.1	48.5	47.2	46.4	44.4	42.8	41.1	40.9	40.5

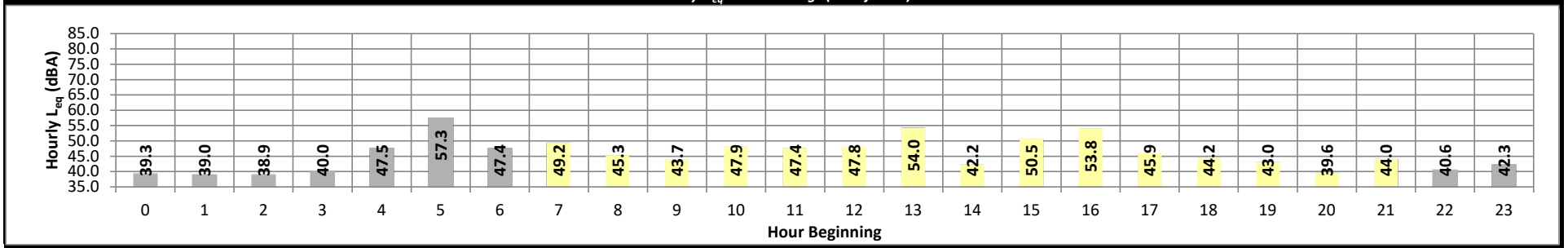
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
58.2	**57.3**	**49.2**

24-Hour Noise Level Measurement Summary

Date: Thursday, April 23, 2026 *Location:* L4 - Located south of the site near the residence at 5595 Cedar *Meter:* Piccolo II *JN:* 16894

Project: Twentynine Palms *Source:* 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	39.3	42.1	38.1	41.9	41.6	40.9	40.5	39.6	39.0	38.3	38.2	38.1	39.3	10.0	49.3
	1	39.0	42.9	37.9	42.6	42.1	41.0	40.5	39.0	38.5	38.1	38.0	37.9	39.0	10.0	49.0
	2	38.9	41.0	38.1	40.8	40.6	40.2	39.8	39.1	38.7	38.3	38.2	38.1	38.9	10.0	48.9
	3	40.0	42.3	38.9	42.0	41.8	41.4	41.2	40.4	39.8	39.2	39.1	39.0	40.0	10.0	50.0
	4	47.5	53.2	40.8	52.5	52.0	51.0	50.5	48.8	46.8	42.4	41.7	41.0	47.5	10.0	57.5
	5	57.3	62.6	45.1	61.7	61.2	60.5	60.1	58.7	56.9	51.9	49.9	46.5	57.3	10.0	67.3
	6	47.4	52.5	43.4	52.2	51.8	51.0	50.2	48.4	46.2	44.3	43.9	43.5	47.4	10.0	57.4
Day	7	49.2	53.4	46.1	52.8	52.2	51.5	51.2	49.8	48.8	47.1	46.8	46.2	49.2	0.0	49.2
	8	45.3	56.6	38.3	55.2	53.6	50.0	48.5	45.2	42.5	39.8	39.2	38.5	45.3	0.0	45.3
	9	43.7	54.3	38.5	52.8	51.2	47.5	46.0	43.6	42.1	39.6	39.1	38.7	43.7	0.0	43.7
	10	47.9	53.0	45.6	52.3	51.6	50.6	50.1	48.7	47.0	46.0	45.8	45.6	47.9	0.0	47.9
	11	47.4	53.1	45.3	52.6	52.1	50.8	50.1	47.6	46.3	45.5	45.4	45.3	47.4	0.0	47.4
	12	47.8	53.8	45.4	53.0	52.3	51.0	50.3	48.3	46.7	45.7	45.5	45.4	47.8	0.0	47.8
	13	54.0	59.6	52.3	58.6	57.7	56.0	55.5	54.1	53.5	52.7	52.5	52.4	54.0	0.0	54.0
	14	42.2	49.4	37.8	48.7	48.0	46.3	45.3	43.0	40.9	38.6	38.3	37.9	42.2	0.0	42.2
	15	50.5	62.8	40.4	61.4	59.3	56.1	54.3	50.3	46.7	41.9	41.3	40.6	50.5	0.0	50.5
	16	53.8	64.1	46.6	62.8	61.5	59.4	58.0	54.0	51.0	47.6	47.2	46.7	53.8	0.0	53.8
	17	45.9	56.5	37.3	55.3	54.1	51.1	49.4	45.9	43.5	38.7	38.1	37.6	45.9	0.0	45.9
	18	44.2	51.3	40.2	50.7	50.1	48.6	47.7	44.5	42.7	40.9	40.7	40.3	44.2	0.0	44.2
	19	43.0	52.0	35.4	50.8	49.7	48.1	47.2	43.9	40.4	36.4	36.0	35.6	43.0	5.0	48.0
	20	39.6	49.9	34.6	48.1	46.4	43.1	42.3	39.7	37.8	36.1	35.4	34.7	39.6	5.0	44.6
	21	44.0	47.7	42.6	47.1	46.6	45.7	45.3	44.4	43.7	42.9	42.8	42.7	44.0	5.0	49.0
Night	22	40.6	46.3	37.9	45.4	44.6	43.2	42.6	41.2	40.0	38.5	38.2	38.0	40.6	10.0	50.6
	23	42.3	46.0	40.2	45.7	45.4	44.6	44.2	42.7	41.8	40.6	40.5	40.3	42.3	10.0	52.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	39.6	47.7	34.6	47.1	46.4	43.1	42.3	39.7	37.8	36.1	35.4	34.7
	Max	54.0	64.1	52.3	62.8	61.5	59.4	58.0	54.1	53.5	52.7	52.5	52.4
Energy Average		48.5	Average:		53.5	52.4	50.4	49.4	46.9	44.9	42.6	42.3	41.9
Night	Min	38.9	41.0	37.9	40.8	40.6	40.2	39.8	39.0	38.5	38.1	38.0	37.9
	Max	57.3	62.6	45.1	61.7	61.2	60.5	60.1	58.7	56.9	51.9	49.9	46.5
Energy Average		49.0	Average:		47.2	46.8	46.0	45.5	44.2	43.1	41.3	40.9	40.3

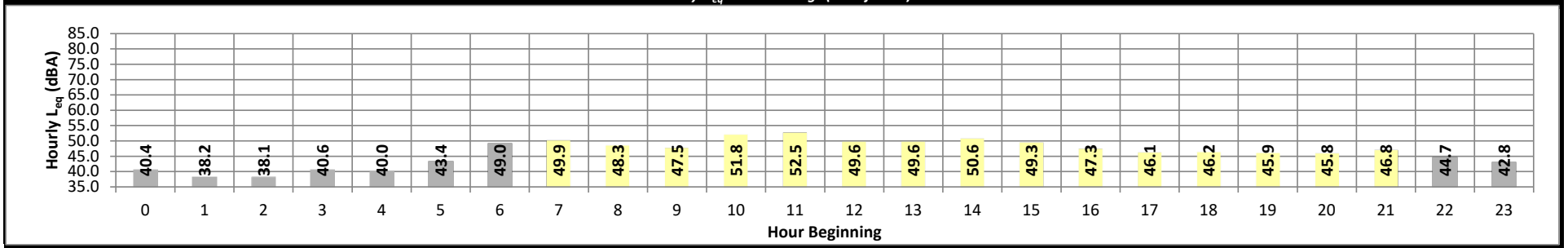
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
55.4	48.5	49.0

24-Hour Noise Level Measurement Summary

Date: Thursday, April 23, 2026 *Location:* L5 - Located west of the site near the residence at 74087 Aztec *Meter:* Piccolo II *JN:* 16894

Project: Twentynine Palms *Source:* 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	40.4	43.9	38.3	43.6	43.2	42.7	42.1	40.8	40.1	39.0	38.7	38.4	40.4	10.0	50.4
	1	38.2	41.6	35.8	41.3	41.0	40.4	39.9	38.7	37.8	36.5	36.3	35.9	38.2	10.0	48.2
	2	38.1	42.7	35.2	42.5	42.2	41.3	40.6	38.4	37.3	35.9	35.7	35.4	38.1	10.0	48.1
	3	40.6	44.7	37.9	44.5	44.3	43.6	43.2	41.3	39.7	38.2	38.0	37.9	40.6	10.0	50.6
	4	40.0	44.2	37.4	44.0	43.7	42.9	42.4	40.5	39.2	38.0	37.8	37.5	40.0	10.0	50.0
	5	43.4	47.7	40.4	47.5	47.2	46.5	46.0	43.9	42.6	41.0	40.8	40.5	43.4	10.0	53.4
	6	49.0	57.2	42.9	56.4	55.8	54.5	53.5	49.1	46.3	43.7	43.4	43.0	49.0	10.0	59.0
Day	7	49.9	57.4	44.7	57.0	56.5	54.7	53.2	50.3	48.4	45.8	45.4	44.9	49.9	0.0	49.9
	8	48.3	55.5	41.8	55.1	54.7	53.4	52.3	48.7	46.8	43.4	42.7	42.0	48.3	0.0	48.3
	9	47.5	55.8	40.7	55.3	54.9	53.4	51.9	47.8	45.1	41.8	41.3	40.8	47.5	0.0	47.5
	10	51.8	63.5	40.8	62.5	61.3	59.4	56.8	50.5	45.7	42.3	41.7	41.0	51.8	0.0	51.8
	11	52.5	62.0	42.5	61.6	61.2	60.2	58.7	51.1	47.2	43.6	43.1	42.7	52.5	0.0	52.5
	12	49.6	60.6	43.2	59.0	58.2	54.1	53.2	49.3	46.4	44.1	43.7	43.3	49.6	0.0	49.6
	13	49.6	58.2	41.8	57.9	57.5	55.8	54.7	49.7	46.1	42.9	42.4	42.0	49.6	0.0	49.6
	14	50.6	61.3	41.9	60.5	59.4	57.4	56.2	49.4	45.9	43.0	42.5	42.1	50.6	0.0	50.6
	15	49.3	59.4	43.1	58.3	56.1	54.6	52.9	48.9	46.7	44.2	43.7	43.2	49.3	0.0	49.3
	16	47.3	56.9	42.9	55.5	54.7	52.1	51.0	47.6	46.2	44.0	43.5	43.1	47.3	0.0	47.3
	17	46.1	50.9	41.3	50.6	50.2	49.5	48.9	47.1	45.4	42.6	42.1	41.5	46.1	0.0	46.1
	18	46.2	51.9	41.4	51.5	51.0	49.7	48.9	47.1	45.5	42.6	42.1	41.5	46.2	0.0	46.2
	19	45.9	51.3	40.8	51.0	50.7	49.8	49.1	46.7	44.9	42.0	41.4	40.9	45.9	5.0	50.9
	20	45.8	50.2	43.0	50.0	49.7	48.7	48.1	46.4	45.2	43.5	43.3	43.1	45.8	5.0	50.8
	21	46.8	54.3	43.4	53.6	52.7	50.4	49.3	47.1	45.7	44.0	43.8	43.6	46.8	5.0	51.8
Night	22	44.7	48.2	42.3	48.0	47.7	47.2	46.9	45.4	44.1	42.7	42.6	42.4	44.7	10.0	54.7
	23	42.8	47.5	40.1	47.1	46.8	46.0	45.2	43.3	42.0	40.8	40.5	40.2	42.8	10.0	52.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	45.8	50.2	40.7	50.0	49.7	48.7	48.1	46.4	44.9	41.8	41.3	40.8
	Max	52.5	63.5	44.7	62.5	61.3	60.2	58.7	51.1	48.4	45.8	45.4	44.9
Energy Average		49.0	Average:		56.0	55.3	53.5	52.4	48.5	46.1	43.3	42.9	42.4
Night	Min	38.1	41.6	35.2	41.3	41.0	40.4	39.9	38.4	37.3	35.9	35.7	35.4
	Max	49.0	57.2	42.9	56.4	55.8	54.5	53.5	49.1	46.3	43.7	43.4	43.0
Energy Average		43.3	Average:		46.1	45.8	45.0	44.4	42.4	41.0	39.5	39.3	39.0

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
51.5	**49.0**	**43.3**

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APPENDIX 6.1:

SITE PLAN

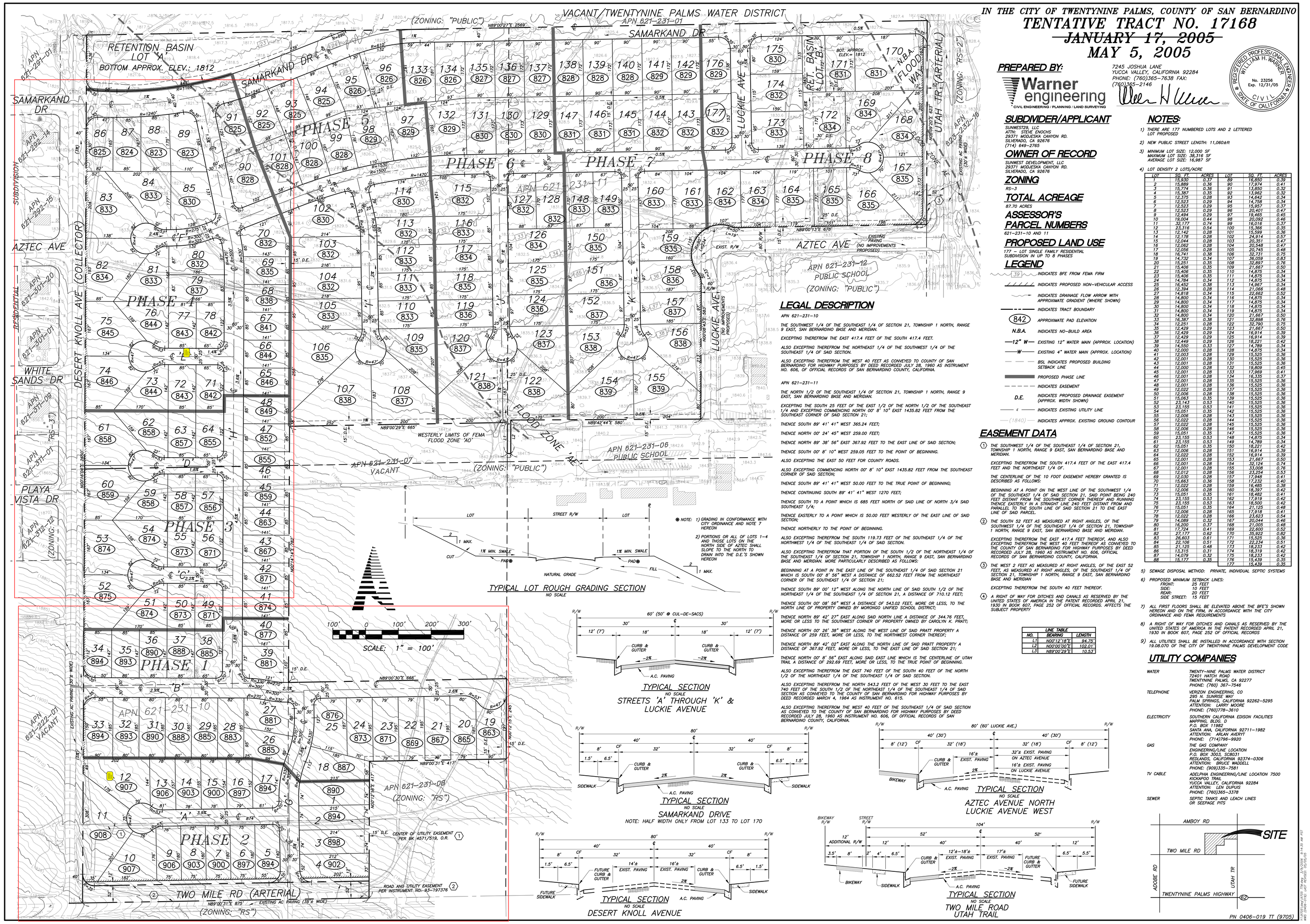
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IN THE CITY OF TWENTYNINE PALMS, COUNTY OF SAN BERNARDINO

TENTATIVE TRACT NO. 17168

~~JANUARY 17, 2005~~

MAY 5, 2005



PREPARED BY:

Warner engineering
CIVIL ENGINEERING / PLANNING / LAND SURVEYING

7245 JOSHUA LANE
YUCCA VALLEY, CALIFORNIA 92284
PHONE: (760)365-7638 FAX:
(760)365-2146

REGISTERED PROFESSIONAL ENGINEER
WILLIAM H. WARNER
No. 23256
Exp. 12/31/05
CIVIL
STATE OF CALIFORNIA

SUBDIVIDER/APPLICANT

SUNWEST28, LLC
ATTN: STEVE ENOCHS
29371 MOUESKA CANYON RD.
SILVERADO, CA 92676
(714) 649-2765

OWNER OF RECORD

SUNWEST DEVELOPMENT, LLC
29371 MOUESKA CANYON RD.
SILVERADO, CA 92676

ZONING

RS-3

TOTAL ACREAGE

87.70 ACRES

ASSESSOR'S PARCEL NUMBERS

621-231-10 AND 11

PROPOSED LAND USE

177 – LOT SINGLE FAMILY RESIDENTIAL SUBDIVISION IN UP TO 8 PHASES

LEGEND

- 39 — INDICATES BFE FROM FEMA FIRM
- INDICATES PROPOSED NON-VEHICULAR ACCESS
- INDICATES DRAINAGE FLOW ARROW WITH APPROXIMATE GRADIENT (WHERE SHOWN)
- INDICATES TRACT BOUNDARY
- (842) — APPROXIMATE PAD ELEVATION
- N.B.A. — INDICATES NO-BUILD AREA
- —12" W— EXISTING 12" WATER MAIN (APPROX. LOCATION)
- —W— EXISTING 4" WATER MAIN (APPROX. LOCATION)
- BSL INDICATES PROPOSED BUILDING SETBACK LINE
- PROPOSED PHASE LINE
- INDICATES EASEMENT
- D.E. — INDICATES PROPOSED DRAINAGE EASEMENT (APPROX. WIDTH SHOWN)
- ℄ — INDICATES EXISTING UTILITY LINE
- (1840) — INDICATES APPROX. EXISTING GROUND CONTOUR

LEGAL DESCRIPTION

APN 621-231-10

THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 1 NORTH, RANGE 9 EAST, SAN BERNARDINO BASE AND MERIDIAN.

EXCEPTING THEREFROM THE EAST 417.4 FEET OF THE SOUTH 417.4 FEET.

ALSO EXCEPTING THEREFROM THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION.

ALSO EXCEPTING THEREFROM THE WEST 40 FEET AS CONVEYED TO COUNTY OF SAN BERNARDINO FOR HIGHWAY PURPOSES BY DEED RECORDED JULY 28, 1960 AS INSTRUMENT NO. 606, OF OFFICIAL RECORDS OF SAN BERNARDINO COUNTY, CALIFORNIA.

APN 621-231-11

THE NORTH 1/2 OF THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 1 NORTH, RANGE 9 EAST, SAN BERNARDINO BASE AND MERIDIAN.

EXCEPTING THE SOUTH 25 FEET OF THE EAST 1/2 OF THE NORTH 1/2 OF THE SOUTHEAST 1/4 AND EXCEPTING COMMENCING NORTH 00° 8' 10" EAST 1435.82 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 21;

THENCE SOUTH 89° 41' 41" WEST 365.24 FEET;

THENCE NORTH 00° 24' 45" WEST 259.00 FEET;

THENCE NORTH 89° 38' 56" EAST 367.92 FEET TO THE EAST LINE OF SAID SECTION;

THENCE SOUTH 00° 8' 10" WEST 259.05 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPTING THE EAST 50 FEET FOR COUNTY ROADS.

ALSO EXCEPTING COMMENCING NORTH 00° 8' 10" EAST 1435.82 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION;

THENCE SOUTH 89° 41' 41" WEST 50.00 FEET TO THE TRUE POINT OF BEGINNING;

THENCE CONTINUING SOUTH 89° 41' 41" WEST 1270 FEET;

THENCE SOUTH TO A POINT WHICH IS 685 FEET NORTH OF SAID LINE OF NORTH 3/4 SAID SOUTHEAST 1/4;

THENCE EASTERLY TO A POINT WHICH IS 50.00 FEET WESTERLY OF THE EAST LINE OF SAID SECTION;

THENCE NORTHERLY TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THE SOUTH 119.73 FEET OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION.

ALSO EXCEPTING THEREFROM THAT PORTION OF THE SOUTH 1/2 OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 1 NORTH, RANGE 9 EAST, SAN BERNARDINO BASE AND MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE EAST LINE OF THE SOUTHEAST 1/4 OF SAID SECTION 21 WHICH IS SOUTH 00° 8' 56" WEST A DISTANCE OF 662.52 FEET FROM THE NORTHEAST CORNER OF THE SOUTHEAST 1/4 OF SECTION 21;

THENCE SOUTH 89° 00' 12" WEST ALONG THE NORTH LINE OF SAID SOUTH 1/2 OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 21, A DISTANCE OF 710.12 FEET;

THENCE SOUTH 00° 08' 56" WEST A DISTANCE OF 543.02 FEET, MORE OR LESS, TO THE NORTH LINE OF PROPERTY OWNED BY MORONGO UNIFIED SCHOOL DISTRICT;

THENCE NORTH 89° 42' 27" EAST ALONG SAID NORTH LINE A DISTANCE OF 344.76 FEET, MORE OR LESS TO THE SOUTHWEST CORNER OF PROPERTY OWNED BY CAROLYN K. PRATT;

THENCE NORTH 00° 26' 38" WEST ALONG THE WEST LINE OF SAID PRATT PROPERTY A DISTANCE OF 259 FEET, MORE OR LESS, TO THE NORTHWEST CORNER THEREOF;

THENCE NORTH 89° 42' 02" EAST ALONG THE NORTH LINE OF SAID PRATT PROPERTY A DISTANCE OF 367.92 FEET, MORE OR LESS, TO THE EAST LINE OF SAID SECTION 21;

THENCE NORTH 00° 8' 56" EAST ALONG SAID EAST LINE WHICH IS THE CENTERLINE OF UTAH TRAIL A DISTANCE OF 292.69 FEET, MORE OR LESS, TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THE EAST 740 FEET OF THE SOUTH 40 FEET OF THE NORTH 1/2 OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION.

ALSO EXCEPTING THEREFROM THE NORTH 543.2 FEET OF THE WEST 30 FEET TO THE EAST 740 FEET OF THE SOUTH 1/2 OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION AS CONVEYED TO THE COUNTY OF SAN BERNARDINO FOR HIGHWAY PURPOSES BY DEED RECORDED MARCH 4, 1964 AS INSTRUMENT NO. 615.

ALSO EXCEPTING THEREFROM THE WEST 40 FEET OF THE SOUTHEAST 1/4 OF SAID SECTION AS CONVEYED TO THE COUNTY OF SAN BERNARDINO FOR HIGHWAY PURPOSES BY DEED RECORDED JULY 28, 1960 AS INSTRUMENT NO. 606, OF OFFICIAL RECORDS OF SAN BERNARDINO COUNTY, CALIFORNIA.

EASEMENT DATA

1. THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 1 NORTH, RANGE 9 EAST, SAN BERNARDINO BASE AND MERIDIAN.

   EXCEPTING THEREFROM THE SOUTH 417.4 FEET OF THE EAST 417.4 FEET AND THE NORTHEAST 1/4 OF.

   THE CENTERLINE OF THE 10 FOOT EASEMENT HEREBY GRANTED IS DESCRIBED AS FOLLOWS:

   BEGINNING AT A POINT ON THE WEST LINE OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 21, SAID POINT BEING 240 FEET DISTANT FROM THE SOUTHWEST CORNER THEREOF AND RUNNING THENCE EASTERLY IN A STRAIGHT LINE 240 FEET DISTANT FROM AND PARALLEL TO THE SOUTH LINE OF SAID SECTION 21 TO ENE EAST LINE OF SAID PARCEL.

2. THE SOUTH 52 FEET AS MEASURED AT RIGHT ANGLES, OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 1 NORTH, RANGE 9 EAST, SAN BERNARDINO BASE AND MERIDIAN.

   EXCEPTING THEREFROM THE EAST 417.4 FEET THEREOF, AND ALSO EXCEPTING THEREFROM THE WEST 40 FEET THEREOF AS CONVEYED TO THE COUNTY OF SAN BERNARDINO FOR HIGHWAY PURPOSES BY DEED RECORDED JULY 28, 1960 AS INSTRUMENT NO. 606, OFFICIAL RECORDS OF SAN BERNARDINO COUNTY, CALIFORNIA.

3. THE WEST 2 FEET AS MEASURED AT RIGHT ANGLES, OF THE EAST 52 FEET, AS MEASURED AT RIGHT ANGLES, OF THE SOUTHEAST 1/4 OF SECTION 21, TOWNSHIP 1 NORTH, RANGE 9 EAST, SAN BERNARDINO BASE AND MERIDIAN

   EXCEPTING THEREFROM THE SOUTH 40 FEET THEREOF.

4. A RIGHT OF WAY FOR DITCHES AND CANALS AS RESERVED BY THE UNITED STATES OF AMERICA IN THE PATENT RECORDED APRIL 21, 1930 IN BOOK 607, PAGE 252 OF OFFICIAL RECORDS. AFFECTS THE SUBJECT PROPERTY

LINE TABLE		
NO.	BEARING	LENGTH
L1	N00°12'18"E	94.75'
L2	N00°00'00"E	102.01'
L3	N89°00'29"E	10.53'

NOTES:

1) THERE ARE 177 NUMBERED LOTS AND 2 LETTERED LOT PROPOSED
2) NEW PUBLIC STREET LENGTH: 11,060±ft
3) MINIMUM LOT SIZE: 12,000 SF
   MAXIMUM LOT SIZE: 38,316 SF
   AVERAGE LOT SIZE: 16,987 SF
4) LOT DENSITY 2 LOTS/ACRE

LOT	SQ. FT.	ACRES	LOT	SQ. FT.	ACRES
1	15,330	0.35	89	17,974	0.41
2	15,889	0.36	90	13,994	0.32
3	15,774	0.36	91	13,950	0.32
4	15,387	0.35	92	13,906	0.32
5	12,375	0.28	93	14,616	0.34
6	12,523	0.29	94	14,958	0.34
7	12,523	0.29	95	15,901	0.37
8	12,523	0.29	96	20,401	0.47
9	12,494	0.29	97	19,465	0.45
10	19,004	0.44	98	20,092	0.46
11	35,177	0.74	99	16,016	0.37
12	23,316	0.54	100	15,366	0.35
13	12,142	0.28	101	15,599	0.36
14	12,179	0.28	102	24,914	0.57
15	12,044	0.28	103	20,351	0.47
16	12,062	0.28	104	20,548	0.47
17	12,056	0.28	105	20,745	0.48
18	16,141	0.38	106	32,731	0.75
19	14,732	0.34	107	36,059	0.83
20	15,251	0.35	108	32,897	0.76
21	15,406	0.35	109	21,967	0.50
22	15,406	0.35	110	14,875	0.34
23	15,406	0.35	111	14,875	0.34
24	14,784	0.34	112	14,875	0.34
25	16,452	0.38	113	14,967	0.34
26	16,394	0.38	114	21,066	0.48
27	14,818	0.34	115	22,962	0.52
28	14,800	0.34	116	14,875	0.34
29	14,800	0.34	117	14,875	0.34
30	14,800	0.34	118	14,875	0.34
31	14,800	0.34	119	14,875	0.34
32	14,800	0.34	120	21,967	0.50
33	16,387	0.38	121	32,898	0.76
34	12,251	0.28	122	32,790	0.75
35	12,429	0.29	123	21,967	0.50
36	12,429	0.29	124	16,914	0.39
37	12,429	0.29	125	16,914	0.39
38	12,449	0.29	126	18,221	0.42
39	14,550	0.33	127	14,789	0.34
40	12,000	0.28	128	14,875	0.34
41	12,003	0.28	129	15,525	0.36
42	12,001	0.28	130	15,525	0.36
43	12,001	0.28	131	15,525	0.36
44	12,001	0.28	132	15,525	0.36
45	12,001	0.28	133	17,969	0.41
46	12,001	0.28	134	15,525	0.36
47	12,001	0.28	135	15,525	0.36
48	12,001	0.28	136	15,525	0.36
49	12,003	0.28	137	15,525	0.36
50	12,006	0.28	138	15,525	0.36
51	12,063	0.28	139	15,525	0.36
52	23,143	0.53	140	15,525	0.36
53	23,155	0.53	141	15,525	0.36
54	15,051	0.35	142	15,525	0.36
55	15,051	0.35	143	15,525	0.36
56	12,022	0.28	144	15,525	0.36
57	12,022	0.28	145	15,525	0.36
58	12,006	0.28	146	15,525	0.36
59	15,051	0.35	147	15,525	0.36
60	23,155	0.53	148	14,875	0.34
61	23,155	0.53	149	14,789	0.34
62	15,051	0.35	150	18,221	0.42
63	12,006	0.28	151	16,914	0.39
64	12,022	0.28	152	16,914	0.39
65	12,001	0.28	153	21,667	0.50
66	12,001	0.28	154	32,154	0.74
67	12,001	0.28	155	33,008	0.76
68	12,012	0.28	156	23,954	0.55
69	15,130	0.35	157	17,693	0.41
70	15,663	0.36	158	17,232	0.40
71	12,022	0.28	159	14,426	0.33
72	12,506	0.29	160	16,197	0.37
73	15,051	0.35	161	16,489	0.38
74	23,155	0.53	162	17,319	0.40
75	23,155	0.53	163	18,500	0.42
76	15,051	0.35	164	21,125	0.49
77	12,006	0.28	165	17,918	0.41
78	12,022	0.28	166	23,623	0.54
79	14,089	0.32	167	20,044	0.46
80	16,200	0.37	168	21,005	0.48
81	17,724	0.41	169	22,600	0.52
82	27,177	0.62	170	35,922	0.82
83	26,603	0.61	171	15,525	0.36
84	22,106	0.51	172	22,234	0.51
85	21,125	0.48	173	18,233	0.42
86	13,315	0.31	174	18,319	0.42
87	14,079	0.32	175	18,233	0.42
88	15,177	0.35	176	15,439	0.35
			177	15,439	0.35

5) SEWAGE DISPOSAL METHOD: PRIVATE, INDIVIDUAL SEPTIC SYSTEMS
6) PROPOSED MINIMUM SETBACK LINES:
   FRONT: 25 FEET
   SIDE: 10 FEET
   REAR: 20 FEET
   SIDE STREET: 15 FEET
7) ALL FIRST FLOORS SHALL BE ELEVATED ABOVE THE BFE'S SHOWN HEREON AND ON THE FIRM, IN ACCORDANCE WITH THE CITY ORDINANCE AND FEMA REQUIREMENTS
8) A RIGHT OF WAY FOR DITCHES AND CANALS AS RESERVED BY THE UNITED STATES OF AMERICA IN THE PATENT RECORDED APRIL 21, 1930 IN BOOK 607, PAGE 252 OF OFFICIAL RECORDS
9) ALL UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 19.08.070 OF THE CITY OF TWENTYNINE PALMS DEVELOPMENT CODE

UTILITY COMPANIES

WATER	TWENTY-NINE PALMS WATER DISTRICT 72401 HATCH ROAD TWENTYNINE PALMS, CA 92277 PHONE: (760) 367-7546
TELEPHONE	VERIZON ENGINEERING, CO 295 N. SUNRISE WAY PALM SPRINGS, CALIFORNIA 92262-5295 ATTENTION: LARRY MOORE PHONE: (760)778-3610
ELECTRICITY	SOUTHERN CALIFORNIA EDISON FACILITIES MAPPING, BLDG. D P.O. BOX 119821 SANTA ANA, CALIFORNIA 92711-1982 ATTENTION: ARLAN AVERYT PHONE: (714)796-9920
GAS	THE GAS COMPANY ENGINEERING/LINE LOCATION P.O. BOX 3003, SC8031 REDLANDS, CALIFORNIA 92374-0306 ATTENTION: BRUCE WADDELL PHONE: (909)335-7581
TV CABLE	ADELPHIA ENGINEERING/LINE LOCATION 7500 KICKAPOO TRAIL YUCCA VALLEY, CALIFORNIA 92284 ATTENTION: LEN DUPUIS PHONE: (760)365-3378
SEWER	SEPTIC TANKS AND LEACH LINES OR SEEPAGE PITS

TYPICAL LOT ROUGH GRADING SECTION
NO SCALE

● NOTE: 1) GRADING IN CONFORMANCE WITH CITY ORDINANCE AND NOTE 7 HEREON
2) PORTIONS OR ALL OF LOTS 1–4 AND THOSE LOTS ON THE NORTH SIDE OF AZTEC SHALL SLOPE TO THE NORTH TO DRAIN INTO THE D.E.'S SHOWN HEREON

TYPICAL SECTION
NO SCALE
STREETS 'A' THROUGH 'K' & LUCKIE AVENUE

TYPICAL SECTION
NO SCALE
SAMARKAND DRIVE
NOTE: HALF WIDTH ONLY FROM LOT 133 TO LOT 170

TYPICAL SECTION
NO SCALE
AZTEC AVENUE NORTH
LUCKIE AVENUE WEST

TYPICAL SECTION
NO SCALE
DESERT KNOLL AVENUE

TYPICAL SECTION
NO SCALE
TWO MILE ROAD
UTAH TRAIL

PN 0406-019 TT (9705)

94

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APPENDIX 7.1:

OFF-SITE NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	160 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	12 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.07	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-37.31	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-41.26	2.26	-1.20	*-5.56*	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:	45.3	44.6	42.8	36.8	45.4	46.0
Medium Trucks:	39.5	39.3	32.9	31.3	39.8	40.0
Heavy Trucks:	41.4	41.2	32.2	33.4	41.8	41.9
Vehicle Noise:	47.5	47.0	43.6	39.2	47.7	48.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	13
CNEL:	1	3	6	14

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	410 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	31 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-15.98	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-33.22	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-37.18	2.26	-1.20	*-5.56*	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:	49.3	48.7	46.9	40.9	49.5	50.1
Medium Trucks:	43.6	43.3	37.0	35.4	43.9	44.1
Heavy Trucks:	45.5	45.3	36.2	37.5	45.9	46.0
Vehicle Noise:	51.6	51.1	47.7	43.3	51.8	52.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	25
CNEL:	3	6	12	26

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	166 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	12 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-19.91	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-37.15	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-41.10	2.26	-1.20	*-5.56*	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:	45.4	44.8	43.0	36.9	45.6	46.2
Medium Trucks:	39.7	39.4	33.1	31.5	40.0	40.2
Heavy Trucks:	41.5	41.4	32.3	33.6	41.9	42.1
Vehicle Noise:	47.7	47.2	43.7	39.4	47.9	48.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	13
CNEL:	1	3	7	14

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	416 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	31 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-15.92	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-33.16	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-37.11	2.26	-1.20	*-5.56*	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:	49.4	48.8	47.0	40.9	49.6	50.2
Medium Trucks:	43.7	43.4	37.0	35.5	44.0	44.2
Heavy Trucks:	45.5	45.3	36.3	37.6	45.9	46.0
Vehicle Noise:	51.6	51.2	47.7	43.4	51.9	52.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	12	25
CNEL:	3	6	12	26

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	101 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-22.07	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.30	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.26	2.26	-1.20	*-5.56*	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:	43.3	42.6	40.8	34.8	43.4	44.0
Medium Trucks:	37.5	37.3	30.9	29.3	37.8	38.0
Heavy Trucks:	39.4	39.2	30.2	31.4	39.8	39.9
Vehicle Noise:	45.5	45.0	41.6	37.2	45.7	46.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	4	10
CNEL:	1	2	5	10

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	121 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.28	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.52	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.48	2.26	-1.20	*-5.56*	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:	44.0	43.4	41.6	35.6	44.2	44.8
Medium Trucks:	38.3	38.0	31.7	30.1	38.6	38.8
Heavy Trucks:	40.2	40.0	30.9	32.2	40.6	40.7
Vehicle Noise:	46.3	45.8	42.4	38.0	46.5	46.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	101 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-22.07	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.30	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.26	2.26	-1.20	*-5.56*	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:	43.3	42.6	40.8	34.8	43.4	44.0
Medium Trucks:	37.5	37.3	30.9	29.3	37.8	38.0
Heavy Trucks:	39.4	39.2	30.2	31.4	39.8	39.9
Vehicle Noise:	45.5	45.0	41.6	37.2	45.7	46.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	4	10
CNEL:	1	2	5	10

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	121 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.28	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.52	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.48	2.26	-1.20	*-5.56*	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:	44.0	43.4	41.6	35.6	44.2	44.8
Medium Trucks:	38.3	38.0	31.7	30.1	38.6	38.8
Heavy Trucks:	40.2	40.0	30.9	32.2	40.6	40.7
Vehicle Noise:	46.3	45.8	42.4	38.0	46.5	46.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	131 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.94	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.17	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.13	2.26	-1.20	*-5.56*	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:	44.4	43.7	42.0	35.9	44.5	45.1
Medium Trucks:	38.6	38.4	32.0	30.5	38.9	39.2
Heavy Trucks:	40.5	40.3	31.3	32.5	40.9	41.0
Vehicle Noise:	46.6	46.2	42.7	38.3	46.9	47.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	6	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	141 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.62	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-37.86	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-41.81	2.26	-1.20	*-5.56*	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:	44.7	44.1	42.3	36.2	44.9	45.5
Medium Trucks:	39.0	38.7	32.3	30.8	39.3	39.5
Heavy Trucks:	40.8	40.6	31.6	32.9	41.2	41.3
Vehicle Noise:	46.9	46.5	43.0	38.7	47.2	47.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	12
CNEL:	1	3	6	13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	520 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	39 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-14.95	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-32.19	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-36.14	2.26	-1.20	*-5.56*	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:	50.4	49.7	48.0	41.9	50.5	51.1
Medium Trucks:	44.6	44.4	38.0	36.5	44.9	45.2
Heavy Trucks:	46.5	46.3	37.3	38.5	46.9	47.0
Vehicle Noise:	52.6	52.1	48.7	44.3	52.8	53.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	6	13	29
CNEL:	3	7	14	31

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	644 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	48 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-14.02	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-31.26	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-35.21	2.26	-1.20	*-5.56*	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:	51.3	50.7	48.9	42.8	51.5	52.1
Medium Trucks:	45.6	45.3	38.9	37.4	45.9	46.1
Heavy Trucks:	47.4	47.2	38.2	39.5	47.8	47.9
Vehicle Noise:	53.5	53.1	49.6	45.3	53.8	54.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	7	15	33
CNEL:	4	8	16	35

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	541 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	41 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-14.78	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-32.02	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-35.97	2.26	-1.20	*-5.56*	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:	50.5	49.9	48.1	42.1	50.7	51.3
Medium Trucks:	44.8	44.5	38.2	36.6	45.1	45.3
Heavy Trucks:	46.7	46.5	37.5	38.7	47.1	47.2
Vehicle Noise:	52.8	52.3	48.9	44.5	53.0	53.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	6	14	30
CNEL:	3	7	15	32

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	665 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	50 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-13.88	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-31.12	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-35.07	2.26	-1.20	*-5.56*	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:	51.4	50.8	49.0	43.0	51.6	52.2
Medium Trucks:	45.7	45.4	39.1	37.5	46.0	46.2
Heavy Trucks:	47.6	47.4	38.3	39.6	48.0	48.1
Vehicle Noise:	53.7	53.2	49.8	45.4	53.9	54.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	7	16	34
CNEL:	4	8	17	36

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	102 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-22.02	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.26	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.22	2.26	-1.20	*-5.56*	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:	43.3	42.7	40.9	34.8	43.5	44.1
Medium Trucks:	37.6	37.3	30.9	29.4	37.9	38.1
Heavy Trucks:	39.4	39.2	30.2	31.5	39.8	39.9
Vehicle Noise:	45.5	45.1	41.6	37.2	45.8	46.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	10
CNEL:	1	2	5	10

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	122 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.25	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.48	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.44	2.26	-1.20	*-5.56*	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:	44.1	43.4	41.7	35.6	44.2	44.8
Medium Trucks:	38.3	38.1	31.7	30.2	38.6	38.9
Heavy Trucks:	40.2	40.0	31.0	32.2	40.6	40.7
Vehicle Noise:	46.3	45.9	42.4	38.0	46.6	47.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	102 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-22.02	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.26	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.22	2.26	-1.20	*-5.56*	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:	43.3	42.7	40.9	34.8	43.5	44.1
Medium Trucks:	37.6	37.3	30.9	29.4	37.9	38.1
Heavy Trucks:	39.4	39.2	30.2	31.5	39.8	39.9
Vehicle Noise:	45.5	45.1	41.6	37.2	45.8	46.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	10
CNEL:	1	2	5	10

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	122 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.25	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.48	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.44	2.26	-1.20	*-5.56*	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:	44.1	43.4	41.7	35.6	44.2	44.8
Medium Trucks:	38.3	38.1	31.7	30.2	38.6	38.9
Heavy Trucks:	40.2	40.0	31.0	32.2	40.6	40.7
Vehicle Noise:	46.3	45.9	42.4	38.0	46.6	47.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.90	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.14	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.10	2.26	-1.20	*-5.56*	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:	44.4	43.8	42.0	35.9	44.6	45.2
Medium Trucks:	38.7	38.4	32.1	30.5	39.0	39.2
Heavy Trucks:	40.5	40.4	31.3	32.6	40.9	41.1
Vehicle Noise:	46.7	46.2	42.7	38.4	46.9	47.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	12
CNEL:	1	3	6	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Aztec Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	142 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.59	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-37.82	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-41.78	2.26	-1.20	*-5.56*	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:	44.7	44.1	42.3	36.3	44.9	45.5
Medium Trucks:	39.0	38.7	32.4	30.8	39.3	39.5
Heavy Trucks:	40.9	40.7	31.6	32.9	41.2	41.4
Vehicle Noise:	47.0	46.5	43.1	38.7	47.2	47.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	12
CNEL:	1	3	6	13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	573 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	43 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-14.53	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-31.77	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-35.72	2.26	-1.20	*-5.56*	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:	50.8	50.1	48.4	42.3	50.9	51.6
Medium Trucks:	45.1	44.8	38.4	36.9	45.3	45.6
Heavy Trucks:	46.9	46.7	37.7	39.0	47.3	47.4
Vehicle Noise:	53.0	52.6	49.1	44.7	53.3	53.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	7	14	31
CNEL:	3	7	15	33

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,071 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	80 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-11.81	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-29.05	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-33.01	2.26	-1.20	*-5.56*	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:	53.5	52.9	51.1	45.0	53.7	54.3
Medium Trucks:	47.8	47.5	41.1	39.6	48.1	48.3
Heavy Trucks:	49.6	49.5	40.4	41.7	50.0	50.1
Vehicle Noise:	55.8	55.3	51.8	47.5	56.0	56.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	5	10	22	47
CNEL:	5	11	23	50

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	596 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	45 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-14.36	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-31.59	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-35.55	2.26	-1.20	*-5.56*	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:	51.0	50.3	48.6	42.5	51.1	51.7
Medium Trucks:	45.2	45.0	38.6	37.1	45.5	45.8
Heavy Trucks:	47.1	46.9	37.9	39.1	47.5	47.6
Vehicle Noise:	53.2	52.7	49.3	44.9	53.4	53.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	7	15	31
CNEL:	3	7	16	34

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,094 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	82 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-11.72	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-28.96	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-32.91	2.26	-1.20	*-5.56*	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:	53.6	53.0	51.2	45.1	53.8	54.4
Medium Trucks:	47.9	47.6	41.2	39.7	48.2	48.4
Heavy Trucks:	49.7	49.5	40.5	41.8	50.1	50.2
Vehicle Noise:	55.8	55.4	51.9	47.6	56.1	56.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	5	10	22	47
CNEL:	5	11	23	50

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	103 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.98	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.22	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.17	2.26	-1.20	*-5.56*	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:	43.3	42.7	40.9	34.9	43.5	44.1
Medium Trucks:	37.6	37.3	31.0	29.4	37.9	38.1
Heavy Trucks:	39.5	39.3	30.2	31.5	39.9	40.0
Vehicle Noise:	45.6	45.1	41.7	37.3	45.8	46.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	10
CNEL:	1	2	5	10

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	123 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.21	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.45	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.40	2.26	-1.20	*-5.56*	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:	44.1	43.5	41.7	35.6	44.3	44.9
Medium Trucks:	38.4	38.1	31.7	30.2	38.7	38.9
Heavy Trucks:	40.2	40.1	31.0	32.3	40.6	40.7
Vehicle Noise:	46.4	45.9	42.4	38.1	46.6	47.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	103 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.98	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.22	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.17	2.26	-1.20	*-5.56*	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:	43.3	42.7	40.9	34.9	43.5	44.1
Medium Trucks:	37.6	37.3	31.0	29.4	37.9	38.1
Heavy Trucks:	39.5	39.3	30.2	31.5	39.9	40.0
Vehicle Noise:	45.6	45.1	41.7	37.3	45.8	46.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	10
CNEL:	1	2	5	10

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	123 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.21	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.45	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.40	2.26	-1.20	*-5.56*	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:	44.1	43.5	41.7	35.6	44.3	44.9
Medium Trucks:	38.4	38.1	31.7	30.2	38.7	38.9
Heavy Trucks:	40.2	40.1	31.0	32.3	40.6	40.7
Vehicle Noise:	46.4	45.9	42.4	38.1	46.6	47.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	133 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.87	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.11	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.06	2.26	-1.20	*-5.56*	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:	44.5	43.8	42.0	36.0	44.6	45.2
Medium Trucks:	38.7	38.4	32.1	30.5	39.0	39.2
Heavy Trucks:	40.6	40.4	31.4	32.6	41.0	41.1
Vehicle Noise:	46.7	46.2	42.8	38.4	46.9	47.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	12
CNEL:	1	3	6	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Manana Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	143 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.56	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-37.79	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-41.75	2.26	-1.20	*-5.56*	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:	44.8	44.1	42.4	36.3	44.9	45.5
Medium Trucks:	39.0	38.8	32.4	30.9	39.3	39.6
Heavy Trucks:	40.9	40.7	31.7	32.9	41.3	41.4
Vehicle Noise:	47.0	46.5	43.1	38.7	47.2	47.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	12
CNEL:	1	3	6	13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,333 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	100 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-10.86	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-28.10	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-32.05	2.26	-1.20	*-5.56*	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:	54.5	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	48.7	48.5	42.1	40.6	49.0	49.2
Heavy Trucks:	50.6	50.4	41.4	42.6	51.0	51.1
Vehicle Noise:	56.7	56.2	52.8	48.4	56.9	57.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	5	12	25	54
CNEL:	6	12	27	58

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,333 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	100 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-10.86	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-28.10	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-32.05	2.26	-1.20	*-5.56*	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:	54.5	53.8	52.0	46.0	54.6	55.2
Medium Trucks:	48.7	48.5	42.1	40.6	49.0	49.2
Heavy Trucks:	50.6	50.4	41.4	42.6	51.0	51.1
Vehicle Noise:	56.7	56.2	52.8	48.4	56.9	57.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	5	12	25	54
CNEL:	6	12	27	58

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,387 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	104 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-10.69	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-27.93	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-31.88	2.26	-1.20	*-5.56*	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:	54.6	54.0	52.2	46.2	54.8	55.4
Medium Trucks:	48.9	48.6	42.3	40.7	49.2	49.4
Heavy Trucks:	50.7	50.6	41.5	42.8	51.1	51.3
Vehicle Noise:	56.9	56.4	53.0	48.6	57.1	57.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	6	12	26	55
CNEL:	6	13	27	59

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,387 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	104 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-10.69	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-27.93	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-31.88	2.26	-1.20	*-5.56*	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:	54.6	54.0	52.2	46.2	54.8	55.4
Medium Trucks:	48.9	48.6	42.3	40.7	49.2	49.4
Heavy Trucks:	50.7	50.6	41.5	42.8	51.1	51.3
Vehicle Noise:	56.9	56.4	53.0	48.6	57.1	57.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	6	12	26	55
CNEL:	6	13	27	59

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	104 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.94	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.18	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.13	2.26	-1.20	*-5.56*	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:	43.4	42.7	41.0	34.9	43.5	44.1
Medium Trucks:	37.6	37.4	31.0	29.5	37.9	38.2
Heavy Trucks:	39.5	39.3	30.3	31.5	39.9	40.0
Vehicle Noise:	45.6	45.2	41.7	37.3	45.9	46.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	10
CNEL:	1	2	5	11

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	124 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.17	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.41	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.37	2.26	-1.20	*-5.56*	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:	44.1	43.5	41.7	35.7	44.3	44.9
Medium Trucks:	38.4	38.1	31.8	30.2	38.7	38.9
Heavy Trucks:	40.3	40.1	31.1	32.3	40.7	40.8
Vehicle Noise:	46.4	45.9	42.5	38.1	46.6	47.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	104 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.94	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-39.18	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-43.13	2.26	-1.20	*-5.56*	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:	43.4	42.7	41.0	34.9	43.5	44.1
Medium Trucks:	37.6	37.4	31.0	29.5	37.9	38.2
Heavy Trucks:	39.5	39.3	30.3	31.5	39.9	40.0
Vehicle Noise:	45.6	45.2	41.7	37.3	45.9	46.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	10
CNEL:	1	2	5	11

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	124 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-21.17	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.41	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.37	2.26	-1.20	*-5.56*	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:	44.1	43.5	41.7	35.7	44.3	44.9
Medium Trucks:	38.4	38.1	31.8	30.2	38.7	38.9
Heavy Trucks:	40.3	40.1	31.1	32.3	40.7	40.8
Vehicle Noise:	46.4	45.9	42.5	38.1	46.6	47.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	2	5	11
CNEL:	1	3	5	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	134 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.84	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-38.08	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-42.03	2.26	-1.20	*-5.56*	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:	44.5	43.8	42.1	36.0	44.6	45.2
Medium Trucks:	38.7	38.5	32.1	30.6	39.0	39.3
Heavy Trucks:	40.6	40.4	31.4	32.6	41.0	41.1
Vehicle Noise:	46.7	46.3	42.8	38.4	47.0	47.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	5	12
CNEL:	1	3	6	12

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Desert Knoll Ave.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	144 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	40 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.000
Medium Trucks:	34.746
Heavy Trucks:	34.771

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-20.53	2.22	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	75.75	-37.76	2.27	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	81.57	-41.72	2.26	-1.20	*-5.56*	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:	44.8	44.1	42.4	36.3	44.9	45.6
Medium Trucks:	39.1	38.8	32.4	30.9	39.3	39.6
Heavy Trucks:	40.9	40.7	31.7	33.0	41.3	41.4
Vehicle Noise:	47.0	46.6	43.1	38.7	47.3	47.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	12
CNEL:	1	3	6	13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,506 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	1,088 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.46	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-19.69	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-23.65	-0.36	-1.20	*-5.34*	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:	67.7	67.1	65.3	59.3	67.9	68.5
Medium Trucks:	61.1	60.9	54.5	53.0	61.4	61.7
Heavy Trucks:	61.2	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.3	68.8	65.9	61.0	69.5	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	56	120	259	559
CNEL:	60	129	279	601

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,568 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	1,093 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.44	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-19.68	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-23.63	-0.36	-1.20	*-5.34*	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:	67.8	67.1	65.3	59.3	67.9	68.5
Medium Trucks:	61.2	60.9	54.5	53.0	61.5	61.7
Heavy Trucks:	61.2	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.3	68.8	65.9	61.0	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	56	121	260	560
CNEL:	60	130	280	603

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,752 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	1,181 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.10	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-19.34	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-23.29	-0.36	-1.20	*-5.34*	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:	68.1	67.4	65.7	59.6	68.3	68.9
Medium Trucks:	61.5	61.2	54.9	53.3	61.8	62.0
Heavy Trucks:	61.5	61.4	52.3	53.6	61.9	62.1
Vehicle Noise:	69.7	69.2	66.2	61.3	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	59	127	274	590
CNEL:	64	137	295	635

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,814 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	1,186 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.08	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-19.32	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-23.28	-0.36	-1.20	*-5.34*	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:	68.1	67.5	65.7	59.6	68.3	68.9
Medium Trucks:	61.5	61.3	54.9	53.4	61.8	62.0
Heavy Trucks:	61.6	61.4	52.3	53.6	62.0	62.1
Vehicle Noise:	69.7	69.2	66.2	61.4	69.9	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	59	128	275	592
CNEL:	64	137	296	637

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	105 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.86	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-41.10	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-45.05	-0.36	-1.20	*-5.34*	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:	46.3	45.7	43.9	37.9	46.5	47.1
Medium Trucks:	39.7	39.5	33.1	31.6	40.0	40.3
Heavy Trucks:	39.8	39.6	30.6	31.8	40.2	40.3
Vehicle Noise:	47.9	47.4	44.4	39.6	48.1	48.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	10	21
CNEL:	2	5	10	22

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	125 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.10	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-40.34	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-44.30	-0.36	-1.20	*-5.34*	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:	47.1	46.4	44.7	38.6	47.2	47.9
Medium Trucks:	40.5	40.2	33.9	32.3	40.8	41.0
Heavy Trucks:	40.5	40.4	31.3	32.6	40.9	41.1
Vehicle Noise:	48.7	48.2	45.2	40.3	48.9	49.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	23
CNEL:	3	5	12	25

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	105 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.86	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-41.10	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-45.05	-0.36	-1.20	*-5.34*	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:	46.3	45.7	43.9	37.9	46.5	47.1
Medium Trucks:	39.7	39.5	33.1	31.6	40.0	40.3
Heavy Trucks:	39.8	39.6	30.6	31.8	40.2	40.3
Vehicle Noise:	47.9	47.4	44.4	39.6	48.1	48.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	10	21
CNEL:	2	5	10	22

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	125 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.10	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-40.34	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-44.30	-0.36	-1.20	*-5.34*	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:	47.1	46.4	44.7	38.6	47.2	47.9
Medium Trucks:	40.5	40.2	33.9	32.3	40.8	41.0
Heavy Trucks:	40.5	40.4	31.3	32.6	40.9	41.1
Vehicle Noise:	48.7	48.2	45.2	40.3	48.9	49.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	23
CNEL:	3	5	12	25

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	135 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-22.77	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-40.01	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-43.96	-0.36	-1.20	*-5.34*	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:	47.4	46.8	45.0	39.0	47.6	48.2
Medium Trucks:	40.8	40.6	34.2	32.7	41.1	41.4
Heavy Trucks:	40.9	40.7	31.7	32.9	41.3	41.4
Vehicle Noise:	49.0	48.5	45.5	40.7	49.2	49.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	25
CNEL:	3	6	12	27

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Adobe Rd.
Road Segment: n/o Two Mile Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	145 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-22.46	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-39.70	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-43.65	-0.36	-1.20	*-5.34*	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:	47.7	47.1	45.3	39.3	47.9	48.5
Medium Trucks:	41.1	40.9	34.5	33.0	41.4	41.7
Heavy Trucks:	41.2	41.0	32.0	33.2	41.6	41.7
Vehicle Noise:	49.3	48.8	45.9	41.0	49.5	50.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	6	12	26
CNEL:	3	6	13	28

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,746 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	881 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-3.37	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-20.61	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-24.57	-0.36	-1.20	*-5.34*	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:	66.8	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	60.2	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	60.3	60.1	51.1	52.3	60.7	60.8
Vehicle Noise:	68.4	67.9	64.9	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	49	105	225	485
CNEL:	52	113	242	522

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,058 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	904 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-3.26	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-20.50	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-24.45	-0.36	-1.20	*-5.34*	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:	66.9	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	60.3	60.1	53.7	52.2	60.6	60.9
Heavy Trucks:	60.4	60.2	51.2	52.4	60.8	60.9
Vehicle Noise:	68.5	68.0	65.1	60.2	68.7	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	49	106	229	494
CNEL:	53	114	247	531

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,045 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	978 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.92	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-20.16	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-24.11	-0.36	-1.20	*-5.34*	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:	67.3	66.6	64.9	58.8	67.4	68.0
Medium Trucks:	60.7	60.4	54.1	52.5	61.0	61.2
Heavy Trucks:	60.7	60.5	51.5	52.8	61.1	61.2
Vehicle Noise:	68.9	68.4	65.4	60.5	69.1	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	112	242	521
CNEL:	56	121	260	560

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,357 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	1,002 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-2.81	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-20.05	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-24.01	-0.36	-1.20	*-5.34*	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:	67.4	66.7	65.0	58.9	67.5	68.1
Medium Trucks:	60.8	60.5	54.2	52.6	61.1	61.3
Heavy Trucks:	60.8	60.7	51.6	52.9	61.2	61.3
Vehicle Noise:	69.0	68.5	65.5	60.6	69.2	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	53	114	245	529
CNEL:	57	123	264	569

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	106 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.82	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-41.06	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-45.01	-0.36	-1.20	*-5.34*	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:	46.4	45.7	44.0	37.9	46.5	47.1
Medium Trucks:	39.8	39.5	33.2	31.6	40.1	40.3
Heavy Trucks:	39.8	39.6	30.6	31.9	40.2	40.3
Vehicle Noise:	48.0	47.4	44.5	39.6	48.2	48.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	10	21
CNEL:	2	5	11	23

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	126 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.07	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-40.31	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-44.26	-0.36	-1.20	*-5.34*	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:	47.1	46.5	44.7	38.7	47.3	47.9
Medium Trucks:	40.5	40.3	33.9	32.4	40.8	41.1
Heavy Trucks:	40.6	40.4	31.4	32.6	41.0	41.1
Vehicle Noise:	48.7	48.2	45.2	40.4	48.9	49.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	24
CNEL:	3	5	12	25

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	106 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.82	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-41.06	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-45.01	-0.36	-1.20	*-5.34*	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:	46.4	45.7	44.0	37.9	46.5	47.1
Medium Trucks:	39.8	39.5	33.2	31.6	40.1	40.3
Heavy Trucks:	39.8	39.6	30.6	31.9	40.2	40.3
Vehicle Noise:	48.0	47.4	44.5	39.6	48.2	48.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	10	21
CNEL:	2	5	11	23

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	126 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-23.07	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-40.31	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-44.26	-0.36	-1.20	*-5.34*	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:	47.1	46.5	44.7	38.7	47.3	47.9
Medium Trucks:	40.5	40.3	33.9	32.4	40.8	41.1
Heavy Trucks:	40.6	40.4	31.4	32.6	41.0	41.1
Vehicle Noise:	48.7	48.2	45.2	40.4	48.9	49.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	24
CNEL:	3	5	12	25

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	136 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-22.74	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-39.97	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-43.93	-0.36	-1.20	*-5.34*	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:	47.5	46.8	45.0	39.0	47.6	48.2
Medium Trucks:	40.9	40.6	34.2	32.7	41.2	41.4
Heavy Trucks:	40.9	40.7	31.7	32.9	41.3	41.4
Vehicle Noise:	49.0	48.5	45.6	40.7	49.3	49.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	12	25
CNEL:	3	6	12	27

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Adobe Rd.
Road Segment: s/o Two Mile Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	146 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	71.78	-22.43	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	82.40	-39.67	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	86.40	-43.62	-0.36	-1.20	*-5.34*	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:	47.8	47.1	45.4	39.3	47.9	48.5
Medium Trucks:	41.2	40.9	34.6	33.0	41.5	41.7
Heavy Trucks:	41.2	41.0	32.0	33.3	41.6	41.7
Vehicle Noise:	49.4	48.8	45.9	41.0	49.6	50.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	6	12	26
CNEL:	3	6	13	28

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,944 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	146 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-10.31	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-27.55	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-31.51	-0.36	-1.20	*-5.34*	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:	56.6	55.9	54.1	48.1	56.7	57.3
Medium Trucks:	50.3	50.1	43.7	42.2	50.6	50.9
Heavy Trucks:	51.2	51.0	42.0	43.2	51.6	51.7
Vehicle Noise:	58.4	57.9	54.8	50.1	58.6	59.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	10	23	49	105
CNEL:	11	24	52	112

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,068 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	155 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-10.04	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-27.28	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-31.24	-0.36	-1.20	*-5.34*	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:	56.8	56.2	54.4	48.4	57.0	57.6
Medium Trucks:	50.6	50.3	44.0	42.4	50.9	51.1
Heavy Trucks:	51.4	51.3	42.2	43.5	51.8	52.0
Vehicle Noise:	58.7	58.2	55.0	50.4	58.9	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	24	51	109
CNEL:	12	25	54	117

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,187 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	164 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.80	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-27.04	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-31.00	-0.36	-1.20	*-5.34*	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:	57.1	56.4	54.7	48.6	57.2	57.8
Medium Trucks:	50.8	50.6	44.2	42.7	51.1	51.4
Heavy Trucks:	51.7	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	58.9	58.4	55.3	50.6	59.1	59.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	24	53	113
CNEL:	12	26	56	121

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,311 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	173 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.56	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-26.80	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-30.76	-0.36	-1.20	*-5.34*	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:	57.3	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	50.8	44.5	42.9	51.4	51.6
Heavy Trucks:	51.9	51.8	42.7	44.0	52.3	52.5
Vehicle Noise:	59.2	58.7	55.5	50.8	59.4	59.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	12	25	55	117
CNEL:	13	27	58	126

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	107 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.91	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-40.14	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-44.10	-0.36	-1.20	*-5.34*	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:	44.0	43.3	41.6	35.5	44.1	44.7
Medium Trucks:	37.7	37.5	31.1	29.6	38.0	38.3
Heavy Trucks:	38.6	38.4	29.4	30.6	39.0	39.1
Vehicle Noise:	45.8	45.3	42.2	37.5	46.0	46.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	3	7	15
CNEL:	2	4	8	16

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	127 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.16	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-39.40	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-43.36	-0.36	-1.20	*-5.34*	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:	44.7	44.1	42.3	36.2	44.9	45.5
Medium Trucks:	38.5	38.2	31.9	30.3	38.8	39.0
Heavy Trucks:	39.3	39.2	30.1	31.4	39.7	39.9
Vehicle Noise:	46.6	46.1	42.9	38.2	46.8	47.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	17
CNEL:	2	4	8	18

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	107 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.91	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-40.14	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-44.10	-0.36	-1.20	*-5.34*	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:	44.0	43.3	41.6	35.5	44.1	44.7
Medium Trucks:	37.7	37.5	31.1	29.6	38.0	38.3
Heavy Trucks:	38.6	38.4	29.4	30.6	39.0	39.1
Vehicle Noise:	45.8	45.3	42.2	37.5	46.0	46.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	3	7	15
CNEL:	2	4	8	16

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	127 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.16	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-39.40	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-43.36	-0.36	-1.20	*-5.34*	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:	44.7	44.1	42.3	36.2	44.9	45.5
Medium Trucks:	38.5	38.2	31.9	30.3	38.8	39.0
Heavy Trucks:	39.3	39.2	30.1	31.4	39.7	39.9
Vehicle Noise:	46.6	46.1	42.9	38.2	46.8	47.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	17
CNEL:	2	4	8	18

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	137 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-21.83	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-39.07	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-43.03	-0.36	-1.20	*-5.34*	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:	45.0	44.4	42.6	36.6	45.2	45.8
Medium Trucks:	38.8	38.6	32.2	30.7	39.1	39.3
Heavy Trucks:	39.7	39.5	30.5	31.7	40.1	40.2
Vehicle Noise:	46.9	46.4	43.2	38.6	47.1	47.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	18
CNEL:	2	4	9	19

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Utah Tr.
Road Segment: n/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	147 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-21.53	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-38.77	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-42.72	-0.36	-1.20	*-5.34*	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:	45.3	44.7	42.9	36.9	45.5	46.1
Medium Trucks:	39.1	38.9	32.5	31.0	39.4	39.6
Heavy Trucks:	40.0	39.8	30.8	32.0	40.4	40.5
Vehicle Noise:	47.2	46.7	43.5	38.9	47.4	47.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	9	19
CNEL:	2	4	9	20

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,944 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	146 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-10.31	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-27.55	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-31.51	-0.36	-1.20	*-5.34*	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:	56.6	55.9	54.1	48.1	56.7	57.3
Medium Trucks:	50.3	50.1	43.7	42.2	50.6	50.9
Heavy Trucks:	51.2	51.0	42.0	43.2	51.6	51.7
Vehicle Noise:	58.4	57.9	54.8	50.1	58.6	59.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	10	23	49	105
CNEL:	11	24	52	112

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,194 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	165 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.79	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-27.03	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-30.98	-0.36	-1.20	*-5.34*	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:	57.1	56.4	54.7	48.6	57.2	57.8
Medium Trucks:	50.9	50.6	44.2	42.7	51.2	51.4
Heavy Trucks:	51.7	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	58.9	58.4	55.3	50.6	59.2	59.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	24	53	113
CNEL:	12	26	56	122

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,187 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	164 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.80	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-27.04	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-31.00	-0.36	-1.20	*-5.34*	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:	57.1	56.4	54.7	48.6	57.2	57.8
Medium Trucks:	50.8	50.6	44.2	42.7	51.1	51.4
Heavy Trucks:	51.7	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	58.9	58.4	55.3	50.6	59.1	59.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	24	53	113
CNEL:	12	26	56	121

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,437 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	183 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.33	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-26.57	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-30.53	-0.36	-1.20	*-5.34*	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:	57.5	56.9	55.1	49.1	57.7	58.3
Medium Trucks:	51.3	51.1	44.7	43.2	51.6	51.8
Heavy Trucks:	52.2	52.0	43.0	44.2	52.6	52.7
Vehicle Noise:	59.4	58.9	55.7	51.1	59.6	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	12	26	56	122
CNEL:	13	28	61	131

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	108 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.87	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-40.10	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-44.06	-0.36	-1.20	*-5.34*	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:	44.0	43.4	41.6	35.5	44.2	44.8
Medium Trucks:	37.8	37.5	31.2	29.6	38.1	38.3
Heavy Trucks:	38.6	38.5	29.4	30.7	39.0	39.2
Vehicle Noise:	45.9	45.4	42.2	37.5	46.1	46.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	3	7	15
CNEL:	2	4	8	16

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.13	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-39.37	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-43.32	-0.36	-1.20	*-5.34*	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:	44.7	44.1	42.3	36.3	44.9	45.5
Medium Trucks:	38.5	38.3	31.9	30.4	38.8	39.0
Heavy Trucks:	39.4	39.2	30.2	31.4	39.8	39.9
Vehicle Noise:	46.6	46.1	42.9	38.3	46.8	47.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	17
CNEL:	2	4	8	18

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	108 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.87	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-40.10	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-44.06	-0.36	-1.20	*-5.34*	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:	44.0	43.4	41.6	35.5	44.2	44.8
Medium Trucks:	37.8	37.5	31.2	29.6	38.1	38.3
Heavy Trucks:	38.6	38.5	29.4	30.7	39.0	39.2
Vehicle Noise:	45.9	45.4	42.2	37.5	46.1	46.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	3	7	15
CNEL:	2	4	8	16

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	128 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.13	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-39.37	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-43.32	-0.36	-1.20	*-5.34*	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:	44.7	44.1	42.3	36.3	44.9	45.5
Medium Trucks:	38.5	38.3	31.9	30.4	38.8	39.0
Heavy Trucks:	39.4	39.2	30.2	31.4	39.8	39.9
Vehicle Noise:	46.6	46.1	42.9	38.3	46.8	47.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	17
CNEL:	2	4	8	18

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	138 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-21.80	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-39.04	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-43.00	-0.36	-1.20	*-5.34*	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:	45.1	44.4	42.7	36.6	45.2	45.8
Medium Trucks:	38.8	38.6	32.2	30.7	39.1	39.4
Heavy Trucks:	39.7	39.5	30.5	31.7	40.1	40.2
Vehicle Noise:	46.9	46.4	43.3	38.6	47.1	47.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	18
CNEL:	2	4	9	19

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Utah Tr.
Road Segment: s/o Samarkand Dr.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	148 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	60 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	60.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.202
Medium Trucks:	52.032
Heavy Trucks:	52.048

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-21.50	-0.38	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	79.45	-38.74	-0.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-42.69	-0.36	-1.20	*-5.34*	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:	45.4	44.7	43.0	36.9	45.5	46.1
Medium Trucks:	39.2	38.9	32.5	31.0	39.4	39.7
Heavy Trucks:	40.0	39.8	30.8	32.0	40.4	40.5
Vehicle Noise:	47.2	46.7	43.6	38.9	47.4	47.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	9	19
CNEL:	2	4	9	20

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,480 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	186 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.26	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-26.49	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-30.45	0.56	-1.20	*-5.41*	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:	58.5	57.9	56.1	50.1	58.7	59.3
Medium Trucks:	52.3	52.1	45.7	44.2	52.6	52.9
Heavy Trucks:	53.2	53.0	44.0	45.2	53.6	53.7
Vehicle Noise:	60.4	59.9	56.7	52.1	60.6	61.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	12	26	57	123
CNEL:	13	28	61	132

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,604 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	195 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.04	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-26.28	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-30.24	0.56	-1.20	*-5.41*	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:	58.8	58.1	56.3	50.3	58.9	59.5
Medium Trucks:	52.5	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	53.4	53.2	44.2	45.4	53.8	53.9
Vehicle Noise:	60.6	60.1	57.0	52.3	60.8	61.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	13	27	59	127
CNEL:	14	29	63	136

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,580 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	194 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-9.08	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-26.32	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-30.28	0.56	-1.20	*-5.41*	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:	58.7	58.1	56.3	50.2	58.9	59.5
Medium Trucks:	52.5	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	53.3	53.2	44.1	45.4	53.7	53.9
Vehicle Noise:	60.6	60.1	56.9	52.2	60.8	61.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	13	27	59	126
CNEL:	14	29	63	135

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,704 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	203 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-8.88	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-26.12	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-30.07	0.56	-1.20	*-5.41*	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:	58.9	58.3	56.5	50.4	59.1	59.7
Medium Trucks:	52.7	52.4	46.1	44.5	53.0	53.2
Heavy Trucks:	53.5	53.4	44.3	45.6	53.9	54.1
Vehicle Noise:	60.8	60.3	57.1	52.4	61.0	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	13	28	60	130
CNEL:	14	30	65	140

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	109 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.83	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-40.06	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-44.02	0.56	-1.20	*-5.41*	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:	45.0	44.3	42.6	36.5	45.1	45.7
Medium Trucks:	38.8	38.5	32.1	30.6	39.0	39.3
Heavy Trucks:	39.6	39.4	30.4	31.6	40.0	40.1
Vehicle Noise:	46.8	46.3	43.2	38.5	47.0	47.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	3	7	15
CNEL:	2	4	8	16

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	129 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.09	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-39.33	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-43.29	0.56	-1.20	*-5.41*	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:	45.7	45.1	43.3	37.2	45.9	46.5
Medium Trucks:	39.5	39.2	32.9	31.3	39.8	40.0
Heavy Trucks:	40.3	40.2	31.1	32.4	40.7	40.9
Vehicle Noise:	47.5	47.1	43.9	39.2	47.8	48.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	17
CNEL:	2	4	9	18

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	109 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.83	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-40.06	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-44.02	0.56	-1.20	*-5.41*	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:	45.0	44.3	42.6	36.5	45.1	45.7
Medium Trucks:	38.8	38.5	32.1	30.6	39.0	39.3
Heavy Trucks:	39.6	39.4	30.4	31.6	40.0	40.1
Vehicle Noise:	46.8	46.3	43.2	38.5	47.0	47.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	3	7	15
CNEL:	2	4	8	16

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	129 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-22.09	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-39.33	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-43.29	0.56	-1.20	*-5.41*	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:	45.7	45.1	43.3	37.2	45.9	46.5
Medium Trucks:	39.5	39.2	32.9	31.3	39.8	40.0
Heavy Trucks:	40.3	40.2	31.1	32.4	40.7	40.9
Vehicle Noise:	47.5	47.1	43.9	39.2	47.8	48.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	17
CNEL:	2	4	9	18

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	139 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-21.77	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-39.01	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-42.96	0.56	-1.20	*-5.41*	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:	46.0	45.4	43.6	37.6	46.2	46.8
Medium Trucks:	39.8	39.5	33.2	31.6	40.1	40.3
Heavy Trucks:	40.7	40.5	31.4	32.7	41.0	41.2
Vehicle Noise:	47.9	47.4	44.2	39.6	48.1	48.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	8	18
CNEL:	2	4	9	19

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Marine Av.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	149 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	11 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-21.47	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-38.71	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-42.66	0.56	-1.20	*-5.41*	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:	46.3	45.7	43.9	37.9	46.5	47.1
Medium Trucks:	40.1	39.9	33.5	31.9	40.4	40.6
Heavy Trucks:	41.0	40.8	31.7	33.0	41.3	41.5
Vehicle Noise:	48.2	47.7	44.5	39.9	48.4	48.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	4	9	19
CNEL:	2	4	9	20

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,986 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	599 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-4.18	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-21.42	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-25.37	0.56	-1.20	*-5.41*	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:	63.6	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	57.4	57.1	50.8	49.2	57.7	57.9
Heavy Trucks:	58.2	58.1	49.0	50.3	58.6	58.8
Vehicle Noise:	65.5	65.0	61.8	57.1	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	58	124	268
CNEL:	29	62	134	288

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,110 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	608 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-4.11	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-21.35	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-25.30	0.56	-1.20	*-5.41*	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:	63.7	63.0	61.3	55.2	63.8	64.4
Medium Trucks:	57.5	57.2	50.8	49.3	57.8	58.0
Heavy Trucks:	58.3	58.1	49.1	50.4	58.7	58.8
Vehicle Noise:	65.5	65.0	61.9	57.2	65.8	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	58	126	271
CNEL:	29	63	135	291

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,473 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	635 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-3.92	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-21.16	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-25.11	0.56	-1.20	*-5.41*	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:	63.9	63.2	61.5	55.4	64.0	64.6
Medium Trucks:	57.7	57.4	51.0	49.5	58.0	58.2
Heavy Trucks:	58.5	58.3	49.3	50.5	58.9	59.0
Vehicle Noise:	65.7	65.2	62.1	57.4	65.9	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	28	60	129	279
CNEL:	30	64	139	299

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,597 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	645 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-3.86	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-21.10	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-25.05	0.56	-1.20	*-5.41*	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:	63.9	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	57.7	57.5	51.1	49.6	58.0	58.2
Heavy Trucks:	58.6	58.4	49.4	50.6	59.0	59.1
Vehicle Noise:	65.8	65.3	62.1	57.5	66.0	66.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	28	61	131	282
CNEL:	30	65	140	302

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	74 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	6 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-24.51	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-41.75	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-45.70	0.56	-1.20	*-5.41*	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:	43.3	42.6	40.9	34.8	43.4	44.0
Medium Trucks:	37.1	36.8	30.4	28.9	37.4	37.6
Heavy Trucks:	37.9	37.7	28.7	30.0	38.3	38.4
Vehicle Noise:	45.1	44.6	41.5	36.8	45.4	45.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	5	12
CNEL:	1	3	6	13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	84 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	6 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-23.96	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-41.20	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-45.15	0.56	-1.20	*-5.41*	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:	43.8	43.2	41.4	35.4	44.0	44.6
Medium Trucks:	37.6	37.4	31.0	29.5	37.9	38.1
Heavy Trucks:	38.5	38.3	29.3	30.5	38.9	39.0
Vehicle Noise:	45.7	45.2	42.0	37.4	45.9	46.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	13
CNEL:	1	3	6	14

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	74 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	6 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-24.51	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-41.75	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-45.70	0.56	-1.20	*-5.41*	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:	43.3	42.6	40.9	34.8	43.4	44.0
Medium Trucks:	37.1	36.8	30.4	28.9	37.4	37.6
Heavy Trucks:	37.9	37.7	28.7	30.0	38.3	38.4
Vehicle Noise:	45.1	44.6	41.5	36.8	45.4	45.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	5	12
CNEL:	1	3	6	13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	84 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	6 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-23.96	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-41.20	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-45.15	0.56	-1.20	*-5.41*	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:	43.8	43.2	41.4	35.4	44.0	44.6
Medium Trucks:	37.6	37.4	31.0	29.5	37.9	38.1
Heavy Trucks:	38.5	38.3	29.3	30.5	38.9	39.0
Vehicle Noise:	45.7	45.2	42.0	37.4	45.9	46.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	13
CNEL:	1	3	6	14

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	94 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	7 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-23.47	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-40.71	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-44.66	0.56	-1.20	*-5.41*	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:	44.3	43.7	41.9	35.9	44.5	45.1
Medium Trucks:	38.1	37.8	31.5	29.9	38.4	38.6
Heavy Trucks:	39.0	38.8	29.7	31.0	39.3	39.5
Vehicle Noise:	46.2	45.7	42.5	37.9	46.4	46.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	14
CNEL:	1	3	7	15

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Two Mile Rd.
Road Segment: w/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	104 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-23.03	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-40.27	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-44.22	0.56	-1.20	*-5.41*	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:	44.8	44.1	42.4	36.3	44.9	45.5
Medium Trucks:	38.5	38.3	31.9	30.4	38.8	39.1
Heavy Trucks:	39.4	39.2	30.2	31.4	39.8	39.9
Vehicle Noise:	46.6	46.1	43.0	38.3	46.8	47.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	7	15
CNEL:	2	3	7	16

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,733 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	430 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-5.62	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-22.85	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-26.81	0.56	-1.20	*-5.41*	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:	62.2	61.5	59.8	53.7	62.3	62.9
Medium Trucks:	56.0	55.7	49.3	47.8	56.3	56.5
Heavy Trucks:	56.8	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	64.0	63.5	60.4	55.7	64.2	64.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	22	46	100	215
CNEL:	23	50	107	231

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.
Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,231 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	467 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-5.25	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-22.49	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-26.45	0.56	-1.20	*-5.41*	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:	62.5	61.9	60.1	54.1	62.7	63.3
Medium Trucks:	56.3	56.1	49.7	48.2	56.6	56.9
Heavy Trucks:	57.2	57.0	48.0	49.2	57.6	57.7
Vehicle Noise:	64.4	63.9	60.7	56.1	64.6	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	23	49	106	227
CNEL:	24	53	113	244

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,965 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	447 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-5.44	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-22.68	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-26.64	0.56	-1.20	*-5.41*	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:	62.4	61.7	59.9	53.9	62.5	63.1
Medium Trucks:	56.1	55.9	49.5	48.0	56.4	56.7
Heavy Trucks:	57.0	56.8	47.8	49.0	57.4	57.5
Vehicle Noise:	64.2	63.7	60.6	55.9	64.4	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	22	48	102	221
CNEL:	24	51	110	237

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,463 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	485 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-5.10	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-22.33	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-26.29	0.56	-1.20	*-5.41*	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:	62.7	62.1	60.3	54.2	62.9	63.5
Medium Trucks:	56.5	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	57.3	57.2	48.1	49.4	57.7	57.8
Vehicle Noise:	64.5	64.1	60.9	56.2	64.8	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	23	50	108	233
CNEL:	25	54	116	250

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Weekday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	0 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-43.20	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-60.44	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-64.39	0.56	-1.20	*-5.41*	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:	24.6	23.9	22.2	16.1	24.8	25.4
Medium Trucks:	18.4	18.1	11.8	10.2	18.7	18.9
Heavy Trucks:	19.2	19.0	10.0	11.3	19.6	19.7
Vehicle Noise:	26.4	25.9	22.8	18.1	26.7	27.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	0	0	0	1
CNEL:	0	0	0	1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: Existing Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	0 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-43.20	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-60.44	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-64.39	0.56	-1.20	*-5.41*	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:	24.6	23.9	22.2	16.1	24.8	25.4
Medium Trucks:	18.4	18.1	11.8	10.2	18.7	18.9
Heavy Trucks:	19.2	19.0	10.0	11.3	19.6	19.7
Vehicle Noise:	26.4	25.9	22.8	18.1	26.7	27.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	0	0	0	1
CNEL:	0	0	0	1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Base Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	74 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	6 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-24.51	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-41.75	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-45.70	0.56	-1.20	*-5.41*	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:	43.3	42.6	40.9	34.8	43.4	44.0
Medium Trucks:	37.1	36.8	30.4	28.9	37.4	37.6
Heavy Trucks:	37.9	37.7	28.7	30.0	38.3	38.4
Vehicle Noise:	45.1	44.6	41.5	36.8	45.4	45.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	5	12
CNEL:	1	3	6	13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	84 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	6 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-23.96	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-41.20	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-45.15	0.56	-1.20	*-5.41*	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:	43.8	43.2	41.4	35.4	44.0	44.6
Medium Trucks:	37.6	37.4	31.0	29.5	37.9	38.1
Heavy Trucks:	38.5	38.3	29.3	30.5	38.9	39.0
Vehicle Noise:	45.7	45.2	42.0	37.4	45.9	46.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	13
CNEL:	1	3	6	14

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Base Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	94 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	7 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-23.47	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-40.71	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-44.66	0.56	-1.20	*-5.41*	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:	44.3	43.7	41.9	35.9	44.5	45.1
Medium Trucks:	38.1	37.8	31.5	29.9	38.4	38.6
Heavy Trucks:	39.0	38.8	29.7	31.0	39.3	39.5
Vehicle Noise:	46.2	45.7	42.5	37.9	46.4	46.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	6	14
CNEL:	1	3	7	15

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: EPC Sunday
Road Name: Two Mile Rd.
Road Segment: e/o Adobe Rd.

Project Name: Tract 17168 Twentynine P
Job Number: 16894

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	104 vehicles
Peak Hour Percentage:	7.50%
Peak Hour Volume:	8 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	52 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	52.0 feet
Centerline Dist. to Observer:	52.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

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:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.310
Medium Trucks:	45.114
Heavy Trucks:	45.133

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-23.03	0.54	-1.20	*-4.66*	0.000	0.000
Medium Trucks:	79.45	-40.27	0.57	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-44.22	0.56	-1.20	*-5.41*	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:	44.8	44.1	42.4	36.3	44.9	45.5
Medium Trucks:	38.5	38.3	31.9	30.4	38.8	39.1
Heavy Trucks:	39.4	39.2	30.2	31.4	39.8	39.9
Vehicle Noise:	46.6	46.1	43.0	38.3	46.8	47.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	1	3	7	15
CNEL:	2	3	7	16

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APPENDIX 8.1:

ON-SITE NOISE LEVEL CALCULATIONS

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

Scenario: Backyard
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	43.875
Medium Trucks:	43.673
Heavy Trucks:	43.692

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.75	-1.20	*-0.88*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.78	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.78	-1.20	*-1.96*	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:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

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

Scenario: Backyard With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	43.875
Medium Trucks:	43.673
Heavy Trucks:	43.692

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.75	-1.20	*-0.88*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.78	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.78	-1.20	*-1.96*	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:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

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

Scenario: First Floor With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.59	-1.20	*-0.38*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.57	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.57	-1.20	*-1.43*	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:	57.2	55.3	53.6	47.5	56.1	56.7
Medium Trucks:	49.7	48.2	41.9	40.3	48.8	49.0
Heavy Trucks:	51.0	49.6	40.5	41.8	50.1	50.3
Vehicle Noise:	58.7	57.0	54.0	49.1	57.7	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.2	55.3	53.6	47.5	56.1	56.7
Medium Trucks:	49.7	48.2	41.9	40.3	48.8	49.0
Heavy Trucks:	51.0	49.6	40.5	41.8	50.1	50.3
Vehicle Noise:	58.7	57.0	54.0	49.1	57.7	58.2

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

Scenario: Second Floor With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	55.462
Medium Trucks:	54.927
Heavy Trucks:	54.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.78	-1.20	*-2.57*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.72	-1.20	*-3.17*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.60	-1.20	*-4.90*	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:	57.0	55.1	53.4	47.3	55.9	56.6
Medium Trucks:	49.6	48.1	41.7	40.2	48.6	48.9
Heavy Trucks:	51.0	49.5	40.5	41.8	50.1	50.2
Vehicle Noise:	58.6	56.8	53.9	49.0	57.5	58.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.0	55.1	53.4	47.3	55.9	56.6
Medium Trucks:	49.6	48.1	41.7	40.2	48.6	48.9
Heavy Trucks:	51.0	49.5	40.5	41.8	50.1	50.2
Vehicle Noise:	58.6	56.8	53.9	49.0	57.5	58.0

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

Scenario: Backyard
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	43.875
Medium Trucks:	43.673
Heavy Trucks:	43.692

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.75	-1.20	*-0.88*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.78	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.78	-1.20	*-1.96*	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:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

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

Scenario: Backyard With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	43.875
Medium Trucks:	43.673
Heavy Trucks:	43.692

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.75	-1.20	*-0.88*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.78	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.78	-1.20	*-1.96*	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:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.6	56.7	54.9	48.8	57.5	58.1
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	60.1	58.3	55.4	50.5	59.0	59.5

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

Scenario: First Floor With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.898
Medium Trucks:	53.734
Heavy Trucks:	53.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.59	-1.20	*-0.38*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.57	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.57	-1.20	*-1.43*	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:	57.2	55.3	53.6	47.5	56.1	56.7
Medium Trucks:	49.7	48.2	41.9	40.3	48.8	49.0
Heavy Trucks:	51.0	49.6	40.5	41.8	50.1	50.3
Vehicle Noise:	58.7	57.0	54.0	49.1	57.7	58.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.2	55.3	53.6	47.5	56.1	56.7
Medium Trucks:	49.7	48.2	41.9	40.3	48.8	49.0
Heavy Trucks:	51.0	49.6	40.5	41.8	50.1	50.3
Vehicle Noise:	58.7	57.0	54.0	49.1	57.7	58.2

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

Scenario: Second Floor With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	40.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	55.462
Medium Trucks:	54.927
Heavy Trucks:	54.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.78	-1.20	*-2.57*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.72	-1.20	*-3.17*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.60	-1.20	*-4.90*	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:	57.0	55.1	53.4	47.3	55.9	56.6
Medium Trucks:	49.6	48.1	41.7	40.2	48.6	48.9
Heavy Trucks:	51.0	49.5	40.5	41.8	50.1	50.2
Vehicle Noise:	58.6	56.8	53.9	49.0	57.5	58.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.0	55.1	53.4	47.3	55.9	56.6
Medium Trucks:	49.6	48.1	41.7	40.2	48.6	48.9
Heavy Trucks:	51.0	49.5	40.5	41.8	50.1	50.2
Vehicle Noise:	58.6	56.8	53.9	49.0	57.5	58.0

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

Scenario: Backyard
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	37.0 feet
Centerline Dist. to Observer:	47.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	40.866
Medium Trucks:	40.649
Heavy Trucks:	40.670

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	1.21	-1.20	*-0.86*	0.000	0.000
Medium Trucks:	74.83	-23.33	1.25	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	1.24	-1.20	*-2.04*	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:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	51.5	50.0	43.7	42.1	50.6	50.8
Heavy Trucks:	52.8	51.4	42.3	43.6	52.0	52.1
Vehicle Noise:	60.5	58.8	55.9	51.0	59.5	60.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	51.5	50.0	43.7	42.1	50.6	50.8
Heavy Trucks:	52.8	51.4	42.3	43.6	52.0	52.1
Vehicle Noise:	60.5	58.8	55.9	51.0	59.5	60.0

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

Scenario: Backyard With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	37.0 feet
Centerline Dist. to Observer:	47.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	40.866
Medium Trucks:	40.649
Heavy Trucks:	40.670

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	1.21	-1.20	*-0.86*	0.000	0.000
Medium Trucks:	74.83	-23.33	1.25	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	1.24	-1.20	*-2.04*	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:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	51.5	50.0	43.7	42.1	50.6	50.8
Heavy Trucks:	52.8	51.4	42.3	43.6	52.0	52.1
Vehicle Noise:	60.5	58.8	55.9	51.0	59.5	60.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.0	57.1	55.4	49.3	57.9	58.5
Medium Trucks:	51.5	50.0	43.7	42.1	50.6	50.8
Heavy Trucks:	52.8	51.4	42.3	43.6	52.0	52.1
Vehicle Noise:	60.5	58.8	55.9	51.0	59.5	60.0

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

Scenario: First Floor With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	37.0 feet
Centerline Dist. to Observer:	57.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	50.892
Medium Trucks:	50.718
Heavy Trucks:	50.735

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.22	-1.20	*-0.36*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.20	-1.20	*-0.62*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.20	-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:	57.6	55.7	53.9	47.9	56.5	57.1
Medium Trucks:	50.1	48.6	42.2	40.7	49.2	49.4
Heavy Trucks:	51.4	49.9	40.9	42.2	50.5	50.6
Vehicle Noise:	59.1	57.3	54.4	49.5	58.1	58.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.6	55.7	53.9	47.9	56.5	57.1
Medium Trucks:	50.1	48.6	42.2	40.7	49.2	49.4
Heavy Trucks:	51.4	49.9	40.9	42.2	50.5	50.6
Vehicle Noise:	59.1	57.3	54.4	49.5	58.1	58.6

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

Scenario: Second Floor With Wall
Road Name: Desert Knoll Av.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	37.0 feet
Centerline Dist. to Observer:	57.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	52.545
Medium Trucks:	51.980
Heavy Trucks:	51.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.43	-1.20	*-2.47*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.36	-1.20	*-3.10*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.23	-1.20	*-4.97*	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:	57.4	55.5	53.7	47.7	56.3	56.9
Medium Trucks:	49.9	48.4	42.1	40.5	49.0	49.2
Heavy Trucks:	51.3	49.9	40.9	42.1	50.5	50.6
Vehicle Noise:	58.9	57.2	54.2	49.4	57.9	58.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.4	55.5	53.7	47.7	56.3	56.9
Medium Trucks:	49.9	48.4	42.1	40.5	49.0	49.2
Heavy Trucks:	51.3	49.9	40.9	42.1	50.5	50.6
Vehicle Noise:	58.9	57.2	54.2	49.4	57.9	58.4

Thursday, April 30, 2026

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

Scenario: Backyard
Road Name: Utah Trail
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,800 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,880 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:	67.0 feet
Centerline Dist. to Observer:	77.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	70.922
Medium Trucks:	70.798
Heavy Trucks:	70.810

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	2.64	-2.38	-1.20	*-0.98*	0.000	0.000
Medium Trucks:	77.62	-14.60	-2.37	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	82.14	-18.55	-2.37	-1.20	*-1.60*	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:	68.4	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	59.5	57.9	51.6	50.0	58.5	58.7
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	69.5	67.7	65.1	59.8	68.4	68.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.4	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	59.5	57.9	51.6	50.0	58.5	58.7
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	69.5	67.7	65.1	59.8	68.4	68.9

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

Scenario: Backyard With Wall
Road Name: Utah Trail
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,800 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,880 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	6.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	77.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	71.050
Medium Trucks:	70.867
Heavy Trucks:	70.787

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	2.64	-2.39	-1.20	*0.16*	-6.480	-9.480
Medium Trucks:	77.62	-14.60	-2.38	-1.20	*0.11*	-6.080	-9.080
Heavy Trucks:	82.14	-18.55	-2.37	-1.20	*0.02*	-5.200	-8.200

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.4	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	59.5	57.9	51.6	50.0	58.5	58.7
Heavy Trucks:	60.0	58.6	49.6	50.8	59.2	59.3
Vehicle Noise:	69.4	67.6	65.1	59.8	68.4	68.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.9	57.0	55.2	49.2	57.8	58.4
Medium Trucks:	50.4	48.9	42.5	41.0	49.4	49.7
Heavy Trucks:	51.8	50.4	41.4	42.6	51.0	51.1
Vehicle Noise:	60.2	58.4	55.6	50.6	59.1	59.6

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

Scenario: First Floor With Wall
Road Name: Utah Trail
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,800 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,880 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	6.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	87.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	81.025
Medium Trucks:	80.842
Heavy Trucks:	80.762

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	2.64	-3.25	-1.20	*0.16*	-6.480	-9.480
Medium Trucks:	77.62	-14.60	-3.23	-1.20	*0.09*	-5.900	-8.900
Heavy Trucks:	82.14	-18.55	-3.23	-1.20	*0.00*	-4.900	-7.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	58.6	57.1	50.7	49.2	57.6	57.9
Heavy Trucks:	59.2	57.7	48.7	50.0	58.3	58.4
Vehicle Noise:	68.6	66.8	64.2	59.0	67.5	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.4	48.3	57.0	57.6
Medium Trucks:	49.7	48.2	41.8	40.3	48.7	49.0
Heavy Trucks:	51.3	49.8	40.8	42.1	50.4	50.5
Vehicle Noise:	59.4	57.6	54.8	49.8	58.3	58.8

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

Scenario: Second Floor With Wall
Road Name: Utah Trail
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,800 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	2,880 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	6.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	87.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	81.982
Medium Trucks:	81.621
Heavy Trucks:	81.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	2.64	-3.32	-1.20	*-0.62*	0.000	0.000
Medium Trucks:	77.62	-14.60	-3.30	-1.20	*-0.79*	0.000	0.000
Heavy Trucks:	82.14	-18.55	-3.25	-1.20	*-1.32*	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:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	59.1	57.7	48.7	49.9	58.3	58.4
Vehicle Noise:	68.5	66.7	64.1	58.9	67.5	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	59.1	57.7	48.7	49.9	58.3	58.4
Vehicle Noise:	68.5	66.7	64.1	58.9	67.5	68.0

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

Scenario: Backyard
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: Backyard With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: First Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	56.903
Medium Trucks:	56.748
Heavy Trucks:	56.763

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.95	-1.20	*-0.39*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.93	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.93	-1.20	*-1.36*	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:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

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

Scenario: Second Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	58.387
Medium Trucks:	57.879
Heavy Trucks:	57.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-6.09	-1.11	-1.20	*-2.66*	0.000	0.000
Medium Trucks:	74.83	-23.33	-1.06	-1.20	*-3.22*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.96	-1.20	*-4.85*	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:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

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

Scenario: Backyard
Road Name: Samarkand Dr.

Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: Backyard With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: First Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	56.903
Medium Trucks:	56.748
Heavy Trucks:	56.763

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.95	-1.20	*-0.39*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.93	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.93	-1.20	*-1.36*	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:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

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

Scenario: Second Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	58.387
Medium Trucks:	57.879
Heavy Trucks:	57.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-6.09	-1.11	-1.20	*-2.66*	0.000	0.000
Medium Trucks:	74.83	-23.33	-1.06	-1.20	*-3.22*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.96	-1.20	*-4.85*	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:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

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

Scenario: Backyard
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: Backyard With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: First Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	56.903
Medium Trucks:	56.748
Heavy Trucks:	56.763

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.95	-1.20	*-0.39*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.93	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.93	-1.20	*-1.36*	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:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

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

Scenario: Second Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	58.387
Medium Trucks:	57.879
Heavy Trucks:	57.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-1.11	-1.20	*-2.66*	0.000	0.000
Medium Trucks:	74.83	-23.33	-1.06	-1.20	*-3.22*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.96	-1.20	*-4.85*	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:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

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

Scenario: Backyard
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: Backyard With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: First Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	56.903
Medium Trucks:	56.748
Heavy Trucks:	56.763

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.95	-1.20	*-0.39*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.93	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.93	-1.20	*-1.36*	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:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

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

Scenario: Second Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	58.387
Medium Trucks:	57.879
Heavy Trucks:	57.000

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-6.09	-1.11	-1.20	*-2.66*	0.000	0.000
Medium Trucks:	74.83	-23.33	-1.06	-1.20	*-3.22*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.96	-1.20	*-4.85*	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:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

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

Scenario: Backyard
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: Backyard With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	53.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	46.883
Medium Trucks:	46.694
Heavy Trucks:	46.712

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	0.32	-1.20	*-0.90*	0.000	0.000
Medium Trucks:	74.83	-23.33	0.34	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	80.05	-27.28	0.34	-1.20	*-1.90*	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:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.5	48.4	57.0	57.6
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	51.9	50.5	41.4	42.7	51.1	51.2
Vehicle Noise:	59.6	57.9	55.0	50.1	58.6	59.1

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

Scenario: First Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	56.903
Medium Trucks:	56.748
Heavy Trucks:	56.763

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-0.95	-1.20	*-0.39*	0.000	0.000
Medium Trucks:	74.83	-23.33	-0.93	-1.20	*-0.61*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.93	-1.20	*-1.36*	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:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.9	55.0	53.2	47.2	55.8	56.4
Medium Trucks:	49.4	47.9	41.5	40.0	48.4	48.7
Heavy Trucks:	50.6	49.2	40.2	41.4	49.8	49.9
Vehicle Noise:	58.4	56.6	53.7	48.8	57.3	57.8

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

Scenario: Second Floor With Wall
Road Name: Samarkand Dr.
Project Name: Tract 17168 Twentynine Palms
Job Number: 16894
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,000 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	300 vehicles
Vehicle Speed:	35 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:	43.0 feet
Centerline Dist. to Observer:	63.0 feet
Barrier Distance to Observer:	20.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 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:	2.30		
Heavy Trucks:	8.00	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	58.387
Medium Trucks:	57.879
Heavy Trucks:	57.000

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	65.11	-6.09	-1.11	-1.20	*-2.66*	0.000	0.000
Medium Trucks:	74.83	-23.33	-1.06	-1.20	*-3.22*	0.000	0.000
Heavy Trucks:	80.05	-27.28	-0.96	-1.20	*-4.85*	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:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.7	54.8	53.0	47.0	55.6	56.2
Medium Trucks:	49.2	47.7	41.4	39.8	48.3	48.5
Heavy Trucks:	50.6	49.2	40.1	41.4	49.8	49.9
Vehicle Noise:	58.2	56.5	53.5	48.7	57.2	57.7

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APPENDIX 10.1:

SAMPLE AIR CONDITIONING UNIT

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24SCA4
Comfort™ Series Single-Stage Air Conditioner with Puron® Refrigerant
1-1/2 To 5 Tons

Carrier
Turn to the experts

Product Data



This unit has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows you to make a responsible decision in the protection of the earth's ozone layer.

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

Industry leading Features / Benefits

Efficiency

- 13.4 - 16.0 SEER2 (13.5 - 16.5 SEER) / 11.0 – 13.5 EER2 (11.0 - 14.5 EER)
- Microtube Technology refrigeration system
- Indoor air quality accessories available

Reliability

- Puron refrigerant - environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- Filter drier

Durability

WeatherArmor™ Protection Package:

- Solid, durable sheet metal construction
- Dense wire coil guard

Applications

- Long–line – up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.4 m) evaporator above condenser (See Long Line Guide for more information.)
- Low ambient cooling (down to 0°F / -18°C) with approved low ambient accessory kits.

STANDARD FEATURES

Features	18	24	30	36	42	48	60
Puron Refrigerant	X	X	X	X	X	X	X
SEER2 (Range depending on indoor combination)	13.4 - 16.0	13.4 - 16.0	13.4 - 16.0	13.4 - 15.0	13.4 - 15.5	13.4 - 15.2	13.4 - 14.0
Scroll Compressor	X	X	X	X	X	X	X
Field Installed Filter Drier	X	X	X	X	X	X	X
Front Seating Service Valves	X	X	X	X	X	X	X
Internal Pressure Relief Valve	X	X	X	X	X	X	X
Internal Thermal Overload	X	X	X	X	X	X	X
Long Line Capability	X	X	X	X	X	X	X
Low Ambient Capability with Kit	X	X	X	X	X	X	X

Model Number Nomenclature

1	2	3	4	5	6	7	8	9	10	11	12
N	N	A	A	A/N	N	N	N	A/N	A/N	A/N	N
2	**4**	**S**	**C**	**A**	**4**	**1**	**8**	**N**	**0**	**0**	**3**
Product Series		Design Type	Tier	Major Series	SEER2	Cooling Capacity		Region	Feature	Special Feature	Voltage
24 = R-410A AC		S = Single Stage AC	**C** = Comfort Series	A=Initial	4 = 13.4 SEER2	1,000 Btuh (nominal)		N = Standard North AC	0=Standard	0=Standard	3=208/230-1

CATALOG ORDERING NUMBERS

Size	Model Number
18	24SCA418N003
24	24SCA424N003
30	24SCA430N003
36	24SCA436N003
42	24SCA442N003
48	24SCA448N003
60	24SCA460N003

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.

Quality ISO 9001

Physical Data

UNIT SIZE	18	24	30	36	42	48	60
Compressor Type	Scroll						
REFRIGERANT	Puron® (R-410A)						
Control	TXV (Puron Hard Shutoff)						
Factory Charge lb (kg)*	5.5 (2.49)	4.40 (2.00)	6.00 (2.72)	5.20 (2.36)	7.90 (3.58)	8.90 (4.04)	9.10 (4.13)
COND FAN	Propeller Type, Direct Drive						
Air Discharge	Vertical						
Air Qty (CFM)	1600	1800	2500	2750	4100	3850	4000
Motor HP	1/12	1/12	1/10	1/5	1/4	1/4	1/4
Motor RPM	1100	1100	1100	1100	1100	1100	1100
COND COIL							
Face Area (Sq ft)	8.4	9.8	17.1	12.9	23.6	15.0	19.3
Fins per In.	25	25	25	20	25	20	20
Rows	1	1	1	1	1	2	2
Circuits	3	5	4	5	7	6	9
VALVE CONNECT. (In. ID)							
Vapor	3/4	3/4	3/4	7/8	7/8	7/8	7/8
Liquid	3/8"						
REFRIGERANT TUBES* (In. OD)							
Rated Vapor†	3/4	3/4	3/4	7/8	7/8	7/8	1-1/8
Rated Liquid Line‡	3/8"						

*.For 15 ft. lineset
†.Units are rated with 25 ft (7.6 m) of lineset length. See Vapor Line Sizing and Cooling Capacity Loss table when using other sizes and lengths of lineset.
‡.See Liquid Line Sizing For Cooling Only Systems with Puron Refrigerant tables.
Note: See unit Installation Instruction for proper installation.

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

REFRIGERANT PIPING LENGTH LIMITATIONS

Liquid Line Sizing and Maximum Total Equivalent Lengths for Cooling Only Systems with Puron® Refrigerant:

The maximum allowable length of a residential split system depends on the liquid line diameter and vertical separation between indoor and outdoor units.

See Table below for liquid line sizing and maximum lengths :

Table 1 – Maximum Total Equivalent Length* Outdoor Unit BELOW Indoor Unit

Size	Liquid Line Connection	Liquid Line Diam. w/ TXV	AC with Puron Refrigerant Maximum Total Equivalent Length†: Outdoor unit BELOW Indoor Vertical Separation ft (m)								
			0-5 (0-1.5)	6-10 (1.8-3.0)	11-20 (3.4-6.1)	21-30 (6.4-9.1)	31-40 (9.4-12.2)	41-50 (12.5-15.2)	51-60 (15.5-18.3)	61-70 (18.6-21.3)	71-80 (21.6-24.4)
18000	3/8	1/4	150	150	125	100	100	75	--	--	--
		5/16	250*	250*	250*	250*	250*	250*	250*	225*	150
		3/8	250*	250*	250*	250*	250*	250*	250*	250*	250*
24000	3/8	1/4	75	75	75	50	50	--	--	--	--
		5/16	250*	250*	250*	250*	250*	225*	175	125	100
		3/8	250*	250*	250*	250*	250*	250*	250*	250*	250*
30000	3/8	1/4	30	--	--	--	--	--	--	--	--
		5/16	175	225*	200	175	125	100	75	--	--
		3/8	250*	250*	250*	250*	250*	250*	250*	250*	250*
36000	3/8	5/16	175	150	150	100	100	100	75	--	--
		3//8	250*	250*	250*	250*	250*	250*	250*	250*	250*
42000	3/8	5/16	125	100	100	75	75	50	--	--	--
		3/8	250*	250*	250*	250*	250*	250*	250*	250*	150
48000	3/8	3/8	250*	250*	250*	250*	250*	250*	230	160	--
60000	3/8	3/8	250*	250*	250*	225*	190	150	110	--	--

*.Maximum actual length not to exceed 200 ft (61 m)
†.Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.
-- = outside acceptable range

Table 2 – Maximum* Total Equivalent Length Outdoor Unit ABOVE Indoor Unit

Size	Liquid Line Connection	Liquid Line Diam. w/ TXV	AC with Puron Refrigerant Maximum Total Equivalent Length†: Outdoor unit ABOVE Indoor Vertical Separation ft (m)							
			25 (7.6)	26-50 (7.9-15.2)	51-75 (15.5-22.9)	76-100 (23.2-30.5)	101-125 (30.8-38.1)	126-150 (38.4-45.7)	151-175 (46.0-53.3)	176-200 (53.6-61.0)
18000	3/8	1/4	175	250*	250*	250*	250*	250*	250*	250*
		5/16	250*	250*	250*	250*	250*	250*	250*	250*
		3/8	250*	250*	250*	250*	250*	250*	250*	250*
24000	3/8	1/4	100	125	175	200	225*	250*	250*	250*
		5/16	250*	250*	250*	250*	250*	250*	250*	250*
		3/8	250*	250*	250*	250*	250*	250*	250*	250*
30000	3/8	1/4	30	--	--	--	--	--	--	--
		5/16	250*	250*	250*	250*	250*	250*	250*	250*
		3/8	250*	250*	250*	250*	250*	250*	250*	250*
36000	3/8	5/16	225*	250*	250*	250*	250*	250*	250*	250*
		3/8	250*	250*	250*	250*	250*	250*	250*	250*
42000	3/8	5/16	175	200	250*	250*	250*	250*	250*	250*
		3/8	250*	250*	250*	250*	250*	250*	250*	250*
48000	3/8	3/8	250*	250*	250*	250*	250*	250*	250*	250*
60000	3/8	3/8	250*	250*	250*	250*	250*	250*	250*	250*

*.Maximum actual length not to exceed 200 ft (61 m)
†.Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.
-- = Outside acceptable range

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Table 3 – Refrigerant Charge Adjustments

Liquid Line Size	Puron Charge oz/ft (g/m)
3/8	0.60 (17.74) (Factory charge for lineset = 9 oz / 266.16 g)
5/16	0.40 (11.83)
1/4	0.27 (7.98)

Units are factory charged for 15 ft (4.6 m) of 3/8" liquid line. The factory charge for 3/8" lineset 9 oz.(266.16 g). When using other length or diameter liquid lines, charge adjustments are required per the chart above.

Charging Formula:

[(Lineset oz/ft X total length) – (factory charge for lineset)] = charge adjustment

Example 1: System has 15 ft of lineset* using existing 1/4" liquid line. What charge adjustment is required?

Formula:(.27 oz/ft X 15ft) – (9 oz) = (-4.95) oz.

Net result is to remove 4.95 oz of refrigerant from the system

Example 2: System has 45 ft of existing 5/16" liquid line. What is the charge adjustment?

Formula:(.40 oz/ft. X 45ft) – (9 oz.) = 9 oz.

Net result is to add 9 oz of refrigerant to the system

NOTE: Conditions must be favorable for charging by subcooling method. Indoor temperature must be 70°F to 80°F (21°C to 27°C), and outdoor temperature must be 70°F to 100°F (21°C to 38°C). If outside these conditions, adjust charge for long linesets by weigh-in method.

* When applicable. Refer to Physical Data Table in this PD and to the Installation Instructions for more information.

Long Line Applications

An application is considered Long Line, when the refrigerant level in the system requires the use of accessories to maintain acceptable refrigerant management for systems reliability. See Accessory Usage Guideline table for required accessories. Defining a system as long line depends on the liquid line diameter, actual length of the tubing, and vertical separation between the indoor and outdoor units.

For Air Conditioner systems, the chart below shows when an application is considered Long Line.

Table 4 – AC with Puron® Refrigerant Long Line Description ft (m) Beyond these lengths, a TXV is required

Total Length	Outdoor Unit Above or Below Indoor Unit
TXV required beyond 50 ft. (15.2 m)	TXV required beyond 20 ft. (6.1 m)

Table 5 – AC with Puron® Refrigerant Long Line Description ft (m) (Beyond these lengths, long line accessories are required)

Liquid Line Size	Units On Same Level	Outdoor Below Indoor	Outdoor Above Indoor
1/4 + TXV	No accessories needed within allowed lengths	No accessories needed within allowed lengths	175 (53.3)
5/16 + TXV	120 (36.6)	50 (15.2) vertical or 120 (36.6) total	120 (36.6)
3/8 + TXV	80 (24.4)	35 (10.7) vertical or 80 (24.4) total	80 (24.4)

Note: See Residential Piping and Long Line Guideline for details

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

VAPOR LINE SIZING AND COOLING CAPACITY LOSS

Acceptable vapor line diameters provide adequate oil return to the compressor while avoiding excessive capacity loss. The suction line diameters shown in the chart below are acceptable for AC systems with **Puron®** refrigerant:

Table 6 – Vapor Line Sizing and Cooling Capacity Losses — Puron® Refrigerant 1-Stage Air Conditioner Applications

Unit Nominal Size (Btuh)	Maximum Liquid Line Diameters (In. OD)	Vapor Line Diameters (In. OD)	Cooling Capacity Loss (%) Total Equivalent Line Length ft. (m) 1-Stage AC with Puron®								
			26-50 (7.9-15.2)	51-80 (15.5-24.4)	81-100 (24.7-30.5)	101-125 (30.8-38.1)	126-150 (38.4-45.7)	151-175 (46.0-53.3)	176-200 (53.6-61.0)	201-225 (61.3-68.6)	226-250 (68.9-76.2)
18	3/8	1/2	1	2	3	5	6	7	8	9	11
		5/8	0	1	1	1	2	2	2	3	3
		3/4	0	0	0	0	1	1	1	1	1
24	3/8	5/8	0	1	2	2	3	3	4	5	5
		3/4	0	0	1	1	1	1	1	2	2
		7/8	0	0	0	0	0	1	1	1	1
30	3/8	5/8	1	2	3	3	4	5	6	7	8
		3/4	0	0	1	1	1	2	2	2	3
		7/8	0	0	0	0	1	1	1	1	1
36	3/8	5/8	1	2	4	5	6	8	9	10	12
		3/4	0	1	1	2	2	3	3	4	4
		7/8	0	0	0	1	1	1	1	2	2
42	3/8	3/4	0	1	2	2	3	4	4	5	6
		7/8	0	0	1	1	1	2	2	2	3
		1 1/8	0	0	0	0	0	0	0	0	0
48	3/8	3/4	0	1	2	3	4	5	5	6	7
		7/8	0	0	1	1	2	2	2	3	3
		1 1/8	0	0	0	0	0	0	0	1	1
60	3/8	3/4	1	2	4	5	6	7	9	10	11
		7/8	0	1	2	2	3	4	4	5	5
		1 1/8	0	0	0	1	1	1	1	1	1

Applications in this area may be long line and may have height restrictions. See the Residential Piping and Long Line Guideline.

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

ACCESSORIES

KIT NUMBER	KIT NAME	18	24	30	36	42	48	60
KSAFT0101AAA	FRZ THERM KIT	X	X	X	X	X	X	X
KAATD0101TDR	TIME DELAY KIT (90 second TDR)	X	X	X	X	X	X	X
KAATD0201TDR	TIME DELAY KIT (30 second TDR)	X	X	X	X	X	X	X
KSALA0301410	LOW AMBIENT COOLING KIT	X	X	X	X	X	X	X
KSALA1001AAA	MOTORMASTER KIT	X	X	X	X	X	X	X
KSAHS2501AAA	HARD START KIT	X	X	X	X	X	X	X
KSACY0101AAA	CYCLE PROTR KIT	X	X	X	X	X	X	X
KSASF0201AAA	SPRT FEET KIT	X	X	X	X	X	X	X
KAALS0201LLS*	SOL VALVE KIT	X	X	X	X	X	X	X
KAAWS0101AAA	WINTER ST KIT	X	X	X	X	X	X	X
KAALP0401PUR	LOW PRESSURE SW KIT	X	X	X	X	X	X	X
KAAHI0501PUR	HIGH PRESSURE SW KIT	X	X	X	X	X	X	X
KAACH1701AAA	CRKC HTR KIT	X	X	X	X			
KAACH1601AAA	CRKC HTR KIT					X	X	X
KSATX0201PUR	TXV KIT (For use with copper coils)	X	X	X				
KSATX0301PUR	TXV KIT (For use with copper coils)				X	X		
KSATX0401PUR	TXV KIT (For use with copper coils)						X	X
KSBTX0201PUR	TXV KIT (For use with aluminum coils)	X	X	X				
KSBTX0301PUR	TXV KIT (For use with aluminum coils)				X	X		
KSBTX0401PUR	TXV KIT (For use with aluminum coils)						X	X
KSASH2301COP	SOUND BLKT KIT	X	X	X	X			
KSASH2401COP	SOUND BLKT KIT					X	X	X

X = Accessory

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

ACCESSORY USAGE GUIDELINE

ACCESSORY	REQUIRED FOR LOW-AMBIENT COOLING APPLICATIONS (Below 55°F/12.8°C)	REQUIRED FOR LONG LINE APPLICATIONS*	REQUIRED FOR SEA COAST APPLICATIONS (Within 2 miles/3.22 km)
Ball Bearing Fan Motor	Standard	Standard	Standard
Compressor Start Assist Capacitor and Relay	Yes	Yes	No
Crankcase Heater	Yes	Yes	No
Evaporator Freeze Thermostat	Yes	No	No
Hard Shut-Off TXV	Yes	Yes	No
Liquid Line Solenoid Valve	No	See Long Line Guideline	No
MotorMaster® Control or Low-ambient Pressure Switch	Yes	No	No
Support Feet	Recommended	No	Recommended
Winter Start Control	Yes†	No	No

*.For tubing set lengths between 80 and 200 ft. (24 and 61 m) horizontal or 35 ft. (10.7 m) vertical differential (total equivalent length), refer to the Residential Split-System Long Line Application Guideline.
†.Required if Low Pressure Switch is factory or field installed.

Accessory Description and Usage (Listed Alphabetically)

1. Ball-Bearing Fan Motor

A fan motor with ball bearings which permits speed reduction while maintaining bearing lubrication.

Usage Guideline:

Required on all units when MotorMaster® is used.

2. Compressor Start Assist - Capacitor and Relay

Start capacitor and relay gives a ”hard” boost to compressor motor at each start up.

Usage Guideline:

Required for single-phase scroll compressors in the following applications:

Long line

Low ambient cooling

Suggested for all compressors in areas with a history of low voltage problems.

3. Crankcase Heater

An electric resistance heater which mounts to the base of the compressor to keep the lubricant warm during off cycles. Improves compressor lubrication on restart and minimizes the chance of liquid slugging.

Usage Guideline:

Required in low ambient cooling applications.

Required in long line applications.

Suggested in all commercial applications.

4. Cycle Protector

The cycle protector is designed to prevent compressor short cycling. This control provides an approximate 5-minute delay after power to the compressor has been interrupted for any reason, including power outage, protector control trip, thermostat jiggling, or normal cycling.

5. Evaporator Freeze Thermostat

An SPST temperature-actuated switch that stops unit operation when evaporator reaches freeze-up conditions.

Usage Guideline:

Required when low ambient kit has been added.

6. Low-Ambient Pressure Switch Kit

A long life pressure switch which is mounted to outdoor unit service valve. It is designed to cycle the outdoor fan motor in order to maintain head pressure within normal operating limits (approximately 100 psig to 225 psig). The control will maintain working head pressure at low-ambient temperatures down to 0°F (-18°C) when properly installed and also using wind baffles. Instructions provided in accessory kit.

Usage Guideline:

A Low-Ambient Pressure Switch or MotorMaster® Low-Ambient Controller must be used when cooling operation is used at outdoor temperatures below 55°F (12.8°C).

7. MotorMaster® Low-Ambient Controller

A fan-speed control device activated by a temperature sensor, designed to control condenser fan motor speed in response to the saturated, condensing temperature during operation in cooling mode only. For outdoor temperatures down to –10°F/–23.3°C), it maintains condensing temperature at 100°F ±10°F (37.8°C ±5.5°C).

Usage Guideline:

A MotorMaster® Low Ambient Controller or Low-Ambient Pressure Switch must be used when cooling operation is used at outdoor temperatures below 55°F (12.8°C).

Suggested for all commercial applications.

8. Outdoor Air Temperature Sensor

This device enables the thermostat to display the outdoor temperature. This device is also required to enable special thermostat features such as auxiliary heat lock out.

Usage Guideline:

Suggested for use with compatible Carrier thermostats.

9. Sound Hood

Wraparound sound reducing cover for the compressor. Reduces the sound level of the compressor.

Usage Guideline:

Suggested when unit is installed closer than 15 ft (4.57 m) to quiet areas, bedrooms, etc.

Suggested when unit is installed between two houses less than 10 ft (3 m) apart.

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Accessory Description and Usage (Listed Alphabetically) Continued

10. Support Feet

Four or five stick-on plastic feet that raise the unit 4 in. (101.6 mm) above the mounting pad. This allows sand, dirt, and other debris to be flushed from the unit base, minimizing corrosion.

Usage Guideline:

Suggested in the following applications:

Coastal installations.

Windy areas or where debris is normally circulating.

Rooftop installations.

For improved sound ratings.

11. Thermostatic Expansion Valve (TXV)

A modulating flow-control valve which meters refrigerant liquid flow rate into the evaporator in response to the superheat of the refrigerant gas leaving the evaporator.

Kit includes valve, adapter tubes, and external equalizer tube. Hard shut off types are available.

Usage Guideline:

Required to achieve AHRI ratings in certain equipment combinations. Refer to combination ratings.

Hard shut off TXV or LLS required in air conditioner long line applications.

Required for use on all zoning systems.

12. Time-Delay Relay

An SPST delay relay which briefly continues operation of indoor blower motor to provide additional cooling after the compressor cycles off.

NOTE: Most indoor unit controls include this feature. For those that do not, use the guideline below.

Usage Guideline:

For improved efficiency ratings for certain combinations of indoor and outdoor units. Refer to AHRI Directory of Certified Product Performance (AHRI Directory).

When a Time-Delay Relay (TDR) is called for in the AHRI Directory, use a 30 second TDR for MicroChannel Indoor units and use a 90 second TDR for Round Tube Plate Fin Indoor units.

13. Winter Start Control

This control is designed to alleviate nuisance opening of the low-pressure switch by bypassing it for the first 3 minutes of operation.

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AHRI RATINGS

For AHRI ratings certificates, please refer to the AHRI directory www.ahridirectory.org
Additional ratings and system combinations can be accessed via the Ratings Database here: www.MyCarrierRatings.com

Electrical Data

UNIT SIZE	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MAX FUSE† or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		
18	208-230/1	253	197	48.0	8.00	0.40	10.4	15
24				59.5	11.70	0.50	15.1	25
30				64.3	11.80	0.75	15.6	25
36				80.1	12.20	1.05	16.4	25
42				110.2	17.70	1.40	23.5	40
48				124.0	18.50	1.40	24.5	40
60				150.0	25.60	1.52	33.5	50

*.Permissible limits of the voltage range at which the unit will operate satisfactorily
†.Time-Delay fuse.

FLA- Full Load Amps
LRA - Locked Rotor Amps
MCA- Minimum Circuit Amps
RLA- Rated Load Amps
NOTE:Control circuit is 24V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.
Complies with requirements of ASHRAE Standards 90.1

Sound Power Level without sound shield

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (without tone adjustment) (dB)						
		125	250	500	1000	2000	4000	8000
18	75	68.9	65.3	65.6	71.4	68.4	63.8	61.2
24	74	66.9	72.6	70.0	70.7	66.6	62.7	59.2
30	73	69.5	68.9	68.9	68.5	62.8	60.0	57.4
36	75	70.8	73.6	71.5	69.5	66.1	63.6	58.1
42	73	73.9	72.6	70.3	68.2	64.3	61.2	57.3
48	76	72.3	74.1	71.2	70.6	63.8	61.6	55.9
60	76	70.0	75.0	71.9	73.7	66.0	61.7	56.3

NOTE: Tested in compliance with AHRI 270 but not listed with AHRI.

Sound Power Level with Accessory sound shield

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (without tone adjustment) (dB)						
		125	250	500	1000	2000	4000	8000
18	75	66.4	67.0	66.1	71.5	66.6	62.5	61.1
24	74	68.4	72.2	70.4	70.2	66.0	62.3	58.5
30	72	69.3	69.7	68.8	68.0	62.4	59.5	55.7
36	75	71.0	73.7	71.2	69.0	65.4	63.0	57.7
42	73	75.3	71.7	70.0	68.1	63.9	60.2	55.3
48	74	73.3	74.2	71.6	69.9	63.8	60.4	54.7
60	75	70.2	73.9	71.8	72.4	64.2	60.4	54.6

NOTE: Tested in compliance with AHRI 270 but not listed with AHRI.

Charging Subcooling (TXV-Type Expansion Device)

UNIT SIZE	REQUIRED SUBCOOLING (F)	Indoor
18	14	TXV
24	10	
30	10	
36	10	
42	11	
48	12	
60	12	

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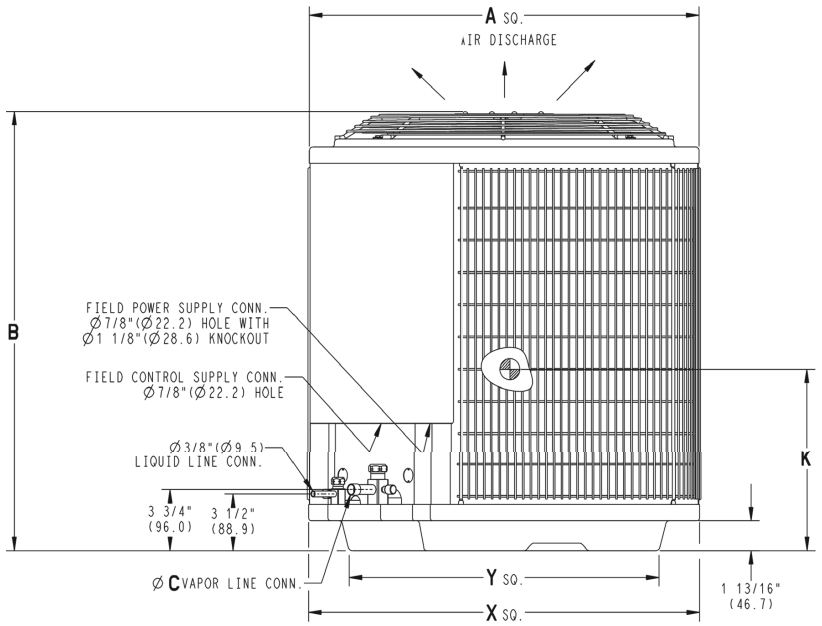
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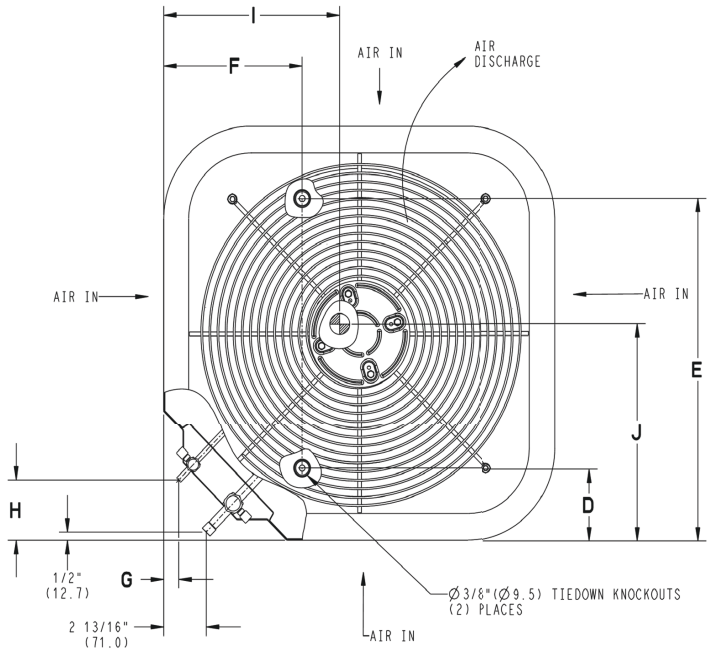
UNIT	SERIES	ELECTRICAL CHARACTERISTICS				A		B		C		D		E		F		G		H		I		J		K		OPERATING WEIGHT		SHIPPING WEIGHT		SHIPPING LENGTH / WIDTH (Sq.)		SHIPPING HEIGHT	
		208-230-1-60	208/230-3-60	460-3-60	575-3-60	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	Lbs	Kgs	Lbs	Kgs	INCH	MM	INCH	MM
24SCA418N*0	0	Y	N	N	N	23 1/8	587.3	25 5/16	642.9	3/4	19.1	4 7/16	113.0	18 1/16	459.0	7 13/16	197.9	5/16	7.9	3	76.2	11	279.4	10 1/2	266.7	10 1/4	260.4	100	45.4	109	49.4	26	660.0	30 9/16	775.7
24SCA424N*0	0	Y	N	N	N	25 3/4	654.0	25 5/16	642.4	3/4	19.1	4 7/16	113.0	21 1/4	539.9	9 1/8	231.3	5/16	7.9	3	76.2	13 1/2	342.9	13	330.2	12 1/2	317.5	111	50.3	121	54.9	28 3/4	730.0	30 9/16	775.7
24SCA430N*0	0	Y	N	N	N	31 3/16	792.5	32 1/16	815.1	3/4	19.1	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	5/16	7.9	3	76.2	15	381.0	15 3/4	400.1	16	406.4	139	63.0	161	73.0	34 1/4	870.0	37 5/16	947.9
24SCA436N*0	0	Y	N	N	N	31 3/16	792.5	25 5/16	642.4	7/8	22.2	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	5/16	7.9	3	76.2	14 1/2	368.3	15	381.0	11 1/2	292.1	132	59.9	146	66.2	34 1/4	870.0	30 1/2	775.2
24SCA442N*0	0	Y	N	N	N	31 3/16	792.5	42 5/16	1074.2	7/8	22.2	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	5/16	7.9	3	76.2	17	431.8	15 1/2	393.7	22 1/2	571.5	181	82.1	203	92.1	34 1/4	870.0	47 1/2	1207.1
24SCA448N*0	0	Y	N	N	N	31 3/16	792.5	28 11/16	728.7	7/8	22.2	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	5/16	7.9	3	76.2	14 1/2	368.3	14 1/2	368.3	12 1/2	317.5	171	77.6	190	86.2	34 1/4	870.0	33 15/16	861.6
24SCA460N*0	0	Y	N	N	N	31 3/16	792.5	35 1/2	901.4	7/8	22.2	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	5/16	7.9	3	76.2	15 1/2	393.7	16	406.4	18 1/2	469.9	190	86.2	206	93.4	34 1/4	870.0	40 3/4	1034.3

Y=YES
N=NO

NOTES:

1. CENTER OF GRAVITY .





NOTE: ALL DIMENSIONS IN INCH (MM)

U.S. ECCN: Not Subject to Regulation (N.S.R.)

SD5750-4 REV. A

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APPENDIX 10.2:

CADNAA OPERATIONAL NOISE CALCULATIONS

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16894 - Tract 17168 Twentynine Palms

CadnaA Noise Prediction Model: 16894-02 Operation.cna
Date: 30.04.26
Analyst: N. Johnson

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)
R01		R01	28.0	25.3	32.0	65.0	65.0	0.0				5.00	a	7155773.34	1885737.57	5.00
R02		R02	34.2	31.5	38.2	65.0	65.0	0.0				5.00	a	7154994.26	1884507.10	5.00
R03		R03	33.2	30.5	37.2	65.0	65.0	0.0				5.00	a	7154492.96	1884192.43	5.00
R04		R04	37.5	34.8	41.5	65.0	65.0	0.0				5.00	a	7153637.49	1883682.88	5.00
R05		R05	34.9	32.1	38.9	65.0	65.0	0.0				5.00	a	7152930.03	1884665.09	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)
POINTSOURCE		AC01	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153565.10	1883731.83	3.00
POINTSOURCE		AC02	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153585.62	1883836.01	3.00
POINTSOURCE		AC03	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153588.77	1883925.99	3.00
POINTSOURCE		AC04	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153577.73	1884012.80	3.00
POINTSOURCE		AC05	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153585.62	1884099.62	3.00
POINTSOURCE		AC06	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153584.04	1884175.39	3.00
POINTSOURCE		AC07	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153580.88	1884263.79	3.00
POINTSOURCE		AC08	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153580.88	1884352.18	3.00
POINTSOURCE		AC09	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153426.19	1883730.25	3.00
POINTSOURCE		AC10	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153333.06	1883731.83	3.00
POINTSOURCE		AC11	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153239.92	1883731.83	3.00
POINTSOURCE		AC12	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153112.06	1883769.71	3.00
POINTSOURCE		AC13	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153101.01	1883913.36	3.00
POINTSOURCE		AC14	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153235.19	1883943.35	3.00
POINTSOURCE		AC15	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153334.63	1883922.83	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)
POINTSOURCE		AC16	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153421.45	1883924.41	3.00
POINTSOURCE		AC17	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153415.14	1884061.74	3.00
POINTSOURCE		AC18	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153333.06	1884060.16	3.00
POINTSOURCE		AC19	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153235.19	1884063.32	3.00
POINTSOURCE		AC20	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153105.75	1884079.10	3.00
POINTSOURCE		AC21	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153096.28	1884240.11	3.00
POINTSOURCE		AC22	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153232.03	1884266.94	3.00
POINTSOURCE		AC23	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153325.16	1884268.52	3.00
POINTSOURCE		AC24	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153410.40	1884270.10	3.00
POINTSOURCE		AC25	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153579.30	1884437.42	3.00
POINTSOURCE		AC26	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153572.99	1884524.24	3.00
POINTSOURCE		AC27	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153572.99	1884606.32	3.00
POINTSOURCE		AC28	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153576.15	1884686.83	3.00
POINTSOURCE		AC29	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153576.15	1884775.22	3.00
POINTSOURCE		AC30	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153568.25	1884873.09	3.00
POINTSOURCE		AC31	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153410.40	1884407.43	3.00
POINTSOURCE		AC32	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153323.58	1884404.27	3.00
POINTSOURCE		AC33	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153227.30	1884402.70	3.00
POINTSOURCE		AC34	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153102.59	1884435.84	3.00
POINTSOURCE		AC35	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153093.12	1884576.33	3.00
POINTSOURCE		AC36	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153225.72	1884611.06	3.00
POINTSOURCE		AC37	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153323.58	1884601.59	3.00
POINTSOURCE		AC38	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153410.40	1884609.48	3.00
POINTSOURCE		AC39	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153359.89	1884715.24	3.00
POINTSOURCE		AC40	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153363.05	1884797.32	3.00
POINTSOURCE		AC41	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153217.82	1884745.23	3.00
POINTSOURCE		AC42	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153077.34	1884764.18	3.00
POINTSOURCE		AC43	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153080.49	1884947.28	3.00
POINTSOURCE		AC44	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153222.56	1884994.64	3.00
POINTSOURCE		AC45	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153329.90	1884993.06	3.00
POINTSOURCE		AC46	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153058.39	1885138.28	3.00
POINTSOURCE		AC47	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153135.74	1885141.44	3.00
POINTSOURCE		AC48	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153227.30	1885150.91	3.00
POINTSOURCE		AC49	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153320.43	1885150.91	3.00
POINTSOURCE		AC50	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153513.01	1885056.20	3.00
POINTSOURCE		AC51	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153465.65	1885203.00	3.00
POINTSOURCE		AC52	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153550.89	1885239.31	3.00
POINTSOURCE		AC53	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153639.29	1885269.30	3.00
POINTSOURCE		AC54	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153734.00	1885308.76	3.00
POINTSOURCE		AC55	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153823.97	1885345.07	3.00
POINTSOURCE		AC56	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153934.47	1885378.22	3.00
POINTSOURCE		AC57	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153996.03	1885215.63	3.00
POINTSOURCE		AC58	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153883.96	1885179.32	3.00
POINTSOURCE		AC59	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153786.09	1885149.33	3.00
POINTSOURCE		AC60	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153705.58	1885122.50	3.00
POINTSOURCE		AC61	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153609.30	1885095.66	3.00
POINTSOURCE		AC62	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153748.20	1884936.23	3.00
POINTSOURCE		AC63	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153759.25	1884825.74	3.00
POINTSOURCE		AC64	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153756.10	1884734.18	3.00
POINTSOURCE		AC65	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153763.99	1884639.47	3.00
POINTSOURCE		AC66	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153745.05	1884517.93	3.00
POINTSOURCE		AC67	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153823.97	1884386.91	3.00
POINTSOURCE		AC68	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153999.19	1884396.38	3.00
POINTSOURCE		AC69	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154026.02	1884543.18	3.00
POINTSOURCE		AC70	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154003.92	1884650.52	3.00
POINTSOURCE		AC71	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153992.87	1884738.92	3.00
POINTSOURCE		AC72	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153996.03	1884824.16	3.00
POINTSOURCE		AC73	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153992.87	1884912.56	3.00
POINTSOURCE		AC74	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7153980.25	1884994.64	3.00
POINTSOURCE		AC75	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154161.77	1885008.84	3.00
POINTSOURCE		AC76	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154172.82	1884901.51	3.00
POINTSOURCE		AC77	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154180.72	1884833.63	3.00
POINTSOURCE		AC78	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154168.09	1884738.92	3.00
POINTSOURCE		AC79	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154171.25	1884659.99	3.00
POINTSOURCE		AC80	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154174.40	1884563.70	3.00
POINTSOURCE		AC81	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154223.34	1884429.53	3.00
POINTSOURCE		AC82	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154393.82	1884424.80	3.00
POINTSOURCE		AC83	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154415.92	1884563.70	3.00
POINTSOURCE		AC84	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154398.55	1884688.41	3.00
POINTSOURCE		AC85	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154392.24	1884762.60	3.00
POINTSOURCE		AC86	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154389.08	1884868.36	3.00
POINTSOURCE		AC87	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154355.93	1884991.48	3.00
POINTSOURCE		AC88	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154445.91	1884994.64	3.00
POINTSOURCE		AC89	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154396.97	1885225.10	3.00
POINTSOURCE		AC90	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154310.15	1885229.84	3.00
POINTSOURCE		AC91	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154223.34	1885229.84	3.00
POINTSOURCE		AC92	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154112.84	1885232.99	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)
POINTSOURCE		AC93	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154018.13	1885389.27	3.00
POINTSOURCE		AC94	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154116.00	1885382.95	3.00
POINTSOURCE		AC95	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154210.71	1885390.84	3.00
POINTSOURCE		AC96	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154300.68	1885390.84	3.00
POINTSOURCE		AC97	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154395.39	1885397.16	3.00
POINTSOURCE		AC98	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154475.90	1885395.58	3.00
POINTSOURCE		AC99	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154567.45	1885401.89	3.00
POINTSOURCE		AC00	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154663.74	1885401.89	3.00
POINTSOURCE		AC01	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154752.14	1885406.63	3.00
POINTSOURCE		AC02	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154826.33	1885408.21	3.00
POINTSOURCE		AC03	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154846.85	1885237.73	3.00
POINTSOURCE		AC04	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154756.87	1885234.57	3.00
POINTSOURCE		AC05	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154665.32	1885239.31	3.00
POINTSOURCE		AC06	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154575.34	1885237.73	3.00
POINTSOURCE		AC07	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154488.53	1885236.15	3.00
POINTSOURCE		AC08	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154523.25	1885008.84	3.00
POINTSOURCE		AC09	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154619.54	1885008.84	3.00
POINTSOURCE		AC10	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154583.24	1884884.14	3.00
POINTSOURCE		AC11	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154572.19	1884776.80	3.00
POINTSOURCE		AC12	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154570.61	1884672.62	3.00
POINTSOURCE		AC13	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154561.14	1884546.34	3.00
POINTSOURCE		AC14	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154624.28	1884434.27	3.00
POINTSOURCE		AC15	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154780.55	1884453.21	3.00
POINTSOURCE		AC16	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154837.38	1884571.60	3.00
POINTSOURCE		AC17	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154821.59	1884682.09	3.00
POINTSOURCE		AC18	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154815.28	1884775.22	3.00
POINTSOURCE		AC19	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154801.07	1884871.51	3.00
POINTSOURCE		AC20	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154755.30	1885018.32	3.00
POINTSOURCE		AC21	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154873.68	1885015.16	3.00
POINTSOURCE		AC22	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154965.24	1885024.63	3.00
POINTSOURCE		AC23	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155077.31	1885026.21	3.00
POINTSOURCE		AC24	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155164.13	1885024.63	3.00
POINTSOURCE		AC25	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155295.15	1885030.94	3.00
POINTSOURCE		AC26	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155404.06	1885019.89	3.00
POINTSOURCE		AC27	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155501.93	1885095.66	3.00
POINTSOURCE		AC28	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155487.72	1885226.68	3.00
POINTSOURCE		AC29	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155405.64	1885285.08	3.00
POINTSOURCE		AC30	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155449.84	1885452.41	3.00
POINTSOURCE		AC31	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155312.51	1885425.57	3.00
POINTSOURCE		AC32	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155271.47	1885253.51	3.00
POINTSOURCE		AC33	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155119.93	1885242.46	3.00
POINTSOURCE		AC34	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155110.46	1885349.80	3.00
POINTSOURCE		AC35	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7155108.88	1885455.56	3.00
POINTSOURCE		AC36	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154938.40	1885436.62	3.00
POINTSOURCE		AC37	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	a	7154944.72	1885247.20	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)	

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:

CONSTRUCTION NOISE CALCULATIONS

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16894 - Tract 17168 Twentynine Palms

CadnaA Noise Prediction Model: 16894-02 COnstruction.cna
Date: 30.04.26
Analyst: N. Johnson

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)
R01		R01	58.3	-48.7	55.2	80.0	0.0	0.0				5.00	a	7155773.34	1885737.57	5.00
R02		R02	66.2	-40.8	63.2	80.0	0.0	0.0				5.00	a	7154994.26	1884507.10	5.00
R03		R03	63.1	-43.9	60.0	80.0	0.0	0.0				5.00	a	7154492.96	1884192.43	5.00
R04		R04	64.7	-42.3	61.7	80.0	0.0	0.0				5.00	a	7153637.49	1883682.88	5.00
R05		R05	63.8	-43.2	60.7	80.0	0.0	0.0				5.00	a	7152930.03	1884665.09	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)		
SITEBOUNDARY		CONSTRUCTION01	122.6	15.6	15.6	67.9	-39.1	-39.1	PWL-Pt	115.6					8	a

Name	ID	Height			Coordinates			
		Begin		End	x	y	z	Ground
		(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	CONSTRUCTION01	8.00	a		7153041.58	1883665.52	8.00	0.00
					7153013.94	1885480.80	8.00	0.00
					7155578.47	1885574.50	8.00	0.00
					7155590.38	1884872.17	8.00	0.00
					7154962.91	1884848.47	8.00	0.00
					7154971.55	1884345.87	8.00	0.00
					7153657.02	1884311.02	8.00	0.00
					7153666.29	1883710.76	8.00	0.00
					7153464.99	1883707.81	8.00	0.00
					7153465.54	1883671.89	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)		