

APPENDIX 11



Murrieta Apartments

NOISE IMPACT ANALYSIS

CITY OF MURRIETA

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AUGUST 18, 2021

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LIST OF ABBREVIATED TERMS

•	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-215	Interstate 215
IEC	International Electrotechnical Commission
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Murrieta Apartments
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Murrieta Apartments development ("Project"). The Project site is located on the southeast corner of Clinton Keith Road and Whitewood Road in the City of Murrieta. The Project is proposed to consist of the development of 153 condominium dwelling units and 330 apartments dwelling units. This noise study has been prepared to satisfy applicable City of Murrieta noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

ON-SITE TRAFFIC NOISE ANALYSIS

The results of this analysis indicate that future vehicle noise from Clinton Keith Road and Whitewood Road represents the principal source of community noise that will impact the Project site. The Project will also experience some background traffic noise impacts from the Project's internal streets, however due to the low traffic volume/speeds, traffic noise from these roads will not make a significant contribution to the noise environment. With the recommended noise reduction measures the on-site noise impacts will be *less than significant*.

EXTERIOR NOISE ANALYSIS

Exterior noise mitigation is required to satisfy the City of Murrieta General Plan Noise Element exterior land use/noise level compatibility criteria for residential uses at the proposed apartment pool and recreation area. Therefore, Noise-1 has been recommended to reduce noise levels to comply with City exterior noise level standards.

Noise-1: An 8-foot-high noise barrier should be erected along the northern side of the swimming pool as shown on Exhibit ES-A. The noise barrier should be constructed of material with a minimum weight of 4 pounds per square foot with no gaps or perforations.

Additionally, the proposed residential structures are shown to experience *conditionally acceptable* to *clearly unacceptable* exterior noise levels ranging from 65.1 to 75.1 dBA CNEL. Therefore, as required by the City of Murrieta General Plan, additional interior noise analysis is required to demonstrate the residential land use interior noise standards are met. (2)

INTERIOR NOISE ANALYSIS

This noise study evaluates the interior noise levels at the Project buildings based on the City of Murrieta 45 dBA CNEL residential interior noise level standard. Based on the modeled exterior noise level, Project buildings would require Noise Reduction (NR) ranging from 26 to 31 dBA and a windows-closed condition requiring a means of mechanical ventilation (e.g. air conditioning). To meet the City of Murrieta 45 dBA CNEL interior noise standards the following on-site noise control measures are recommended for all structures:

- **Windows:** All buildings require standard windows and sliding glass doors with a minimum STC rating of 25 (all windows/glass doors, all floors).

- Exterior Doors (Non-Glass): All residential building exterior doors shall be well weather-stripped. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating. (3)
- 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.
- Residential Roofs: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Ceilings shall be per 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.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receive circulated air. A forced air circulation system (e.g. air conditioning) or active ventilation system (e.g. fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.

In addition to these recommendations, Noise-2 is recommended for condominium buildings located adjacent to Clinton Keith Road:

Noise-2: All windows or entry doors facing Clinton Keith Road shall have the following minimum Sound Transmission Class (STC) ratings:

- condominium building number 2 should have a minimum STC of 26;
- condominium buildings 3 and 4 should have a minimum STC of 27;
- condominium building 5 should have a minimum STC of 28;
- on condominium building 6 should have a minimum STC of 31.

See Exhibit ES-A for building numbers.

STATIONARY-SOURCE NOISE LEVELS

The Project is not expected to include any specific type of operational noise levels beyond the typical noise sources associated with residential land use in the Project study area, such as people and children, car doors slamming, garage doors, trash collection, and small community parks, and is considered a noise-sensitive receiving land use. Therefore, no potential operational noise impacts for the residential land use are analyzed in the noise study.

CONSTRUCTION NOISE ANALYSIS

Construction noise levels are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site when certain activities occur at the closest point to the nearby receiver locations from the edge of primary Project construction activity. Using sample reference noise levels to represent the construction activities at the Project site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. The results of the analysis show the highest construction noise levels at the potentially impacted receiver locations are expected to approach 74.4 dBA.

EXHIBIT ES-A: SUMMARY OF ON-SITE RECOMMENDATIONS



The Project related construction equipment noise levels are anticipated to satisfy the City of Murrieta Municipal Code construction noise level standards of 75 dBA L_{max} for mobile equipment during temporary Project construction activities at residential receiver locations R2, R3, R4, and R5. Therefore, the short-term Project construction impacts are considered a *less than significant*.

CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Project construction vibration velocity levels are expected to approach 0.018 in/sec PPV at the nearby receiver locations, and will therefore, not exceed the City of Murrieta vibration threshold of 0.04 in/sec PPV. Therefore, construction related vibration impacts would be *less than significant*.

SUMMARY OF SIGNIFICANCE FINDINGS

The results of this Murrieta Apartments Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact before and after incorporation of Project design features.

TABLE ES-1: SUMMARY OF SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
On-Site Exterior Traffic Noise Levels	7	<i>Less Than Significant</i>	<i>n/a</i>
On-Site Interior Traffic Noise Levels		<i>Potentially Significant</i>	<i>Less Than Significant</i>
Construction Noise Levels	9	<i>Less Than Significant</i>	<i>n/a</i>
Construction Vibration Levels		<i>Less Than Significant</i>	<i>n/a</i>

"n/a" = No mitigation is required since the unmitigated impact will be less than significant.

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Murrieta Apartments ("Project"). This noise study describes the proposed Project, provides information regarding noise fundamentals, outlines the local regulatory setting, provides the study methods and procedures for traffic and construction noise analysis, and evaluates the future exterior noise environment.

1.1 SITE LOCATION

This report presents the results of the noise impact analysis for the proposed Murrieta Apartments (Project), which is located at the southeast corner of Whitewood Road and Clinton Keith Road in the City of Murrieta. The Project's location in relation to the surrounding area is shown on Exhibit 1-A.

The Project site is generally surrounded by residential land uses, educational land uses, and open space, with the nearest residential land use is northwest of the Project site and the Vista Murrieta High School is located the west of the Project site. The Project site is designated Multiple-Family Residential on the City of Murrieta General Plan Land Use Map.

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates the preliminary Project site plan. The Project is proposed to consist of 153 condominium dwelling units and 330 apartments dwelling units, 3.5 acres landscaped area, and associated parking. It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2023. The proposed Project is anticipated to generate 2,916 two-way trips per day.

EXHIBIT 1-A: LOCATION MAP

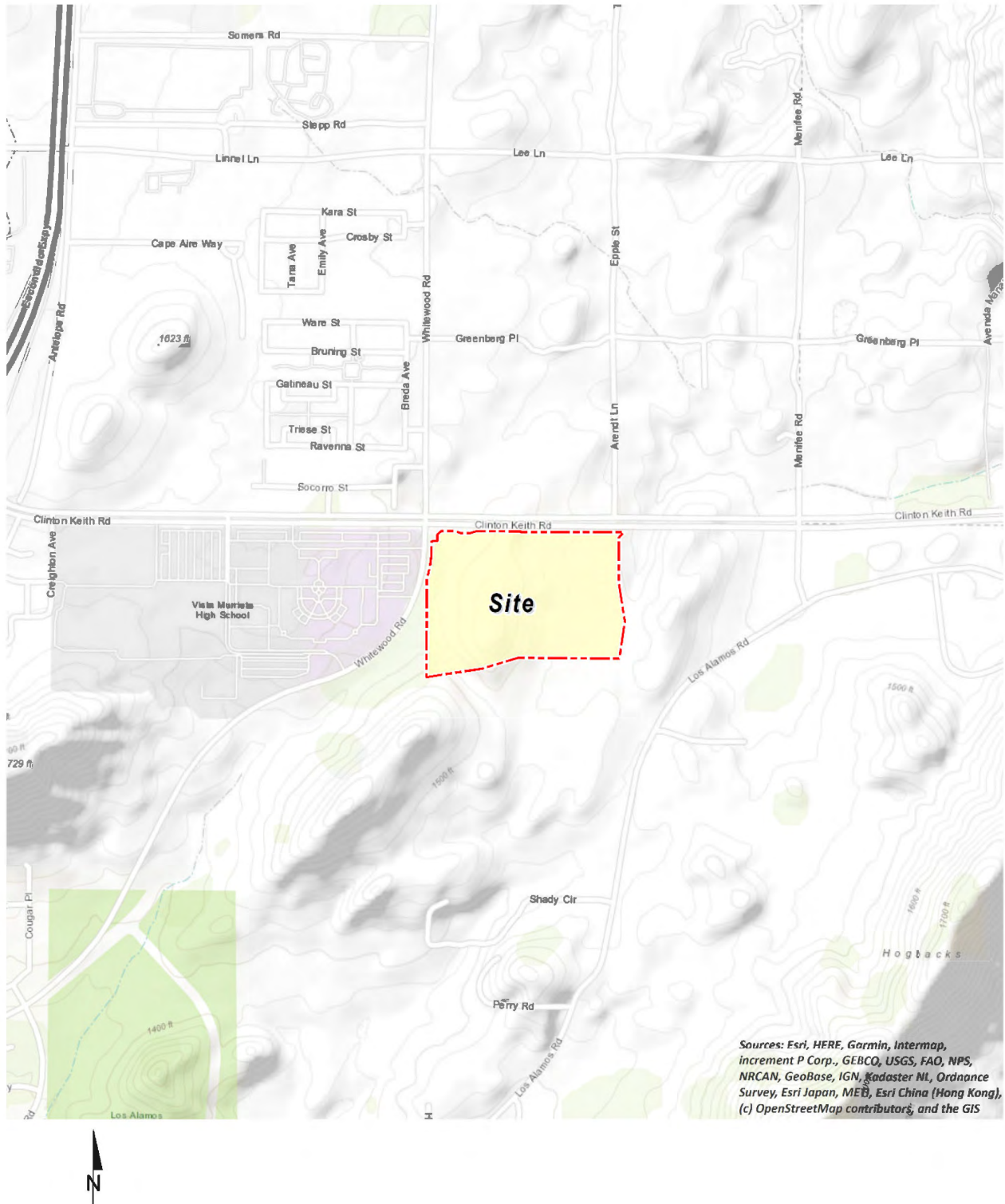


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

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

EXHIBIT 2-A: 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	LOUD	SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70		
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60	MODERATE	SLEEP DISTURBANCE
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50		
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40	FAINT	NO EFFECT
QUIET SUBURBAN NIGHTTIME	LIBRARY	30		
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20	VERY FAINT	
	BROADCAST/RECORDING STUDIO	10		
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. (4) 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 100 feet, which can cause serious discomfort. (5) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure 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.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{50} , L_{25} , L_8 and L_2 , are commonly used. The percentile noise descriptors are the noise levels equaled or exceeded during 50 percent, 25 percent, 8 percent, and 2 percent of a stated time. Sound levels associated with the L_2 and L_8 typically describe transient or short-term events, while levels associated with the L_{50} describe the steady state (or median) noise conditions. While the L_{50} describes the median noise levels occurring 50 percent of the time, the L_{eq} accounts for the total energy (average) observed for the entire hour. Therefore, the L_{eq} noise descriptor is generally 1-2 dBA higher than the L_{50} noise level.

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 sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Murrieta relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

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

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (4)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, 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 receptor 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. (6)

2.3.3 ATMOSPHERIC EFFECTS

Receptors 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. (4)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. 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 resident. 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 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 receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor 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 receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (6)

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 are 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 government 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 VIBRATION

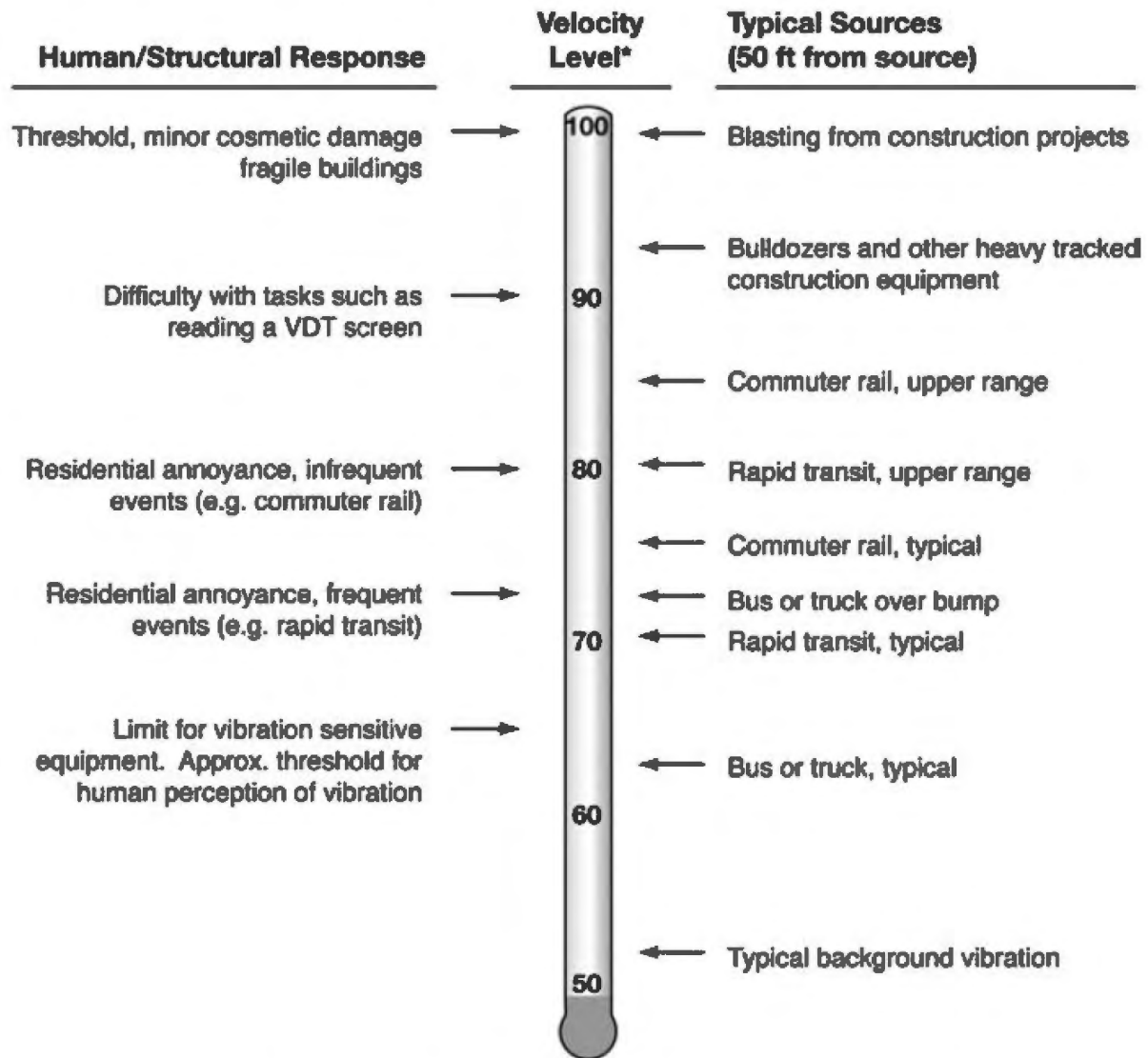
Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural 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.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings, but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal, and is most frequently used to describe the effect of

vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

The background vibration-velocity level in residential areas is generally 50 VdB (0.0013 PPV in/sec). Ground-borne vibration is normally perceptible to humans at approximately 65 VdB (0.0071 PPV in/sec). For most people, a vibration-velocity level of 75 VdB (0.0225 PPV in/sec) 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 (0.4 PPV in/sec), which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-B illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-B: 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 Impact and Vibration Assessment.

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

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

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2.1 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 (11).

3.2.2 NON-RESIDENTIAL CONSTRUCTION

The State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (12) These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other noise source. If the development falls within an airport or freeway 65 dBA CNEL noise contour, buildings shall be constructed to provide an interior noise level environment attributable to exterior sources that does not exceed an hourly equivalent level of 50 dBA L_{eq} in occupied areas during any hour of operation.

3.3 CITY OF MURRIETA GENERAL PLAN NOISE ELEMENT

The City of Murrieta has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of the City of Murrieta from excessive exposure to noise. (2) The Noise Element specifies the exterior noise levels allowable for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, the Noise Element identifies noise policies designed to protect, create, and maintain an environment free from noise that may jeopardize the health or welfare of sensitive receivers, or degrade quality of life. To protect City of Murrieta residents from excessive noise, the Noise Element contains the following three goals related to the Project:

- N-1 *Noise sensitive land uses are properly and effectively protected from excessive noise generators.*
- N-2 *A comprehensive and effective land use planning and development review process that ensures noise impacts are adequately addressed.*
- N-3 *Noise from mobile noise sources is minimized.*

The noise policies specified in the City of Murrieta Noise Element provide the guidelines necessary to satisfy these three goals. To protect noise sensitive land uses from excessive noise generators (N-1), Table 11-2 of the City of Murrieta General Plan Noise Element, shown on Exhibit 3-A, identifies a maximum allowable exterior *normally acceptable* noise level of 60 dBA CNEL and an interior noise level limit of 45 dBA CNEL for residential homes impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. The Noise Element also provides several policies to reduce noise impacts to new developments (N-2) that include integrating noise considerations into planning decisions, noise mitigation measures as development requirements, and compliance with the standards of the Noise Element and Noise Ordinance. To ensure noise from mobile sources is minimized (N-3), noise mitigation measures must be considered in the design of all future streets and highways such as the construction and maintenance of noise barriers located along the I-15 and I-215 Freeways.

The policies included in the General Plan Noise Element consider land use compatibility and identify exterior noise level compatibility standards for transportation related noise. The *Land Use Compatibility for Community Noise Environments* matrix shown on Exhibit 3-A provides the

City of Murrieta with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

According to the City's *Land Use Compatibility for Community Noise Environments* (Table 11-2), multi-family residential land uses, such as the Project, are considered *normally acceptable* with exterior noise levels below 65 dBA CNEL and *conditionally acceptable* with noise levels below 70 dBA CNEL. For land uses within the *normally and clearly unacceptable* categories, where exterior noise levels exceed from 70 dBA CNEL, *new construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design.*

3.4 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Murrieta Apartments Project, noise from construction activities are typically limited to the hours of operation established under the Municipal Code. The Municipal Code noise standards for construction are described below for the City of Murrieta to determine the potential noise impacts at the nearby sensitive receiver locations. The construction-related noise standards are summarized in Tables 3-1 and 3-2.

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Low Density, Single-Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	75 - 85
Residential - Multiple Family	50 - 65	60 - 70	70 - 75	70 - 85
Transient Lodging - Motel, Hotels	50 - 65	60 - 70	70 - 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 - 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 - 85
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 77.5	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA	70 - 80	80 - 85
Office Buildings, Business Commercial and Professional	50 - 70	67.5 - 77.5	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	NA
CNEL = community noise equivalent level; NA = not applicable				
<u>NORMALLY ACCEPTABLE:</u> Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. <u>CONDITIONALLY ACCEPTABLE:</u> New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. <u>NORMALLY UNACCEPTABLE:</u> New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design. <u>CLEARLY UNACCEPTABLE:</u> New construction or development should generally not be undertaken.				
Source: Office of Planning and Research, California, <i>General Plan Guidelines</i> , October 2003.				

The City of Murrieta has established maximum noise levels for mobile and stationary construction equipment. Section 16.30.130 of the Municipal Code identifies limits on noise levels

from construction activities those shown on Table 3-1 and 3-2 for mobile and stationary equipment, respectively. The nearest noise-sensitive receivers to the Project site consist of existing single-family residential homes. For single-family residential development, mobile equipment noise levels may not exceed 75 dBA and stationary equipment noise levels may not exceed 60 dBA during the daytime hours. (13) In addition, the Municipal Code identifies hours during which mobile and stationary equipment may operate, between 7:00 a.m. to 8:00 p.m. daily, with no activity allowed on Sundays or holidays (City of Murrieta Municipal Code, Section 16.30.130(A)(2)(a)(1)). The City of Murrieta Municipal Code is included in Appendix 3.1.

TABLE 3-1: MOBILE EQUIPMENT NOISE LEVEL LIMITS

Receiving Land Use Category	Time Period	Maximum Hourly Noise Levels (dBA L_{eq}) ¹
Single-Family Residential	Daytime (7:00 a.m. - 8:00 p.m.)	75
	Nighttime (8:00 p.m. - 7:00 a.m.)	60
Multi-Family Residential	Daytime (7:00 a.m. - 8:00 p.m.)	80
	Nighttime (8:00 p.m. - 7:00 a.m.)	64
Commercial	Daytime (7:00 a.m. - 8:00 p.m.)	85
	Nighttime (8:00 p.m. - 7:00 a.m.)	70

¹ Maximum noise levels for mobile equipment, City of Murrieta Municipal Code, 16.30.130 (A) (Appendix 3.1).

TABLE 3-2: STATIONARY EQUIPMENT NOISE LEVEL LIMITS

Receiving Land Use Category	Time Period	Maximum Hourly Noise Levels (dBA L_{eq}) ¹
Single-Family Residential	Daytime (7:00 a.m. - 8:00 p.m.)	60
	Nighttime (8:00 p.m. - 7:00 a.m.)	50
Multi-Family Residential	Daytime (7:00 a.m. - 8:00 p.m.)	65
	Nighttime (8:00 p.m. - 7:00 a.m.)	55
Commercial	Daytime (7:00 a.m. - 8:00 p.m.)	70
	Nighttime (8:00 p.m. - 7:00 a.m.)	60

¹ Maximum noise levels for stationary equipment, City of Murrieta Municipal Code, 16.30.130 (A) (Appendix 3.1).

3.5 CONSTRUCTION VIBRATION STANDARDS

The City of Murrieta Municipal Code, Section 16.30.130 (K), states that *operating or permitting the operation of any device that creates a vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty feet from the source if on public space or public right-of-way* is prohibited. The Municipal Code defines the vibration perception threshold to be a motion velocity of 0.01 RMS in/sec (in/sec) over the range of one to 100 Hz. (13) An RMS of 0.01 in/sec is equivalent to 0.04 PPV in/sec. Table 3-3 shows the City of Murrieta Municipal Code vibration level standards.

TABLE 3-3: CONSTRUCTION VIBRATION STANDARDS

Jurisdiction	Root-Mean-Square Velocity Standard (in/sec)
City of Murrieta ¹	0.01

¹ Source: City of Murrieta Municipal Code, Section 16.30.130 (K) (Appendix 3.1).

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (14) 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?

While the City of Murrieta General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Project's land use compatibility. Table 4-1 shows the significance criteria summary matrix.

ON-SITE TRAFFIC NOISE

- If the on-site noise levels:
 1. exceed the exterior land use compatibility criteria of the City of Murrieta General Plan Noise Element at an exterior use area, Table 11-2, for Project land uses; and
 2. exceed an interior noise level of 45 dBA CNEL for residential uses within the Project site (California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2 as discussed in Section 3.2).

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities:
 1. occur anytime other than between the permitted hours of 7:00 a.m. to 8:00 p.m. daily, with no activity allowed on Sundays or holidays (City of Murrieta Municipal Code, Section 16.30.130(A)(2)(a)(1)); or
 2. create noise levels which exceed the mobile 75 dBA L_{max} or stationary 60 dBA L_{max} equipment noise level limits at the nearby single-family residential land uses (City of Murrieta Municipal Code, Section 16.30.130 (A)).
- If short-term Project generated construction vibration levels could exceed the City of Murrieta maximum acceptable vibration standard of 0.01 RMS in/sec (0.04 in/sec PPV) at sensitive receiver locations (City of Murrieta Municipal Code, Section 16.30.130 (K)). For clarity this report uses the PPV threshold to be consistent with the reference levels.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
On-Site Traffic Noise	Noise-Sensitive	Exterior Noise Level Criteria ¹	See Exhibit 3-A	
		Interior Noise Level Standard ²	45 dBA CNEL	
Mobile Equipment Noise Level Threshold ³		75 dBA L _{max}		
Stationary Equipment Noise Level Threshold ³		60 dBA L _{max}		
Construction Noise & Vibration		Vibration Level Threshold ⁴	0.04 PPV in/sec	

¹ Source: City of Murrieta General Plan Noise Element, Table 11-2.

² Source: California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2.

³ Source: City of Murrieta Municipal Code, Section 16.30.130 (A) (Appendix 3.1).

⁴ Source: City of Murrieta Municipal Code, Section 16.30.130 (K) (Appendix 3.1).

"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, four 24-hour noise level measurements were taken at sensitive receiver 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-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, April 7th, 2021.

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 daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. 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. (15)

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 ambient 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 any part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources.* (4) Further, FTA guidance states, *that it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community.* (8)

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

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The L_{eq} represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Appendix 5.1 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents Vista Murrieta High School at 28251 Clinton Keith Road east of the Project site. The noise level measurements collected show an overall 24-hour exterior noise level of 79.4 dBA CNEL. The hourly noise levels measured at location L1 ranged from 68.8 to 76.2 dBA L_{eq} during the daytime hours and from 53.1 to 70.0 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 71.1 dBA L_{eq} with an average nighttime noise level of 72.7 dBA L_{eq} .
- Location L2 represents existing residences northwest of the Project site. The noise level measurements collected show an overall 24-hour exterior noise level of 55.4 dBA CNEL. The hourly noise levels measured at location L2 ranged from 58.4 to 66.6 dBA L_{eq} during the daytime hours and from 48.0 to 61.1 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 59.3 dBA L_{eq} with an average nighttime noise level of 60.6 dBA L_{eq} .
- Location L3 represents existing residences north of Clinton Keith Road. The 24-hour CNEL indicates that the overall exterior noise level is 49.0 dBA CNEL. At location L3 the background ambient noise levels ranged from 50.5 to 58.4 dBA L_{eq} during the daytime hours to levels of 39.5 to 53.4 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 53.3 dBA L_{eq} with an average nighttime noise level of 54.6 dBA L_{eq} .
- Location L4 represents an existing residence at 36263 Los Alamos Road south of the Project site. The noise level measurements collected show an overall 24-hour exterior noise level of 44.5 dBA CNEL. The hourly noise levels measured at location L4 ranged from 43.8 to 52.2 dBA L_{eq} during the daytime hours and from 38.1 to 49.7 dBA L_{eq} during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 46.7 dBA L_{eq} with an average nighttime noise level of 47.7 dBA L_{eq} .

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.1 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1 , L_2 , L_5 , L_8 , L_{25} , L_{50} , L_{90} , L_{95} , and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network. The 24-hour existing noise level measurements shown on Table 5-1 present the existing ambient noise conditions.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location ¹	Distance to Site (Feet)	Description	Energy Average Hourly Noise Level (dBA L _{eq}) ²		CNEL
			Daytime	Nighttime	
L1	100'	Located 28251 Clinton Keith Road, Vista Murrieta High School	71.1	72.7	79.4
L2	270'	Located west of 35992 Lindstrand Avenue	59.3	60.6	55.4
L3	200'	Located west of 355765 Ardent Lane, along Ardent Lane	53.3	54.6	49.0
L4	700'	Located east of 36263 Los Alamos Road	46.7	47.7	44.5

¹ See Exhibit 5-A for the noise level measurement locations.

² The long-term 24-hour measurement printouts are included in Appendix 5.1.

"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



6 ON-SITE TRAFFIC NOISE IMPACTS

A noise impact analysis has been completed to determine the noise exposure levels that would result from off-site traffic noise sources, and to identify potential noise mitigation measures that would achieve acceptable Project exterior and interior noise levels. The primary source of traffic noise affecting the Project site is anticipated to be from Clinton Keith Road and Whitewood Road. The Project would also be exposed to nominal traffic noise from the Project's internal local streets. However, due to low traffic volume/speed, traffic noise from these roads will not make a substantive contribution to ambient noise conditions. This section outlines the methods and procedures used to model and analyze the future on-site noise environment, analyzes on-site exterior, and interior noise levels at the Project buildings.

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. (16) 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. (17) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

6.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the ADT volumes used for this analysis are presented on Table 6-1. Based on the City of Murrieta General Plan Circulation Element, Exhibit 5-10, Washington Avenue and Nutmeg Street are classified as 4-lane Secondary Roadways. (18) To predict the future on-site noise environment at the Project site, the City of Murrieta General Plan Circulation Element Table 5-2 *Daily Roadway Capacity Values* were used. The traffic volumes shown on Table 7-1 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify potential mitigation measures (if any) that address the worst-case future conditions. For the purposes of this analysis, soft site conditions were used to analyze the on-site traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (19)

TABLE 6-1: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification ¹	Daily Roadway Capacity Volume ²	Posted Speed Limit (mph) ³	Site Conditions
Clinton Keith Rd	6	Urban Arterial	43,100	55	Soft
Whitewood Rd	4	Major	27,300	45	Soft

¹ Source: City of Murrieta General Plan Circulation Element, Exhibit 5-10.

² Roadway traffic volumes were obtained from the City of Murrieta General Plan Circulation Element, Table 5-2.

³ Posted speed limit on Whitewood Road.

Table 6-2 presents the time of day vehicle splits by vehicle type, and Table 6-3 presents the total traffic flow distributions (vehicle mixes) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model based on roadway types.

TABLE 6-2: TIME OF DAY VEHICLE SPLITS

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	77.5%	84.8%	86.5%
Evening (7:00 p.m. - 10:00 p.m.)	12.9%	4.9%	2.7%
Nighttime (10:00 p.m. - 7:00 a.m.)	9.6%	10.3%	10.8%
Total:	100.0%	100.0%	100.0%

Source: Typical Southern California vehicle mix.

TABLE 6-3: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Roadways	97.42%	1.84%	0.74%	100.00%

Source: Typical Southern California vehicle mix.

To predict the future noise environment at multi-family residential buildings within 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 showing the plotting of the residential building in relationship to Clinton Keith Road and Whitewood Road.

The exterior noise level impacts at the first-floor building facade were placed five feet above the pad elevation. All second-floor receivers were located 14 feet above the proposed finished floor elevation. All third-floor receivers were located 23 feet above the proposed finished floor elevation.

7 EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model, and the parameters outlined in Section 6.2, the expected future exterior noise levels at the first-floor building façades were calculated. Table 7-1 presents a summary of future exterior noise level impacts at the first-floor receiver locations. The on-site transportation noise level impacts indicate that the unmitigated exterior noise levels will range from 58.9 to 75.1 dBA CNEL. The on-site traffic noise analysis calculations are provided in Appendix 7.1.

TABLE 7-1: UNMITIGATED EXTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Roadway	First-Floor Unmitigated Noise Level (dBA CNEL)	Noise Element Land Use Compatibility ¹	Resulting Requirements ¹
Pool	Clinton Keith Rd	68.2	<i>Conditionally Acceptable</i>	Barrier
Bldg 1	Clinton Keith Rd	67.6	<i>Conditionally Acceptable</i>	Interior Analysis
Bldg 2	Clinton Keith Rd	67.3	<i>Conditionally Acceptable</i>	Interior Analysis
Bldg 3	Clinton Keith Rd	67.8	<i>Conditionally Acceptable</i>	Interior Analysis
Condo 1	Clinton Keith Rd	69.4	<i>Conditionally Acceptable</i>	Interior Analysis
Condo 2	Clinton Keith Rd	69.7	<i>Conditionally Acceptable</i>	Interior Analysis
Condo 3	Clinton Keith Rd	71.1	<i>Normally Unacceptable</i>	Interior Analysis
Condo 4	Clinton Keith Rd	71.1	<i>Normally Unacceptable</i>	Interior Analysis
Condo 5	Clinton Keith Rd	72.1	<i>Normally Unacceptable</i>	Interior Analysis
Condo 6a	Clinton Keith Rd	75.1	<i>Clearly Unacceptable</i>	Interior Analysis
Condo 6b	Whitewood Rd	68.8	<i>Conditionally Acceptable</i>	Interior Analysis
Condo 7	Whitewood Rd	67.5	<i>Conditionally Acceptable</i>	Interior Analysis
Condo 8	Whitewood Rd	61.8	<i>Normally Acceptable</i>	NA
Condo 9	Whitewood Rd	59.9	<i>Normally Acceptable</i>	NA
Condo 10	Whitewood Rd	58.9	<i>Normally Acceptable</i>	NA

Apt Bldg = Apartment Building; Condo = Condominium Building

¹ Based on the Table 11-2 compatibility criteria of the City of Murrieta General Plan Noise Element (Exhibit 3-A)

Based on the results of the traffic noise modeling, the common exterior use area for the apartments, i.e., the swimming pool and recreation area, would be exposed to noise levels of 68.2 dBA CNEL, which would exceed the City of Murrieta General Plan Noise Element land use/noise level compatibility criteria for multiple-family residential uses. Therefore, Noise-1 is recommended to shield the apartment pool and recreation area from traffic noise on Clinton Keith Road as shown in Exhibit ES-A.

Noise-1: An 8-foot-high noise barrier should be erected along the northern side of the swimming pool as shown on Exhibit ES-A. The noise barrier should be constructed of material with a minimum weight of 4 pounds per square foot with no gaps or perforations.

With the exception of Condominium Building 6, residential uses adjacent to Clinton Keith Road are generally shown to experience *conditionally acceptable* to *normally unacceptable* exterior noise levels of 67.3 to 72.1 dBA CNEL. Condominium building 6 is exposed the minimum *clearly unacceptable* noise level of 75.1 dBA CNEL. Adjacent to Whitewood Road, residential uses are shown to experience *normally acceptable* to *conditionally unacceptable* exterior noise levels of 58.9 to 68.8 dBA CNEL. Noise levels further from these roadways within the development will be lower than the noise levels along Clinton Keith Road and Whitewood Road due to distance and shielding from structures. Noise levels at the condominium pool and recreation area is anticipated to be within the normally acceptable range and would not require any mitigation.

Due to the noise levels at building facades along Clinton Keith Road and Whitewood Road, additional interior noise analysis is required to satisfy the General Plan Noise Element residential land use requirements within the Project site (2).

7.2 INTERIOR NOISE ANALYSIS

To ensure that the Project provides an acceptable interior noise environment, this analysis relies on the City of Murrieta 45 dBA CNEL interior noise limit for new construction.

7.2.1 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." (20) (21) However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: [1] weather-stripped solid core exterior doors; [2] upgraded dual glazed windows; [3] mechanical ventilation/air conditioning; and [4] exterior wall/roof assemblies free of cut outs or openings.

7.2.2 INTERIOR NOISE LEVEL ASSESSMENT

Tables 7-2 to 7-6 show that all residential units will require a windows-closed condition and a means of mechanical ventilation (e.g., air conditioning). Interior noise levels are provided for each floor. The apartment the swimming pool and recreation area are an outdoor location it is not included in the interior analysis. The condominiums will be 2-stories thus the condominium buildings are not included in Table 7-6.

Table 7-2 shows that the future noise levels at the first-floor building façade are estimated to range from 58.9 to 75.2 dBA CNEL. Based on 25 dBA CNEL reduction, the interior noise levels would range from 33.9 to 50.2 dBA CNEL.

The first-floor interior noise level analysis shows that condominium buildings 2, 3, 4, 5, and 6, as shown in Exhibit 1-B, would require window or dwelling unit entry door to have STC 26 to 31 to comply with the City of Murrieta 45 dBA CNEL interior noise standards. All other apartment and condominium buildings can satisfy the City of Murrieta 45 dBA CNEL interior noise standards with standard windows and dwelling unit entry doors and mechanical ventilation.

The following measure (Noise-2) is recommend to comply with the City of Murrieta 45 dBA CNEL interior noise standards:

Noise-2: All windows or entry doors facing Clinton Keith Road shall have the following minimum Sound Transmission Class (STC) ratings:

- condominium building number 2 should have a minimum STC of 26;
- condominium buildings 3 and 4 should have a minimum STC of 27;
- condominium building 5 should have a minimum STC of 28;
- on condominium building 6 should have a minimum STC of 31.

See Exhibit ES-A for building numbers.

TABLE 7-2: FIRST FLOOR INTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Noise Level at Façade ¹	Required Interior Noise Reduction ²	Estimated Interior Noise Reduction ³	Upgraded Windows ⁴	Interior Noise Level ⁵
Bldg 1	67.9	22.9	25.0	No	42.9
Bldg 2	67.7	22.7	25.0	No	42.7
Bldg 3	68.2	23.2	25.0	No	43.2
Condo 1	69.7	24.7	25.0	No	44.7
Condo 2	70.1	25.1	25.0	Yes	45.1
Condo 3	71.4	26.4	25.0	Yes	46.4
Condo 4	71.4	26.4	25.0	Yes	46.4
Condo 5	72.4	27.4	25.0	Yes	47.4
Condo 6a	75.2	30.2	25.0	Yes	50.2
Condo 6b	69.1	24.1	25.0	No	44.1
Condo 7	67.9	22.9	25.0	No	42.9
Condo 8	61.8	16.8	25.0	No	36.8
Condo 9	59.9	14.9	25.0	No	34.9
Condo 10	58.9	13.9	25.0	No	33.9

Apt Bldg = Apartment Building; Condo = Condominium Building

¹ Exterior noise level at the façade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).

² Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.

³ A minimum of 25 dBA noise reduction is assumed with standard building construction.

⁴ Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?

⁵ Estimated interior noise level with minimum STC rating for all windows.

Table 7-3 shows the future noise levels at the second-floor building façade are estimated to range from 58.9 to 75.0 dBA CNEL with interior noise levels ranging from 33.9 to 50 dBA CNEL.

The second-floor interior noise level analysis shows that condominium buildings 3, 4, 5, and as shown in Exhibit 1-B, would require windows and dwelling unit entry doors to have STC 27 to 30 to comply with the City of Murrieta 45 dBA CNEL interior noise standards. All other apartment

and condominium buildings can satisfy the City of Murrieta 45 dBA CNEL interior noise standards with standard windows and dwelling unit entry doors.

It is recommended that windows and doors facing Clinton Keith Road on condominium buildings 3 and 4 should have a minimum STC of 27; on condominium building 5 should have a minimum STC of 28; and on condominium building 6 should have a minimum Sound Transmission Class (STC) of 30.

TABLE 7-3: SECOND FLOOR INTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Noise Level at Façade ¹	Required Interior Noise Reduction ²	Estimated Interior Noise Reduction ³	Upgraded Windows ⁴	Interior Noise Level ⁵
Bldg 1	67.9	22.9	25.0	No	42.9
Bldg 2	67.6	22.6	25.0	No	42.6
Bldg 3	68.1	23.1	25.0	No	43.1
Condo 1	69.6	24.6	25.0	No	44.6
Condo 2	70.0	25.0	25.0	No	45.0
Condo 3	71.3	26.3	25.0	Yes	46.3
Condo 4	71.3	26.3	25.0	Yes	46.3
Condo 5	72.2	27.2	25.0	Yes	47.2
Condo 6a	75.0	30.0	25.0	Yes	50.0
Condo 6b	68.9	23.9	25.0	No	43.9
Condo 7	67.7	22.7	25.0	No	42.7
Condo 8	62.2	17.2	25.0	No	37.2
Condo 9	59.9	14.9	25.0	No	34.9
Condo 10	58.9	13.9	25.0	No	33.9

Apt Bldg = Apartment Building; Condo = Condominium Building

¹ Exterior noise level at the façade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).

² Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.

³ A minimum of 25 dBA noise reduction is assumed with standard building construction.

⁴ Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?

⁵ Estimated interior noise level with minimum STC rating for all windows.

Table 7-4 shows the future noise levels at the third-floor apartment building façades are estimated to range from 67.5 to 68.0 dBA CNEL with interior noise levels ranging from 42.5 to 43 dBA CNEL. The third-floor interior noise level analysis shows that the City of Murrieta 45 dBA CNEL interior noise standards can be satisfied using standard windows for all third-floor units, based on the minimum 25 dBA interior noise reduction for typical construction.

TABLE 7-4: THIRD FLOOR INTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Noise Level at Façade ¹	Required Interior Noise Reduction ²	Estimated Interior Noise Reduction ³	Upgraded Windows ⁴	Interior Noise Level ⁵
Apt Bldg 1	67.8	22.8	25.0	No	42.8
Apt Bldg 2	67.5	22.5	25.0	No	42.5
Apt Bldg 3	68.0	23.0	25.0	No	43.0

Apt Bldg = Apartment Building

¹ Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).

² Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.

³ A minimum of 25 dBA noise reduction is assumed with standard building construction.

⁴ Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?

⁵ Estimated interior noise level with minimum STC rating for all windows.

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8 RECEIVER LOCATIONS

To assess the potential for the project related operational noise sources and short-term construction noise source impacts, the following five receiver locations as shown on Exhibit 7-A were identified as representative locations for focused analysis. 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.

Sensitive receivers near the Project site include existing single-family residential homes adjacent to Project site to the south and across Clinton Keith Road to the north and east with the Vista Murrieta High School to the west across Whitewood Road. 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.

- R1: Location R1 represents Vista Murrieta High School at 28251 Clinton Keith Road, approximately 372 feet east of the Project site. Receiver R1 is placed at nearest location someone may stand for up to one hour. A 24-hour noise level measurement was taken near this location, L1, to describe the existing ambient noise environment.
- R2: Location R2 represents an existing residence at 35992 Lindstrand Avenue, approximately 255 feet northwest of the Project site. Receiver R2 is placed at the private outdoor use area. A 24-hour noise level measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R3: Location R3 represents an existing residence at 28680 Clinton Keith Road, approximately 270 feet north of the Project site. Receiver R3 is placed at the private outdoor living area (backyard). A 24-hour noise level measurement was taken near this location, L3, to describe the existing ambient noise environment.
- R4: Location R4 represents the existing residence at 35960 Ardent Lane, approximately 342 feet northwest of the Project site. Receiver R4 is placed at the private outdoor living area (backyard). A 24-hour noise level measurement was taken near this location, L3, to describe the existing ambient noise environment.
- R5: Location R5 represents an existing residence at 36263 Los Alamos Road, approximately 437 feet south of the Project site. Receiver R5 is placed at the private outdoor living area (backyard). A 24-hour noise level measurement was taken near this location, L4, to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS



LEGEND:

● Receiver Locations

— Distance from receiver to Project site boundary (in feet)

6'

Existing Barrier Height (in feet)

— Existing Barrier

9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed Murrieta Apartments Project.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. The Project is not expected to include any specific type of operational noise levels beyond the typical noise sources associated with similar residential land use in the Project study area, such as people and children, parking lot activity, garage doors, trash collection, and air conditioners. Furthermore, the Project is considered a noise-sensitive receiving land use. Therefore, no potential operational noise impacts for the residential land use are analyzed in the noise study.

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearby sensitive receiver locations previously described in Section 8.

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA). (22). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 10-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (23) to describe the typical construction activities for each stage of Project construction.

10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 10-2, the highest construction noise levels are expected to range from 72.6 to 74.4 dBA L_{eq} at the nearest receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

EXHIBIT 10-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS



LEGEND:

● Receiver Locations

▨ Construction Activity

—● Distance from receiver to Project site boundary (in feet)

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})	Highest Reference Noise Level (dBA L _{eq})
Site Preparation	Crawler Tractors	77	77
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	72
	Tractors	72	
	Welders	65	
Paving	Pavers	70	70
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	67
	Air Compressors	67	
	Generator Sets	67	

¹ Update of noise database for prediction of noise on construction and open site expressed in hourly average L_{eq} based on estimated usage factor.

The construction noise analysis presents a conservative approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from primary construction activity to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will be experienced at each receiver location.

TABLE 10-2: 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	51.7	72.6	46.7	44.7	41.7	72.6
R2	53.7	68.0	48.7	46.7	43.7	68.0
R3	52.7	74.4	47.7	45.7	42.7	74.4
R4	69.5	71.4	64.5	62.5	59.5	71.4
R5	62.1	71.1	57.1	55.1	52.1	71.1

¹ Construction noise source and receiver locations are shown on Exhibit 9-A.

² Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 9.1.

10.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 75 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 75 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location ¹	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels ²	Threshold ³	Threshold Exceeded? ⁴
R1	72.6	75	No
R2	68.0	75	No
R3	74.4	75	No
R4	71.4	75	No
R5	71.1	75	No

¹ Noise receiver locations are shown on Exhibit 10-A.

² Highest construction noise level operating at the Project site boundary to nearby receiver locations (Table 10-2).

³ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.

⁴ Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground-borne vibration levels resulting from typical construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). (24) However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 9-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Using the vibration source level of construction equipment provided on Table 10-4 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-5 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 255 to 437 feet from the Project construction activities, construction vibration velocity levels are estimated to range from 0.001 to 0.003 PPV in/sec. Based on maximum acceptable continuous vibration threshold of 0.04 PPV in/sec, the typical Project construction vibration levels will satisfy the City of Murrieta thresholds at all receiver locations. Therefore, the Project-related vibration impacts are considered less than significant during the construction activities at the Project site.

TABLE 10-5: PROJECT CONSTRUCTION VIBRATION LEVELS

Receiver 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	Highest Vibration Level		
Reference Level	25	0.003	0.035	0.076	0.089			
R1	327'	0.0001	0.0007	0.0016	0.0019	0.0019	0.04	No
R2	255'	0.0001	0.0011	0.0023	0.0027	0.0027	0.04	No
R3	270'	0.0001	0.0010	0.0021	0.0025	0.0025	0.04	No
R4	342'	0.0001	0.0007	0.0015	0.0018	0.0018	0.04	No
R5	437'	0.0000	0.0005	0.0010	0.0012	0.0012	0.04	No

¹ Construction receiver locations are shown on Exhibit 10-A.

² Distance from receiver location to Project construction boundary.

³ Based on the Vibration Source Levels of Construction Equipment (Table 10-5).

⁴ City of Redlands Municipal Code Section 8.06.020

⁵ Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

In addition, the typical construction vibration levels at the nearest sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site boundaries.

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11 REFERENCES

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20. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
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23. **FHWA.** *Roadway Construction Noise Model.* January 2006.
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12 CERTIFICATION

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

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PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
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PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

CITY OF MURRIETA MUNICIPAL CODE

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16.30 Noise

Sections:

- 16.30.010 Purpose.**
- 16.30.020 Declaration of Policy.**
- 16.30.030 Definitions.**
- 16.30.040 Enforcement of Regulations.**
- 16.30.050 Initial Violations.**
- 16.30.060 Activities Exempt from Regulations.**
- 16.30.070 Decibel Measurement.**
- 16.30.080 Noise Zones Designated.**
- 16.30.090 Exterior Noise Standards.**
- 16.30.100 Interior Noise Standards for Multi-family Residential.**
- 16.30.110 Correction for Certain Types of Sounds.**
- 16.30.120 Measurement Methods.**
- 16.30.130 Acts Deemed Violations of Chapter.**
- 16.30.140 Modification of Standards.**

16.30.010 Purpose.

The purpose of this chapter is to establish standards to protect the health, safety, and welfare of those living and working in the city and to implement policies of the general plan noise element.

(Ord. 182 § 2 (part), 1997)

16.30.020 Declaration of Policy.

Excessive noise levels are detrimental to the health and safety of individuals. Noise is considered a public nuisance and the city discourages unnecessary, excessive or annoying noises from all sources. Creating, maintaining, causing or allowing to be created, caused or maintained any noise or vibration in a manner prohibited by the provisions of this chapter is a public nuisance and shall be punishable as a misdemeanor.

(Ord. 182 § 2 (part), 1997)

16.30.030 Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this chapter, except where the context clearly indicates a different meaning:

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 dB(A) or dBA.

Ambient Noise Histogram. The composite of all noise from sources near and far, excluding the alleged intrusive noise source. In this context, the ambient noise histogram shall constitute the normal or existing level of environmental noise at a given location.

Cumulative Period. An additive period of time composed of individual time segments which may be continuous or interrupted.

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

Emergency Machinery, Vehicle or Alarm. Any machinery, vehicle or alarm used, employed, performed or operated in an effort to protect, provide or restore safe conditions in the community, or work by private or public utilities when restoring utility service.

Emergency Work. Work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

Fixed Noise Source. A stationary device which creates sounds while fixed or motionless, including, but not limited to, residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners and refrigeration equipment.

Impulsive Noise. A sound of short duration, usually less than one second and of high intensity, with an abrupt onset and rapid decay.

Intrusive Noise. The alleged offensive noise that intrudes over and above the existing ambient noise at the receptor property.

Mobile Noise Source. A noise source other than a fixed noise source.

Noise Disturbance. An alleged intrusive noise that violates an applicable noise standard of this chapter. **Noise Histogram.** A graphical representation of the distribution of frequency of occurrence of all noise levels near and far measured over a given period of time.

Noise Level (L_N). The noise level expressed in decibels that exceeds the specified (L) value a percentage of total time measured. For example, an L_{25} noise level means that noise level that is exceeded twenty-five (25) percent of the time measured.

Noise-Sensitive Area. An area designated for the purpose of ensuring exceptional quiet (e.g., around hospitals, nursing homes, libraries, and similar uses).

NoiseZone. A defined area of a generally consistent land use.

Pure Tone Noise. A sound that can be judged as audible as a single pitch or a set of single pitches by the code enforcement officer. For the purposes of this chapter, a pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound-pressure levels of the two contiguous one-third octave bands by five dB for center frequencies of five hundred (500) Hertz and above, and by eight dB for center frequencies between one hundred sixty (160) and four hundred (400) Hertz, and by fifteen (15) dB for center frequencies less than or equal to one hundred twenty-five (125) Hertz.

Sound Level Meter. An instrument, including a microphone, an amplifier, an output meter and frequency weighting network, for the measurement of sound levels, that satisfies the requirements pertinent for Type S2A meters in American National Standards Institute specifications for sound level meters.

Vibration. The minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration including, but not limited to, sensation by touch or visual

observations of moving objects. The perception threshold shall be presumed to be a motion velocity of 0.01 in/sec over the range of one to one hundred (100) Hertz.

Weekday. Any day. Monday through Friday, that is not a legal holiday.

(Ord. 182 § 2 (part), 1997)

16.30.040 Enforcement of Regulations.

The code enforcement officer shall have primary responsibility for the enforcement of the noise regulations contained in this chapter. The code enforcement officer shall make all noise-level measurements required for the enforcement of this chapter.

(Ord. 182 § 2 (part), 1997)

16.30.050 Initial Violations.

In the event of an initial violation of the provisions of this chapter, a written notice of violation shall be given the alleged violator, specifying the time by which the condition shall be corrected or an application for a permit or variance shall be filed. No further action shall be taken if the cause of the violation has been removed, the condition abated, or fully corrected within the time period specified in the written notice.

(Ord. 182 § 2 (part), 1997)

16.30.060 Activities Exempt from Regulations.

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

A. Emergency Exemption. The emission of sound for the purpose of alerting persons to the existence of an emergency, or the emission of sound in the performance of emergency work.

B. Warning Device. Warning devices necessary for the protection of public safety, (e.g., police, fire and ambulance sirens, and train horns).

C. Outdoor Activities. Activities conducted on public playgrounds and public or private school grounds, including, but not limited to, school athletic and school entertainment events.

D. Motion Picture Production and Related Activities. Activities in connection to production of motion pictures.

E. Railroad Activities. All locomotives and rail cars operated by any railroad which is regulated by the state Public Utilities Commission.

F. Federal or State Pre-Exempted Activities. Any activity, to the extent regulation thereof has been pre-empted by state or federal law,

G. Public Health and Safety Activities. All transportation, flood control, and utility company maintenance and construction operations at any time on public right-of-way, and those situations that may occur on private real property deemed necessary to serve the best interest of the public and to protect the public's health and well being, including, but not limited to, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, house moving, vacuuming catchbasins, removal of damaged poles and vehicles, repair of water hydrants and mains, gas lines, oil lines, sewers, etc.

H. Motor, Vehicles on Public Right-of-Way and Private Property. Except as provided in this chapter, all vehicles operating in a legal manner in compliance with local, state, and federal vehicle noise regulations within the public right-of-way or on private property.

1. Minor Maintenance to Residential Real Property. Noise sources associated with the minor maintenance of residential real property, provided the activities take place between the hours of seven a.m. and eight p.m. on any day except Sunday, or between the hours of nine a.m. and eight p.m. on Sunday.

(Ord. 182 § 2 (part), 1997)

16.30.070 Decibel Measurement.

Decibel measurements made in compliance with the provisions of this chapter shall be based on a reference sound-pressure of twenty (20) micropascals, as measured with a sound level meter using the A-weighted network (scale) at slow response, or at the fast response when measuring impulsive sound levels and vibrations.

(Ord. 182 § 2 (part), 1997)

16.30.080 Noise Zones Designated.

Receptor properties described in this chapter are hereby assigned to the following noise zones:

- A. Noise zone I, noise-sensitive area:
- B. Noise zone II, residential properties;
- C. Noise zone III, commercial properties: and
- D. Noise zone IV, industrial properties.

(Ord. 182 § 2 (part), 1997)

16.30.090 Exterior Noise Standards.

A. Standards for Noise Zones. Unless otherwise provided in this chapter, the following exterior noise levels shall apply to all receptor properties within a designated noise zone:

TABLE 3-6

EXTERIOR NOISE STANDARDS

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Allowed Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties Residential properties within five hundred (500) feet of a kennel(s)	10:00 p.m. to 7:00 a.m. (nighttime) 7:00 a.m. to 10:00 p.m. (daytime) 7:00 a.m. to 10:00 p.m.	45 50 70
III	Commercial properties	10:00 p.m. to 7:00 a.m. (nighttime) 7:00 a.m. to 10:00 p.m. (daytime)	55 60
IV	Industrial properties	Anytime	70

B. Noise Standards. No person shall operate or cause to be operated. any source of sound at any location within the city or allow the creation of any noise on property owned, leased, occupied or

otherwise controlled by a person that causes the noise level, when measured on any other property to exceed the following exterior noise standards:

1. Standard No.1. Standard No. 1 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than thirty (30) minutes in any hour. Standard No. 1 may be the applicable noise level from Table 3-6 above.

2. Standard No. 2. Standard No. 2 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than fifteen (15) minutes in any hour. Standard No. 2 shall be the applicable noise level from Table 3-6 above, plus five dB.

3. Standard No.3. Standard No. 3 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level from Table 3-6 above plus ten dB.

4. Standard No.4. Standard No. 4 shall be the exterior noise level which shall not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from Table 3-6 above plus fifteen (15) dB.

5. Standard No. 5. Standard No. 5 shall be the exterior noise level which shall not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from Table 3-6 above plus twenty (20) dB.

C. Noise at Zone Boundaries. If the measurement location is on a boundary property between two different zoning districts, the exterior noise level utilized in subsection B of this chapter to determine the exterior standard shall be the arithmetic mean of the exterior noise levels. as specified in Table 3-6, of the subject zones.

D. Measurement of Ambient Noise Histogram. The ambient noise histogram shall be measured at the same location along the property line utilized in subsection B. above, with the alleged intruding noise source inoperative. If the alleged intruding noise source cannot be turned off, the ambient noise histogram shall be estimated by performing a measurement in the same general area of the alleged intruding noise source but at a sufficient distance so that the noise from the alleged intruding noise source is at least ten dB below the ambient noise histogram.

E. Abatement Notice in Lieu of Citation. If the intrusive noise exceeds the exterior noise standards provided in subsections A and B above, at a specific receptor property and the code enforcement officer has reason to believe that this violation was unanticipated and due to abnormal conditions, the code enforcement officer shall issue an abatement notice in lieu of a citation. If the specific violation is abated, no citation shall be issued. If the specific violation is not abated, the code enforcement officer shall issue a citation.

(Ord. 182 § 2 (part), 1997)

16.30.100 Interior Noise Standards for Multi-Family Residential.

A. Noise Standards for Residential Units. No person shall operate or cause to be operated within a residential unit. any source of sound, or allow the creation of any noise, that causes the noise level when measured inside a neighboring receiving residential unit to exceed the following standards:

1. Standard No.1. The applicable interior noise level for cumulative period of more than five minutes in any hour;

2. Standard No.2. The applicable interior noise level plus five dB for a cumulative period of more than one minute in any hour; or

3. Standard No.3. The applicable interior noise level plus ten dB for any period of time.

B. Interior Noise Levels for Multi-Family Residential. The following interior noise levels shall apply within multi-family dwellings with windows in their normal seasonal configuration.

Noise Zone	Designated Land Use	Time Interval	Allowable Interior Noise Level(dB)
All	Multi-family Residential	10:00 p.m.—7:00 a.m.	40
		7:00 a.m.—10:00 p.m.	45

If the measured ambient noise level reflected by the L_{50} exceeds that permissible within the interior noise standards in subsection A above, the allowable interior noise level shall be increased in five dB increments to reflect the ambient noise level (L_{50}).

(Ord. 182 § 2 (part), 1997)

16.30.110 Correction for Certain Types of Sounds.

For any source of sound that emits a pure tone or impulsive noise, the allowed noise levels provided in Sections 16.30.090 (Exterior Noise Standards) and 16.30.100 (Interior Noise Standards for Multi-family Residential) shall be reduced by five decibels.

(Ord. 182 § 2 (part), 1997)

16.30.120 Measurement Methods.

A. A-weighting Scale. The noise level shall be measured at a position(s) at any point on the receiver's property utilizing the A-weighting scale of the sound-level meter and the slow meter response (use fast response for impulsive type sounds). Calibration of the measurement equipment, utilizing an acoustic calibrator, shall be performed immediately prior to recording any noise data.

B. Microphone Location. The microphone shall be located four to five feet above the ground and ten feet or more from the nearest reflective surface except in those cases where another elevation is deemed appropriate.

C. Interior Noise. Interior noise measurements shall be made within the affected residential unit. The measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source, with windows in the normal seasonal configuration.

(Ord. 182 § 2 (part), 1997)

16.30.130 Acts Deemed Violations of Chapter.

The following acts are a violation of this chapter.

A. Construction Noise.

1. Operating or causing the operation of tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of eight p.m. and seven a.m., or at any time on Sundays or holidays so that the sound creates a noise disturbance across a residential or commercial property line, except for emergency work of public service utilities.

2. Construction activities shall be conducted in a manner that the maximum noise levels at the affected structures will not exceed those listed in the following schedule:

a. Residential Structures:

1) Mobile Equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than ten days) of mobile equipment:

	Single-family Residential	Multi-family Residential	Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dBA	64 dBA	70 dBA

2) Stationary Equipment. Maximum noise level for repetitively scheduled and relatively long-term operation periods (three days or more) of stationary equipment:

	Single-family Residential	Multi-family Residential	Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

b. Business Structures. Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment: daily, including Sundays and legal holidays, all hours: maximum of eighty-five (85) dBA.

3. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with suitable exhaust and air-intake silencers in proper working order.

B. Loading and Unloading Operations. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between the hours of ten p.m. and six a.m. in a manner to cause a noise disturbance is prohibited.

C. Noise Disturbances in Noise-Sensitive Zones. Creating or causing the creation of a noise disturbance within a noise-sensitive zone is prohibited, provided that conspicuous signs are displayed indicating the presence of the zone. Noise-sensitive zones shall be indicated by the display of conspicuous signs in at least three separate locations within five hundred (500) feet of the institution or facility (e.g., health care facility)

D. Places of Public Entertainment. Operating, playing, or permitting the operation or playing of a radio, television, phonograph, drum, musical instrument, sound amplifier or similar device that produces, reproduces, or amplifies sound in a place of public entertainment at a sound level greater than ninety-five (95) dBA, (read by the slow response on a sound level meter) at any point that is normally occupied by a customer is prohibited, unless conspicuous signs are located near each public entrance stating, "Warning: Sound Levels Within May Cause Hearing Impairment."

E. Emergency Signaling Devices.

1. The intentional sounding or permitting the sounding outdoors of an emergency signaling device, including fire, burglar or civil defense alarm, siren, whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing is prohibited.

2. Testing of a stationary emergency signaling device shall not occur before seven a.m. or after seven p.m. Testing shall use only the minimum cycle test time. Test time shall not exceed sixty (60) seconds. Testing of the complete emergency signaling system, including the functioning of the signaling device, and the personnel response to the signaling device, shall not occur more than once in each calendar month. Testing shall not occur before seven a.m. or after ten p.m.

3. Sounding or permitting the sounding of an exterior burglar or fire alarm, or motor vehicle burglar alarm

is prohibited, unless the alarm is terminated within fifteen (15) minutes of activation.

F. Stationary Nonemergency Signaling Devices. Sounding or permitting the sounding of an electronically amplified signal from a stationary bell, chime, siren, whistle, or similar device intended primarily for nonemergency purposes, from any place, for more than ten consecutive seconds in any hourly period is prohibited.

G. Refuse Collection Vehicles.

1. Operating or permitting the operation of the compacting mechanism of any motor vehicle that compacts refuse and that creates, during the compacting cycle, a sound level in excess of eighty-six (86) dBA when measured at fifty (50) feet from any point of the vehicle is prohibited.

2. Collecting refuse, or operating or permitting the operation of the compacting mechanism of any motor vehicle that compacts refuse between the hours often p.m. and six a.m. the following day in a residential area or noise-sensitive zone is prohibited.

H. Sweepers and Associated Equipment. Operating or permitting the operation of sweepers or associated sweeping equipment (i.e., blowers) between the hours often p.m. and six a.m. the following day in, or adjacent to, a residential area or noise-sensitive area is prohibited.

I. Residential Air Conditioning or Refrigeration Equipment. Operating or permitting the operation of air conditioning or refrigeration equipment in a manner that exceeds the following sound levels is prohibited:

Measurement Location	Maximum Noise level
Any point on neighboring property line, five feet above grade level, no closer than three feet from any wall.	55
Center of neighboring patio, five feet above grade level, no closer than three feet from any wall.	50
Outside the neighboring living area window nearest the equipment location, not more than three feet from the window opening, but at least three feet from any other surface.	50

J. Vehicle or Motorboat Repairs and Testing. Repairing, rebuilding, modifying or testing any motor vehicle, motorcycle or motorboat in a manner as to cause a noise disturbance across property lines or within a noise-sensitive zone is prohibited.

K. Vibration. Operating or permitting the operation of any device that creates vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property, or at one hundred fifty (150) feet from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz.

(Ord. 544 § 3, 2019; Ord. 182 §2 (part), 1997)

16.30.140 Modification of Standards.

Modifications to the requirements of this chapter may be granted by the director for a period of up to two years, subject to any terms, conditions, or requirements to minimize adverse effects on the surrounding neighborhood reasonable. Modifications may be granted only if one of the following findings can be made:

- A. Additional time is necessary for the applicant to alter or modify the activity, operation, or noise source to comply with this chapter: or
- B. The activity, operation, or noise source cannot feasibly be done in a manner that would comply with the provisions of this chapter. and no other reasonable alternative is available to the applicant.

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APPENDIX 5.1:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

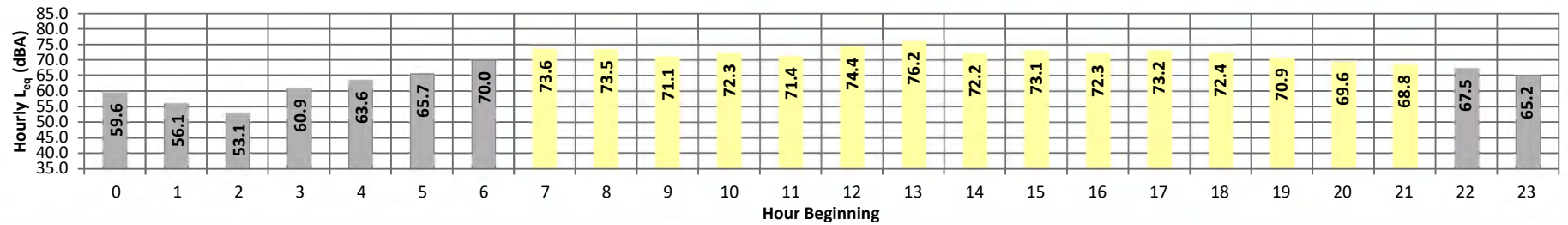
Date: Wednesday, April 7, 2021
Project: Murrieta Apartments

Location: L1 - Vista Murrieta High School Parking Lot, Facing Whitewood
Source: Rd.

Meter: Piccolo II

JN: 14027
Analyst: B. Maddux

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	59.6	73.4	36.9	73.0	71.8	67.3	64.1	50.9	40.9	37.6	37.3	37.0	59.6	10.0	69.6
	1	56.1	69.4	34.8	69.1	68.3	64.6	61.0	44.5	37.2	35.3	35.1	34.9	56.1	10.0	66.1
	2	53.1	67.1	35.5	66.7	65.6	61.3	56.8	41.1	38.0	36.2	35.9	35.6	53.1	10.0	63.1
	3	60.9	75.4	37.1	74.8	73.5	68.6	64.3	48.2	40.3	37.8	37.4	37.2	60.9	10.0	70.9
	4	63.6	76.1	42.2	75.7	74.8	71.8	69.1	59.2	48.7	43.4	42.8	42.3	63.6	10.0	73.6
	5	65.7	78.3	44.2	77.8	76.5	73.6	71.5	62.0	51.8	45.2	44.7	44.4	65.7	10.0	75.7
	6	70.0	81.1	46.6	80.6	79.7	77.4	75.5	69.3	60.2	48.5	47.5	46.8	70.0	10.0	80.0
Day	7	73.6	82.5	51.3	82.0	81.2	79.6	78.6	74.9	69.8	57.3	53.9	51.8	73.6	0.0	73.6
	8	73.5	83.0	47.6	82.4	81.3	79.4	78.4	74.7	69.5	53.1	50.2	47.9	73.5	0.0	73.5
	9	71.1	81.3	44.6	80.7	79.7	77.9	76.6	71.9	64.6	48.8	46.8	45.1	71.1	0.0	71.1
	10	72.3	84.6	46.1	83.8	82.5	79.0	76.9	71.7	65.6	51.2	48.7	46.6	72.3	0.0	72.3
	11	71.4	81.9	51.0	81.0	79.8	77.2	76.0	72.1	67.7	56.7	54.5	51.4	71.4	0.0	71.4
	12	74.4	88.5	48.8	87.6	85.8	80.7	77.2	71.9	66.4	54.1	51.7	49.1	74.4	0.0	74.4
	13	76.2	90.7	43.6	89.7	88.3	83.5	79.2	70.6	65.0	49.5	46.0	43.9	76.2	0.0	76.2
	14	72.2	84.4	46.7	83.6	82.2	78.8	76.2	71.8	66.3	52.3	49.4	47.0	72.2	0.0	72.2
	15	73.1	85.4	49.9	84.8	83.5	79.5	76.9	72.1	67.8	56.1	52.9	50.4	73.1	0.0	73.1
	16	72.3	81.5	52.2	80.9	80.0	77.9	76.9	73.3	69.2	58.6	56.0	52.7	72.3	0.0	72.3
	17	73.2	84.0	58.1	83.4	82.2	79.1	77.3	73.5	69.1	61.4	59.8	58.4	73.2	0.0	73.2
	18	72.4	80.5	52.5	80.0	79.2	77.8	77.0	73.8	70.0	59.0	56.1	53.0	72.4	0.0	72.4
	19	70.9	80.1	48.5	79.6	78.8	76.9	75.9	72.1	67.2	53.3	50.8	48.8	70.9	5.0	75.9
	20	69.6	79.1	44.8	78.6	77.7	75.9	74.7	70.7	64.5	48.8	46.6	45.0	69.6	5.0	74.6
21	68.8	81.1	42.6	80.5	79.3	75.9	74.0	67.7	58.7	44.8	43.6	42.8	68.8	5.0	73.8	
Night	22	67.5	81.1	40.9	80.4	78.9	74.8	71.9	63.8	53.2	42.7	41.6	41.1	67.5	10.0	77.5
	23	65.2	79.3	38.6	78.6	77.2	72.5	69.3	59.3	48.7	39.7	39.3	38.8	65.2	10.0	75.2
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	24-Hour	L _{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
Day	Min	68.8	79.1	42.6	78.6	77.7	75.9	74.0	67.7	58.7	44.8	43.6	42.8			
	Max	76.2	90.7	58.1	89.7	88.3	83.5	79.2	74.9	70.0	61.4	59.8	58.4			
Energy Average		72.7	Average:		82.6	81.4	78.6	76.8	72.2	66.8	53.7	51.1	48.9			
Night	Min	53.1	67.1	34.8	66.7	65.6	61.3	56.8	41.1	37.2	35.3	35.1	34.9	71.1	72.7	64.9
	Max	70.0	81.1	46.6	80.6	79.7	77.4	75.5	69.3	60.2	48.5	47.5	46.8			
Energy Average		64.9	Average:		75.2	74.0	70.2	67.1	55.4	46.6	40.7	40.2	39.8			

24-Hour Noise Level Measurement Summary

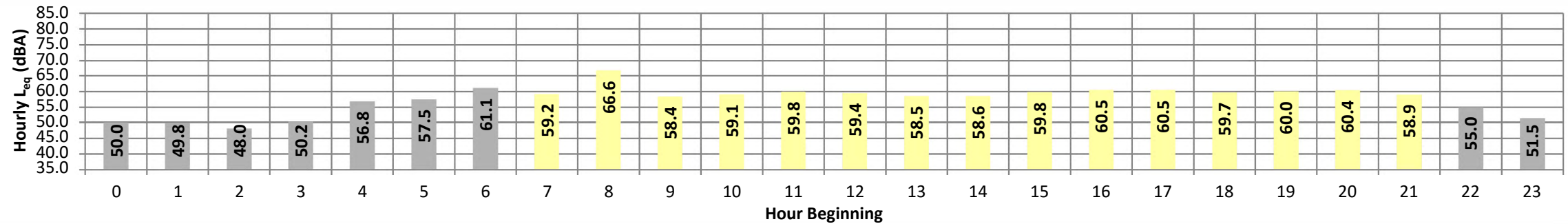
Date: Wednesday, April 7, 2021
Project: Murrieta Apartments

Location: L2 - Northwest Corner of Clinton Keith Rd. and Whitewood Rd.,
Source: Traffic on Clinton Keith Rd.

Meter: Piccolo II

JN: 14027
Analyst: B. Maddux

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	50.0	58.9	38.7	58.4	58.0	56.7	55.1	50.4	45.9	39.9	39.4	38.8	50.0	10.0	60.0
	1	49.8	61.8	36.8	61.4	60.5	57.9	54.8	46.6	40.8	37.4	37.1	36.9	49.8	10.0	59.8
	2	48.0	57.6	36.8	57.3	56.8	55.1	53.5	47.7	42.5	37.7	37.3	36.9	48.0	10.0	58.0
	3	50.2	59.6	39.6	59.1	58.6	57.0	55.3	50.2	45.7	40.6	40.1	39.7	50.2	10.0	60.2
	4	56.8	67.1	43.9	66.6	66.1	63.8	62.0	56.5	51.0	45.6	44.7	44.1	56.8	10.0	66.8
	5	57.5	66.9	46.8	66.5	66.0	64.0	62.2	57.5	53.8	48.1	47.5	46.9	57.5	10.0	67.5
	6	61.1	71.6	50.5	71.1	70.3	67.9	65.8	60.5	56.9	51.9	51.2	50.6	61.1	10.0	71.1
Day	7	59.2	67.1	50.6	66.7	66.2	64.7	63.6	59.9	56.7	52.2	51.5	50.8	59.2	0.0	59.2
	8	66.6	77.6	55.0	76.8	75.7	73.1	71.4	66.5	62.9	56.4	56.1	55.2	66.6	0.0	66.6
	9	58.4	66.9	48.7	66.5	65.9	64.3	63.1	58.9	55.7	50.5	49.8	48.9	58.4	0.0	58.4
	10	59.1	68.0	49.0	67.5	67.0	65.3	63.9	59.4	55.7	50.9	50.0	49.2	59.1	0.0	59.1
	11	59.8	69.7	50.0	69.3	68.7	66.2	63.9	59.8	56.2	51.9	51.0	50.1	59.8	0.0	59.8
	12	59.4	68.6	49.0	68.2	67.6	65.7	64.0	59.5	56.4	51.0	49.9	49.1	59.4	0.0	59.4
	13	58.5	67.9	48.9	67.3	66.4	64.4	63.0	58.8	55.6	51.0	50.2	49.2	58.5	0.0	58.5
	14	58.6	68.4	50.1	67.8	66.9	64.7	62.6	58.5	55.5	51.6	51.0	50.3	58.6	0.0	58.6
	15	59.8	69.6	50.0	69.1	68.3	66.5	65.2	58.9	55.9	51.9	51.1	50.2	59.8	0.0	59.8
	16	60.5	70.8	51.1	70.3	69.5	67.3	64.8	59.9	56.8	52.8	52.0	51.3	60.5	0.0	60.5
	17	60.5	70.8	51.4	70.3	69.5	66.9	64.8	59.7	57.0	52.8	52.1	51.5	60.5	0.0	60.5
	18	59.7	69.9	50.2	69.4	68.6	66.2	64.5	59.3	55.5	51.6	50.9	50.3	59.7	0.0	59.7
	19	60.0	70.3	50.0	69.7	68.9	66.9	65.0	59.5	55.8	51.7	50.8	50.1	60.0	5.0	65.0
	20	60.4	70.5	48.5	70.0	69.4	67.9	66.0	59.3	55.1	50.1	49.2	48.6	60.4	5.0	65.4
	21	58.9	69.0	46.8	68.5	67.8	65.6	64.3	58.8	54.0	48.4	47.7	47.0	58.9	5.0	63.9
Night	22	55.0	64.7	44.5	64.1	63.6	61.7	59.9	54.9	50.9	45.9	45.3	44.7	55.0	10.0	65.0
	23	51.5	60.7	40.2	60.2	59.6	58.1	56.9	51.8	47.1	41.6	41.0	40.4	51.5	10.0	61.5
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq} (dBA)		
Day	Min	58.4	66.9	46.8	66.5	65.9	64.3	62.6	58.5	54.0	48.4	47.7	47.0	24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	66.6	77.6	55.0	76.8	75.7	73.1	71.4	66.5	62.9	56.4	56.1	55.2			
Energy Average		60.6	Average:		69.2	68.4	66.4	64.7	59.8	56.3	51.6	50.9	50.1			
Night	Min	48.0	57.6	36.8	57.3	56.8	55.1	53.5	46.6	40.8	37.4	37.1	36.9	59.3	60.6	55.4
	Max	61.1	71.6	50.5	71.1	70.3	67.9	65.8	60.5	56.9	51.9	51.2	50.6			
Energy Average		55.4	Average:		62.8	62.2	60.2	58.4	52.9	48.3	43.2	42.6	42.1			

24-Hour Noise Level Measurement Summary

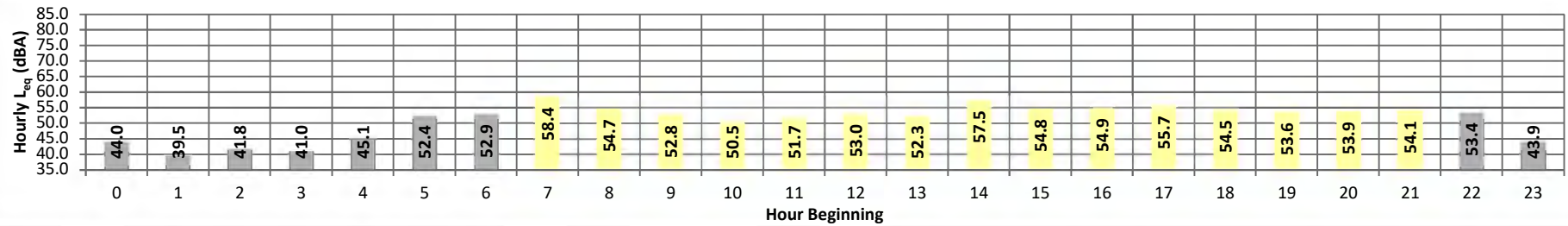
Date: Wednesday, April 7, 2021
Project: Murrieta Apartments

Location: L3 - Arendt Ln., Facing Clinton Keith Rd
Source:

Meter: Piccolo II

JN: 14027
Analyst: B. Maddux

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	44.0	55.8	36.0	55.0	54.1	51.8	48.7	40.8	38.3	36.7	36.3	36.1	44.0	10.0	54.0
	1	39.5	50.4	34.8	49.8	49.1	45.4	42.5	37.8	36.7	35.4	35.1	34.9	39.5	10.0	49.5
	2	41.8	53.7	34.6	53.3	52.5	48.5	45.2	39.0	36.9	35.3	35.0	34.7	41.8	10.0	51.8
	3	41.0	50.2	37.1	49.9	49.2	46.5	44.1	40.1	38.9	37.7	37.5	37.2	41.0	10.0	51.0
	4	45.1	54.1	40.8	53.5	52.7	49.9	47.9	44.8	43.4	41.6	41.3	40.9	45.1	10.0	55.1
	5	52.4	61.0	46.0	60.5	59.7	57.0	55.2	52.5	50.7	48.9	48.3	46.7	52.4	10.0	62.4
	6	52.9	63.9	45.4	63.5	62.9	59.7	57.6	50.7	48.0	46.2	45.9	45.5	52.9	10.0	62.9
Day	7	58.4	70.7	48.3	70.3	69.6	66.3	62.7	54.3	50.6	48.9	48.7	48.4	58.4	0.0	58.4
	8	54.7	67.6	43.1	67.2	66.3	62.3	58.5	50.2	46.7	44.0	43.7	43.3	54.7	0.0	54.7
	9	52.8	66.0	40.7	65.5	64.5	60.3	56.9	48.3	44.1	41.6	41.2	40.8	52.8	0.0	52.8
	10	50.5	61.7	38.5	61.2	60.2	57.6	55.8	49.2	44.0	40.0	39.4	38.8	50.5	0.0	50.5
	11	51.7	63.1	38.4	62.7	62.0	59.2	56.8	50.0	44.4	39.6	39.0	38.5	51.7	0.0	51.7
	12	53.0	64.1	39.1	63.7	62.9	60.1	58.0	51.7	47.3	40.7	39.8	39.3	53.0	0.0	53.0
	13	52.3	64.2	38.2	63.8	62.9	59.6	57.1	50.0	44.8	39.5	39.0	38.4	52.3	0.0	52.3
	14	57.5	70.2	39.9	69.7	68.7	65.2	62.5	53.2	47.4	41.5	40.7	40.1	57.5	0.0	57.5
	15	54.8	67.0	41.6	66.4	65.5	62.2	59.5	52.3	47.1	43.0	42.4	41.8	54.8	0.0	54.8
	16	54.9	66.0	42.4	65.5	64.6	61.9	60.0	54.0	48.9	43.6	43.2	42.5	54.9	0.0	54.9
	17	55.7	66.1	43.3	65.7	65.0	62.5	60.6	55.5	50.2	44.6	43.9	43.5	55.7	0.0	55.7
18	54.5	66.0	41.4	65.5	64.7	61.8	59.6	52.6	46.8	42.5	42.1	41.6	54.5	0.0	54.5	
	19	53.6	66.4	43.0	65.7	64.6	59.4	57.5	51.2	47.1	43.9	43.6	43.2	53.6	5.0	58.6
	20	53.9	66.3	41.7	65.6	64.8	62.5	59.3	49.2	44.5	42.4	42.1	41.8	53.9	5.0	58.9
	21	54.1	65.9	41.6	65.6	65.1	62.3	60.5	48.7	44.7	42.3	42.0	41.7	54.1	5.0	59.1
Night	22	53.4	66.6	38.9	66.2	65.6	61.5	57.6	46.8	42.1	39.7	39.4	39.1	53.4	10.0	63.4
	23	43.9	54.6	36.5	54.2	53.6	50.5	47.9	42.4	40.2	37.2	36.9	36.7	43.9	10.0	53.9
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq} (dBA)		
Day	Min	50.5	61.7	38.2	61.2	60.2	57.6	55.8	48.3	44.0	39.5	39.0	38.4	24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	58.4	70.7	48.3	70.3	69.6	66.3	62.7	55.5	50.6	48.9	48.7	48.4			
Energy Average		54.6	Average:		65.6	64.8	61.5	59.0	51.4	46.6	42.5	42.1	41.6			
Night	Min	39.5	50.2	34.6	49.8	49.1	45.4	42.5	37.8	36.7	35.3	35.0	34.7			
	Max	53.4	66.6	46.0	66.2	65.6	61.5	57.6	52.5	50.7	48.9	48.3	46.7	53.3	54.6	49.0
Energy Average		49.0	Average:		56.2	55.5	52.3	49.6	43.9	41.7	39.8	39.5	39.1			

24-Hour Noise Level Measurement Summary

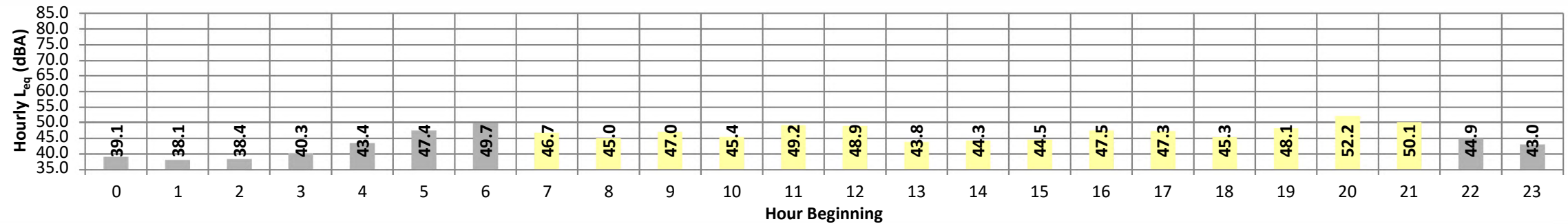
Date: Wednesday, April 7, 2021
Project: Murrieta Apartments

Location: L4 - Los Alamos Rd., facing Los Alamos Rd.
Source:

Meter: Piccolo II

JN: 14027
Analyst: B. Maddux

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	39.1	44.6	35.4	44.2	43.8	42.9	42.1	39.9	38.1	36.1	35.8	35.5	39.1	10.0	49.1
	1	38.1	42.4	35.4	41.9	41.5	40.8	40.4	38.8	37.5	36.0	35.7	35.5	38.1	10.0	48.1
	2	38.4	43.4	35.5	43.0	42.6	41.6	40.9	38.9	37.7	36.1	35.9	35.6	38.4	10.0	48.4
	3	40.3	46.8	37.0	46.5	46.1	44.9	43.8	40.2	38.9	37.6	37.3	37.1	40.3	10.0	50.3
	4	43.4	49.1	40.0	48.7	48.2	46.8	45.9	43.8	42.7	40.8	40.5	40.1	43.4	10.0	53.4
	5	47.4	55.3	43.9	54.8	54.4	52.0	49.9	47.2	46.1	44.7	44.4	44.0	47.4	10.0	57.4
	6	49.7	55.0	46.3	54.4	53.8	52.9	52.3	50.3	49.0	47.2	46.9	46.5	49.7	10.0	59.7
Day	7	46.7	51.1	44.1	50.6	50.2	49.4	48.8	47.3	46.1	44.8	44.6	44.3	46.7	0.0	46.7
	8	45.0	50.8	40.8	50.2	49.7	48.5	47.7	45.8	44.2	41.9	41.5	41.0	45.0	0.0	45.0
	9	47.0	51.3	43.7	50.9	50.5	49.8	49.1	47.7	46.5	44.6	44.2	43.8	47.0	0.0	47.0
	10	45.4	51.2	40.4	50.6	50.1	49.0	48.4	46.0	44.5	42.1	41.5	40.6	45.4	0.0	45.4
	11	49.2	53.6	45.4	53.2	52.9	52.2	51.8	50.1	48.4	46.3	45.9	45.5	49.2	0.0	49.2
	12	48.9	57.3	41.3	56.4	55.8	54.7	53.9	49.3	45.5	42.4	42.0	41.5	48.9	0.0	48.9
	13	43.8	51.1	36.9	50.5	50.0	48.8	48.2	45.0	41.1	38.2	37.7	37.0	43.8	0.0	43.8
	14	44.3	51.8	37.9	51.1	50.4	49.1	48.2	45.2	42.4	39.1	38.6	38.1	44.3	0.0	44.3
	15	44.5	53.1	39.1	52.5	51.9	50.2	48.4	44.5	42.4	40.1	39.7	39.3	44.5	0.0	44.5
	16	47.5	57.1	41.0	56.2	55.1	52.9	51.2	47.4	45.2	42.2	41.7	41.2	47.5	0.0	47.5
	17	47.3	56.6	41.2	56.0	55.3	53.0	51.3	47.4	44.1	42.0	41.6	41.3	47.3	0.0	47.3
	18	45.3	53.8	40.0	53.1	52.3	50.5	49.4	45.3	43.4	41.1	40.7	40.1	45.3	0.0	45.3
	19	48.1	57.0	42.2	56.1	55.4	53.7	52.2	48.2	45.6	43.3	42.8	42.3	48.1	5.0	53.1
	20	52.2	62.7	41.5	62.2	61.5	60.0	58.7	50.0	44.9	42.6	42.2	41.7	52.2	5.0	57.2
	21	50.1	61.0	41.4	60.1	58.8	56.4	54.7	50.1	45.7	42.4	41.9	41.6	50.1	5.0	55.1
Night	22	44.9	52.4	39.1	51.9	51.2	50.1	49.0	45.1	43.0	40.3	39.7	39.2	44.9	10.0	54.9
	23	43.0	52.3	36.5	51.6	51.0	49.6	48.3	41.9	39.7	37.4	37.0	36.6	43.0	10.0	53.0
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq} (dBA)		
Day	Min	43.8	50.8	36.9	50.2	49.7	48.5	47.7	44.5	41.1	38.2	37.7	37.0	24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	52.2	62.7	45.4	62.2	61.5	60.0	58.7	50.1	48.4	46.3	45.9	45.5			
Energy Average		47.7	Average:		54.0	53.3	51.9	50.8	47.3	44.7	42.2	41.8	41.3			
Night	Min	38.1	42.4	35.4	41.9	41.5	40.8	40.4	38.8	37.5	36.0	35.7	35.5	46.7	47.7	44.5
	Max	49.7	55.3	46.3	54.8	54.4	52.9	52.3	50.3	49.0	47.2	46.9	46.5			
Energy Average		44.5	Average:		48.6	48.1	46.9	45.8	42.9	41.4	39.6	39.2	38.9			

APPENDIX 7.1:

ON-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Clinton Keith Rd
Lot No: Pool

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 174.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 184.0 feet		Autos: 0.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 141.707				
Barrier Elevation: 0.0 feet		Medium Trucks: 141.645				
Road Grade: 0.0%		Heavy Trucks: 141.651				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.89	-1.20	-1.07	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.89	-1.20	-1.15	0.000	0.000
Heavy Trucks:	83.81	-17.67	-6.89	-1.20	-1.35	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:	68.2	66.3	64.5	58.4	67.1	67.7
Medium Trucks:	58.1	56.5	50.2	48.6	57.1	57.3
Heavy Trucks:	58.1	56.6	47.6	38.8	54.3	54.5
Vehicle Noise:	68.9	67.1	64.7	58.9	67.7	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	66.3	64.5	58.4	67.1	67.7
Medium Trucks:	58.1	56.5	50.2	48.6	57.1	57.3
Heavy Trucks:	58.1	56.6	47.6	38.8	54.3	54.5
Vehicle Noise:	68.9	67.1	64.7	58.9	67.7	68.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 186.0 feet		Autos: 0.00				
Barrier Distance to Observer: 186.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 143.774				
Barrier Elevation: 0.0 feet		Medium Trucks: 188.364				
Road Grade: 0.0%		Heavy Trucks: 194.073				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.98	-1.20	-73.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.74	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-8.94	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	56.0	54.6	45.5	36.8	52.2	52.4
Vehicle Noise:	68.6	66.7	64.6	58.7	67.4	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	36.9	35.4	29.0	27.5	35.9	36.2
Heavy Trucks:	36.7	35.3	26.2	17.5	32.9	33.1
Vehicle Noise:	68.1	66.2	64.4	58.3	67.0	67.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 192.0 feet		Autos: 0.00				
Barrier Distance to Observer: 192.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 149.963				
Barrier Elevation: 0.0 feet		Medium Trucks: 194.362				
Road Grade: 0.0%		Heavy Trucks: 200.071				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.26	-1.20	-73.37	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.95	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-9.14	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	56.0	54.5	48.1	46.6	55.0	55.3
Heavy Trucks:	55.8	54.4	45.3	36.6	52.0	52.3
Vehicle Noise:	68.3	66.5	64.3	58.4	67.1	67.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	36.7	35.2	28.8	27.3	35.7	36.0
Heavy Trucks:	36.5	35.1	26.0	17.3	32.7	33.0
Vehicle Noise:	67.8	65.9	64.1	58.1	66.7	67.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 181.0 feet		Autos: 0.00				
Barrier Distance to Observer: 181.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 138.604				
Barrier Elevation: 0.0 feet		Medium Trucks: 183.366				
Road Grade: 0.0%		Heavy Trucks: 189.075				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.75	-1.20	-73.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.57	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-8.77	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	56.4	54.9	48.5	47.0	55.4	55.6
Heavy Trucks:	56.2	54.8	45.7	37.0	52.4	52.6
Vehicle Noise:	68.8	67.0	64.8	58.9	67.6	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	37.1	35.6	29.2	27.7	36.1	36.3
Heavy Trucks:	36.9	35.5	26.4	17.7	33.1	33.3
Vehicle Noise:	68.3	66.4	64.6	58.6	67.2	67.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Clinton Keith Rd
Lot No: Condo 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 153.0 feet		Autos: 0.00				
Barrier Distance to Observer: 153.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 109.357				
Barrier Elevation: 0.0 feet		Medium Trucks: 155.379				
Road Grade: 0.0%		Heavy Trucks: 161.088				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-5.20	-1.20	-73.35	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.49	-1.20	73.50	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-7.72	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.4
Medium Trucks:	57.4	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	57.2	55.8	46.8	38.0	53.4	53.7
Vehicle Noise:	70.3	68.5	66.3	60.4	69.1	69.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.4
Medium Trucks:	38.1	36.6	30.3	28.7	37.2	37.4
Heavy Trucks:	37.9	36.5	27.5	18.7	34.1	34.4
Vehicle Noise:	69.9	68.0	66.2	60.1	68.8	69.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Clinton Keith Rd
Lot No: Condo 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 147.0 feet		Autos: 0.00				
Barrier Distance to Observer: 147.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 103.000				
Barrier Elevation: 0.0 feet		Medium Trucks: 149.382				
Road Grade: 0.0%		Heavy Trucks: 155.091				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-4.81	-1.20	-73.35	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.23	-1.20	73.50	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-7.48	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	57.7	56.2	49.8	48.3	56.8	57.0
Heavy Trucks:	57.5	56.0	47.0	38.3	53.7	53.9
Vehicle Noise:	70.7	68.8	66.7	60.8	69.5	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	38.4	36.9	30.5	29.0	37.5	37.7
Heavy Trucks:	38.2	36.7	27.7	19.0	34.4	34.6
Vehicle Noise:	70.2	68.3	66.6	60.5	69.1	69.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 3

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 83.612				
Barrier Elevation: 0.0 feet		Medium Trucks: 131.394				
Road Grade: 0.0%		Heavy Trucks: 137.103				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.45	-1.20	-73.34	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.40	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.67	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	58.3	56.8	47.8	39.1	54.5	54.7
Vehicle Noise:	72.0	70.1	68.1	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	39.2	37.7	31.4	29.8	38.3	38.5
Heavy Trucks:	39.0	37.5	28.5	19.8	35.2	35.4
Vehicle Noise:	71.6	69.7	67.9	61.9	70.5	71.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 4

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 83.612				
Barrier Elevation: 0.0 feet		Medium Trucks: 131.394				
Road Grade: 0.0%		Heavy Trucks: 137.103				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.45	-1.20	-73.34	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.40	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.67	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	58.3	56.8	47.8	39.1	54.5	54.7
Vehicle Noise:	72.0	70.1	68.1	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	39.2	37.7	31.4	29.8	38.3	38.5
Heavy Trucks:	39.0	37.5	28.5	19.8	35.2	35.4
Vehicle Noise:	71.6	69.7	67.9	61.9	70.5	71.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 5

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 118.0 feet		Autos: 0.00				
Barrier Distance to Observer: 118.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 71.407				
Barrier Elevation: 0.0 feet		Medium Trucks: 120.403				
Road Grade: 0.0%		Heavy Trucks: 126.112				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-2.42	-1.20	-73.33	0.000	0.000
Medium Trucks:	79.85	-13.72	-5.83	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.13	-1.20	74.26	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	59.1	57.6	51.2	49.7	58.2	58.4
Heavy Trucks:	58.8	57.4	48.4	39.6	55.0	55.3
Vehicle Noise:	73.0	71.1	69.1	63.1	71.8	72.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	39.8	38.3	31.9	30.4	38.9	39.1
Heavy Trucks:	39.5	38.1	29.1	20.3	35.7	36.0
Vehicle Noise:	72.6	70.7	69.0	62.9	71.5	72.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Clinton Keith Rd
Lot No: Condo 6a

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 96.0 feet		Autos: 0.00				
Barrier Distance to Observer: 96.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 45.177				
Barrier Elevation: 0.0 feet		Medium Trucks: 98.427				
Road Grade: 0.0%		Heavy Trucks: 104.136				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	0.56	-1.20	-73.30	0.000	0.000
Medium Trucks:	79.85	-13.72	-4.52	-1.20	73.52	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-4.88	-1.20	74.26	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.6	73.7	71.9	65.9	74.5	75.1
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	60.1	58.6	49.6	40.9	56.3	56.5
Vehicle Noise:	75.9	74.0	72.0	66.0	74.7	75.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.6	73.7	71.9	65.9	74.5	75.1
Medium Trucks:	41.1	39.6	33.3	31.7	40.2	40.4
Heavy Trucks:	40.8	39.3	30.3	21.6	37.0	37.2
Vehicle Noise:	75.6	73.7	71.9	65.9	74.5	75.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Whitewood Rd
Lot No: Condo 6b

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 83.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 59.950				
Barrier Elevation: 0.0 feet		Medium Trucks: 85.447				
Road Grade: 0.0%		Heavy Trucks: 91.156				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-1.29	-1.20	-39.09	0.000	0.000
Medium Trucks:	77.62	-14.83	-3.59	-1.20	39.36	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-4.02	-1.20	40.72	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	58.0	56.5	50.1	48.6	57.0	57.3
Heavy Trucks:	58.1	56.7	47.7	38.9	54.3	54.6
Vehicle Noise:	69.9	68.0	65.8	59.9	68.7	69.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	39.0	37.5	31.1	29.6	38.1	38.3
Heavy Trucks:	39.1	37.7	28.7	19.9	35.3	35.6
Vehicle Noise:	69.3	67.4	65.6	59.6	68.2	68.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Whitewood Rd
Lot No: Condo 7

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 95.0 feet		Autos: 0.00				
Barrier Distance to Observer: 95.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 72.457				
Barrier Elevation: 0.0 feet		Medium Trucks: 97.428				
Road Grade: 0.0%		Heavy Trucks: 103.137				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-2.52	-1.20	-39.10	0.000	0.000
Medium Trucks:	77.62	-14.83	-4.45	-1.20	39.35	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-4.82	-1.20	40.72	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	57.1	55.6	49.3	47.7	56.2	56.4
Heavy Trucks:	57.3	55.9	46.9	38.1	53.5	53.8
Vehicle Noise:	68.7	66.9	64.6	58.7	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:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	38.2	36.7	30.3	28.7	37.2	37.4
Heavy Trucks:	38.3	36.9	27.9	19.1	34.5	34.8
Vehicle Noise:	68.0	66.1	64.4	58.3	66.9	67.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Whitewood Rd
Lot No: Condo 8

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 196.0 feet		Autos: 0.00				
Barrier Distance to Observer: 196.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 174.931				
Barrier Elevation: 0.0 feet		Medium Trucks: 198.361				
Road Grade: 0.0%		Heavy Trucks: 204.070				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-8.26	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-9.08	-1.20	39.31	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-9.27	-1.20	40.68	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	52.5	51.0	44.6	43.1	51.6	51.8
Heavy Trucks:	52.9	51.5	42.4	33.7	49.1	49.3
Vehicle Noise:	63.2	61.3	58.9	53.1	61.9	62.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	33.5	32.0	25.7	24.1	32.6	32.8
Heavy Trucks:	33.9	32.5	23.4	14.7	30.1	30.3
Vehicle Noise:	62.3	60.4	58.6	52.6	61.2	61.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Whitewood Rd
Lot No: Condo 9

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 254.0 feet		Autos: 0.00				
Barrier Distance to Observer: 254.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 233.197				
Barrier Elevation: 0.0 feet		Medium Trucks: 256.346				
Road Grade: 0.0%		Heavy Trucks: 262.055				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-10.13	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-10.75	-1.20	39.30	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-10.89	-1.20	40.68	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.8	50.7	59.3	59.9
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	51.3	49.8	40.8	32.1	47.5	47.7
Vehicle Noise:	61.3	59.5	57.0	51.2	60.0	60.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.8	50.7	59.3	59.9
Medium Trucks:	31.9	30.3	24.0	22.4	30.9	31.1
Heavy Trucks:	32.2	30.8	21.8	13.0	28.4	28.7
Vehicle Noise:	60.4	58.5	56.8	50.7	59.3	59.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard No Wall
Road Name: Whitewood Rd
Lot No: Condo 10

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 293.0 feet		Autos: 0.00				
Barrier Distance to Observer: 293.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 272.312				
Barrier Elevation: 0.0 feet		Medium Trucks: 295.340				
Road Grade: 0.0%		Heavy Trucks: 301.049				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-11.14	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-11.67	-1.20	39.29	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-11.80	-1.20	40.67	-19.013	-22.013

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	49.9	48.4	42.1	40.5	49.0	49.2
Heavy Trucks:	50.4	48.9	39.9	31.2	46.6	46.8
Vehicle Noise:	60.3	58.5	56.0	50.2	59.0	59.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	30.9	29.4	23.1	21.5	30.0	30.2
Heavy Trucks:	31.3	29.9	20.9	12.1	27.5	27.8
Vehicle Noise:	59.4	57.5	55.7	49.7	58.3	58.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Pool

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 8.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 174.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 184.0 feet		Autos: 0.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 141.932				
Barrier Elevation: 0.0 feet		Medium Trucks: 141.812				
Road Grade: 0.0%		Heavy Trucks: 141.688				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.90	-1.20	0.58	-8.900	-11.900
Medium Trucks:	79.85	-13.72	-6.89	-1.20	0.52	-8.600	-11.600
Heavy Trucks:	83.81	-17.67	-6.89	-1.20	0.40	-8.000	-11.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.5	58.4	67.1	67.7
Medium Trucks:	58.0	56.5	50.2	48.6	57.1	57.3
Heavy Trucks:	58.1	56.6	47.6	38.8	54.3	54.5
Vehicle Noise:	68.9	67.1	64.7	58.9	67.7	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.2	57.3	55.6	49.5	58.2	58.8
Medium Trucks:	49.4	47.9	41.6	40.0	48.5	48.7
Heavy Trucks:	50.1	48.6	39.6	30.8	46.3	46.5
Vehicle Noise:	60.1	58.3	55.9	50.0	58.8	59.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 186.0 feet		Autos: 0.00				
Barrier Distance to Observer: 186.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 143.774				
Barrier Elevation: 0.0 feet		Medium Trucks: 188.364				
Road Grade: 0.0%		Heavy Trucks: 194.073				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.98	-1.20	-73.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.74	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-8.94	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	56.0	54.6	45.5	36.8	52.2	52.4
Vehicle Noise:	68.6	66.7	64.6	58.7	67.4	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	36.9	35.4	29.0	27.5	35.9	36.2
Heavy Trucks:	36.7	35.3	26.2	17.5	32.9	33.1
Vehicle Noise:	68.1	66.2	64.4	58.3	67.0	67.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 192.0 feet		Autos: 0.00				
Barrier Distance to Observer: 192.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 149.963				
Barrier Elevation: 0.0 feet		Medium Trucks: 194.362				
Road Grade: 0.0%		Heavy Trucks: 200.071				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.26	-1.20	-73.37	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.95	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-9.14	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	56.0	54.5	48.1	46.6	55.0	55.3
Heavy Trucks:	55.8	54.4	45.3	36.6	52.0	52.3
Vehicle Noise:	68.3	66.5	64.3	58.4	67.1	67.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	36.7	35.2	28.8	27.3	35.7	36.0
Heavy Trucks:	36.5	35.1	26.0	17.3	32.7	33.0
Vehicle Noise:	67.8	65.9	64.1	58.1	66.7	67.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 181.0 feet		Autos: 0.00				
Barrier Distance to Observer: 181.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 138.604				
Barrier Elevation: 0.0 feet		Medium Trucks: 183.366				
Road Grade: 0.0%		Heavy Trucks: 189.075				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.75	-1.20	-73.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.57	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-8.77	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	56.4	54.9	48.5	47.0	55.4	55.6
Heavy Trucks:	56.2	54.8	45.7	37.0	52.4	52.6
Vehicle Noise:	68.8	67.0	64.8	58.9	67.6	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	37.1	35.6	29.2	27.7	36.1	36.3
Heavy Trucks:	36.9	35.5	26.4	17.7	33.1	33.3
Vehicle Noise:	68.3	66.4	64.6	58.6	67.2	67.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 153.0 feet		Autos: 0.00				
Barrier Distance to Observer: 153.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 109.357				
Barrier Elevation: 0.0 feet		Medium Trucks: 155.379				
Road Grade: 0.0%		Heavy Trucks: 161.088				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-5.20	-1.20	-73.35	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.49	-1.20	73.50	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-7.72	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.4
Medium Trucks:	57.4	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	57.2	55.8	46.8	38.0	53.4	53.7
Vehicle Noise:	70.3	68.5	66.3	60.4	69.1	69.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.4
Medium Trucks:	38.1	36.6	30.3	28.7	37.2	37.4
Heavy Trucks:	37.9	36.5	27.5	18.7	34.1	34.4
Vehicle Noise:	69.9	68.0	66.2	60.1	68.8	69.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 2

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 147.0 feet		Autos: 0.00				
Barrier Distance to Observer: 147.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 103.000				
Barrier Elevation: 0.0 feet		Medium Trucks: 149.382				
Road Grade: 0.0%		Heavy Trucks: 155.091				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-4.81	-1.20	-73.35	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.23	-1.20	73.50	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-7.48	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	57.7	56.2	49.8	48.3	56.8	57.0
Heavy Trucks:	57.5	56.0	47.0	38.3	53.7	53.9
Vehicle Noise:	70.7	68.8	66.7	60.8	69.5	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	38.4	36.9	30.5	29.0	37.5	37.7
Heavy Trucks:	38.2	36.7	27.7	19.0	34.4	34.6
Vehicle Noise:	70.2	68.3	66.6	60.5	69.1	69.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 3

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 83.612				
Barrier Elevation: 0.0 feet		Medium Trucks: 131.394				
Road Grade: 0.0%		Heavy Trucks: 137.103				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.45	-1.20	-73.34	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.40	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.67	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	58.3	56.8	47.8	39.1	54.5	54.7
Vehicle Noise:	72.0	70.1	68.1	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	39.2	37.7	31.4	29.8	38.3	38.5
Heavy Trucks:	39.0	37.5	28.5	19.8	35.2	35.4
Vehicle Noise:	71.6	69.7	67.9	61.9	70.5	71.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 4

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 83.612				
Barrier Elevation: 0.0 feet		Medium Trucks: 131.394				
Road Grade: 0.0%		Heavy Trucks: 137.103				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.45	-1.20	-73.34	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.40	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.67	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	58.3	56.8	47.8	39.1	54.5	54.7
Vehicle Noise:	72.0	70.1	68.1	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	39.2	37.7	31.4	29.8	38.3	38.5
Heavy Trucks:	39.0	37.5	28.5	19.8	35.2	35.4
Vehicle Noise:	71.6	69.7	67.9	61.9	70.5	71.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 5

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 118.0 feet		Autos: 0.00				
Barrier Distance to Observer: 118.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 71.407				
Barrier Elevation: 0.0 feet		Medium Trucks: 120.403				
Road Grade: 0.0%		Heavy Trucks: 126.112				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-2.42	-1.20	-73.33	0.000	0.000
Medium Trucks:	79.85	-13.72	-5.83	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.13	-1.20	74.26	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	59.1	57.6	51.2	49.7	58.2	58.4
Heavy Trucks:	58.8	57.4	48.4	39.6	55.0	55.3
Vehicle Noise:	73.0	71.1	69.1	63.1	71.8	72.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	39.8	38.3	31.9	30.4	38.9	39.1
Heavy Trucks:	39.5	38.1	29.1	20.3	35.7	36.0
Vehicle Noise:	72.6	70.7	69.0	62.9	71.5	72.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 6a

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 96.0 feet		Autos: 0.00				
Barrier Distance to Observer: 96.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 45.177				
Barrier Elevation: 0.0 feet		Medium Trucks: 98.427				
Road Grade: 0.0%		Heavy Trucks: 104.136				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	0.56	-1.20	-73.30	0.000	0.000
Medium Trucks:	79.85	-13.72	-4.52	-1.20	73.52	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-4.88	-1.20	74.26	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.6	73.7	71.9	65.9	74.5	75.1
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	60.1	58.6	49.6	40.9	56.3	56.5
Vehicle Noise:	75.9	74.0	72.0	66.0	74.7	75.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.6	73.7	71.9	65.9	74.5	75.1
Medium Trucks:	41.1	39.6	33.3	31.7	40.2	40.4
Heavy Trucks:	40.8	39.3	30.3	21.6	37.0	37.2
Vehicle Noise:	75.6	73.7	71.9	65.9	74.5	75.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Whitewood Rd
Lot No: Condo 6b

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 83.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 59.950				
Barrier Elevation: 0.0 feet		Medium Trucks: 85.447				
Road Grade: 0.0%		Heavy Trucks: 91.156				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-1.29	-1.20	-39.09	0.000	0.000
Medium Trucks:	77.62	-14.83	-3.59	-1.20	39.36	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-4.02	-1.20	40.72	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	58.0	56.5	50.1	48.6	57.0	57.3
Heavy Trucks:	58.1	56.7	47.7	38.9	54.3	54.6
Vehicle Noise:	69.9	68.0	65.8	59.9	68.7	69.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	39.0	37.5	31.1	29.6	38.1	38.3
Heavy Trucks:	39.1	37.7	28.7	19.9	35.3	35.6
Vehicle Noise:	69.3	67.4	65.6	59.6	68.2	68.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Whitewood Rd
Lot No: Condo 7

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 95.0 feet		Autos: 0.00				
Barrier Distance to Observer: 95.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 72.457				
Barrier Elevation: 0.0 feet		Medium Trucks: 97.428				
Road Grade: 0.0%		Heavy Trucks: 103.137				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-2.52	-1.20	-39.10	0.000	0.000
Medium Trucks:	77.62	-14.83	-4.45	-1.20	39.35	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-4.82	-1.20	40.72	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	57.1	55.6	49.3	47.7	56.2	56.4
Heavy Trucks:	57.3	55.9	46.9	38.1	53.5	53.8
Vehicle Noise:	68.7	66.9	64.6	58.7	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:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	38.2	36.7	30.3	28.7	37.2	37.4
Heavy Trucks:	38.3	36.9	27.9	19.1	34.5	34.8
Vehicle Noise:	68.0	66.1	64.4	58.3	66.9	67.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Whitewood Rd
Lot No: Condo 8

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 196.0 feet		Autos: 0.00				
Barrier Distance to Observer: 196.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 174.931				
Barrier Elevation: 0.0 feet		Medium Trucks: 198.361				
Road Grade: 0.0%		Heavy Trucks: 204.070				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-8.26	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-9.08	-1.20	39.31	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-9.27	-1.20	40.68	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	52.5	51.0	44.6	43.1	51.6	51.8
Heavy Trucks:	52.9	51.5	42.4	33.7	49.1	49.3
Vehicle Noise:	63.2	61.3	58.9	53.1	61.9	62.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	33.5	32.0	25.7	24.1	32.6	32.8
Heavy Trucks:	33.9	32.5	23.4	14.7	30.1	30.3
Vehicle Noise:	62.3	60.4	58.6	52.6	61.2	61.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Whitewood Rd
Lot No: Condo 9

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 254.0 feet		Autos: 0.00				
Barrier Distance to Observer: 254.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 233.197				
Barrier Elevation: 0.0 feet		Medium Trucks: 256.346				
Road Grade: 0.0%		Heavy Trucks: 262.055				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-10.13	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-10.75	-1.20	39.30	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-10.89	-1.20	40.68	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.8	50.7	59.3	59.9
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	51.3	49.8	40.8	32.1	47.5	47.7
Vehicle Noise:	61.3	59.5	57.0	51.2	60.0	60.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.8	50.7	59.3	59.9
Medium Trucks:	31.9	30.3	24.0	22.4	30.9	31.1
Heavy Trucks:	32.2	30.8	21.8	13.0	28.4	28.7
Vehicle Noise:	60.4	58.5	56.8	50.7	59.3	59.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Backyard With Wall
Road Name: Whitewood Rd
Lot No: Condo 10

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 293.0 feet		Autos: 0.00				
Barrier Distance to Observer: 293.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 272.312				
Barrier Elevation: 0.0 feet		Medium Trucks: 295.340				
Road Grade: 0.0%		Heavy Trucks: 301.049				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-11.14	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-11.67	-1.20	39.29	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-11.80	-1.20	40.67	-19.013	-22.013

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	49.9	48.4	42.1	40.5	49.0	49.2
Heavy Trucks:	50.4	48.9	39.9	31.2	46.6	46.8
Vehicle Noise:	60.3	58.5	56.0	50.2	59.0	59.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	30.9	29.4	23.1	21.5	30.0	30.2
Heavy Trucks:	31.3	29.9	20.9	12.1	27.5	27.8
Vehicle Noise:	59.4	57.5	55.7	49.7	58.3	58.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Pool

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 8.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 174.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 198.0 feet		Autos: 0.00				
Barrier Distance to Observer: 24.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 155.678				
Barrier Elevation: 0.0 feet		Medium Trucks: 155.558				
Road Grade: 0.0%		Heavy Trucks: 155.435				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.50	-1.20	0.34	-7.700	-10.700
Medium Trucks:	79.85	-13.72	-7.50	-1.20	0.28	-7.360	-10.360
Heavy Trucks:	83.81	-17.67	-7.49	-1.20	0.16	-6.480	-9.480

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	67.1
Medium Trucks:	57.4	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	57.5	56.0	47.0	38.2	53.6	53.9
Vehicle Noise:	68.3	66.5	64.1	58.3	67.1	67.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.8	57.9	56.2	50.1	58.7	59.4
Medium Trucks:	50.1	48.6	42.2	40.7	49.1	49.4
Heavy Trucks:	51.0	49.5	40.5	31.8	47.2	47.4
Vehicle Noise:	60.8	59.0	56.5	50.6	59.5	60.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 186.0 feet		Autos: 0.00				
Barrier Distance to Observer: 186.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 143.774				
Barrier Elevation: 0.0 feet		Medium Trucks: 188.364				
Road Grade: 0.0%		Heavy Trucks: 194.073				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.98	-1.20	-73.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.74	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-8.94	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	56.0	54.6	45.5	36.8	52.2	52.4
Vehicle Noise:	68.6	66.7	64.6	58.7	67.4	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.4	58.3	67.0	67.6
Medium Trucks:	36.9	35.4	29.0	27.5	35.9	36.2
Heavy Trucks:	36.7	35.3	26.2	17.5	32.9	33.1
Vehicle Noise:	68.1	66.2	64.4	58.3	67.0	67.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 192.0 feet		Autos: 0.00				
Barrier Distance to Observer: 192.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 149.963				
Barrier Elevation: 0.0 feet		Medium Trucks: 194.362				
Road Grade: 0.0%		Heavy Trucks: 200.071				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.26	-1.20	-73.37	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.95	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-9.14	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	56.0	54.5	48.1	46.6	55.0	55.3
Heavy Trucks:	55.8	54.4	45.3	36.6	52.0	52.3
Vehicle Noise:	68.3	66.5	64.3	58.4	67.1	67.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	36.7	35.2	28.8	27.3	35.7	36.0
Heavy Trucks:	36.5	35.1	26.0	17.3	32.7	33.0
Vehicle Noise:	67.8	65.9	64.1	58.1	66.7	67.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 181.0 feet		Autos: 0.00				
Barrier Distance to Observer: 181.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 138.604				
Barrier Elevation: 0.0 feet		Medium Trucks: 183.366				
Road Grade: 0.0%		Heavy Trucks: 189.075				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.75	-1.20	-73.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-8.57	-1.20	73.49	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-8.77	-1.20	74.24	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	56.4	54.9	48.5	47.0	55.4	55.6
Heavy Trucks:	56.2	54.8	45.7	37.0	52.4	52.6
Vehicle Noise:	68.8	67.0	64.8	58.9	67.6	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	37.1	35.6	29.2	27.7	36.1	36.3
Heavy Trucks:	36.9	35.5	26.4	17.7	33.1	33.3
Vehicle Noise:	68.3	66.4	64.6	58.6	67.2	67.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 1

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 153.0 feet		Autos: 0.00				
Barrier Distance to Observer: 153.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 109.357				
Barrier Elevation: 0.0 feet		Medium Trucks: 155.379				
Road Grade: 0.0%		Heavy Trucks: 161.088				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-5.20	-1.20	-73.35	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.49	-1.20	73.50	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-7.72	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.4
Medium Trucks:	57.4	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	57.2	55.8	46.8	38.0	53.4	53.7
Vehicle Noise:	70.3	68.5	66.3	60.4	69.1	69.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.2	60.1	68.7	69.4
Medium Trucks:	38.1	36.6	30.3	28.7	37.2	37.4
Heavy Trucks:	37.9	36.5	27.5	18.7	34.1	34.4
Vehicle Noise:	69.9	68.0	66.2	60.1	68.8	69.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 2

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 147.0 feet		Autos: 0.00				
Barrier Distance to Observer: 147.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 103.000				
Barrier Elevation: 0.0 feet		Medium Trucks: 149.382				
Road Grade: 0.0%		Heavy Trucks: 155.091				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-4.81	-1.20	-73.35	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.23	-1.20	73.50	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-7.48	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	57.7	56.2	49.8	48.3	56.8	57.0
Heavy Trucks:	57.5	56.0	47.0	38.3	53.7	53.9
Vehicle Noise:	70.7	68.8	66.7	60.8	69.5	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.6	60.5	69.1	69.7
Medium Trucks:	38.4	36.9	30.5	29.0	37.5	37.7
Heavy Trucks:	38.2	36.7	27.7	19.0	34.4	34.6
Vehicle Noise:	70.2	68.3	66.6	60.5	69.1	69.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 83.612				
Barrier Elevation: 0.0 feet		Medium Trucks: 131.394				
Road Grade: 0.0%		Heavy Trucks: 137.103				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.45	-1.20	-73.34	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.40	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.67	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	58.3	56.8	47.8	39.1	54.5	54.7
Vehicle Noise:	72.0	70.1	68.1	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	39.2	37.7	31.4	29.8	38.3	38.5
Heavy Trucks:	39.0	37.5	28.5	19.8	35.2	35.4
Vehicle Noise:	71.6	69.7	67.9	61.9	70.5	71.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 4

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 83.612				
Barrier Elevation: 0.0 feet		Medium Trucks: 131.394				
Road Grade: 0.0%		Heavy Trucks: 137.103				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.45	-1.20	-73.34	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.40	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.67	-1.20	74.25	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	58.3	56.8	47.8	39.1	54.5	54.7
Vehicle Noise:	72.0	70.1	68.1	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.6	69.7	67.9	61.9	70.5	71.1
Medium Trucks:	39.2	37.7	31.4	29.8	38.3	38.5
Heavy Trucks:	39.0	37.5	28.5	19.8	35.2	35.4
Vehicle Noise:	71.6	69.7	67.9	61.9	70.5	71.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 5

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 118.0 feet		Autos: 0.00				
Barrier Distance to Observer: 118.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 71.407				
Barrier Elevation: 0.0 feet		Medium Trucks: 120.403				
Road Grade: 0.0%		Heavy Trucks: 126.112				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-2.42	-1.20	-73.33	0.000	0.000
Medium Trucks:	79.85	-13.72	-5.83	-1.20	73.51	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-6.13	-1.20	74.26	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	59.1	57.6	51.2	49.7	58.2	58.4
Heavy Trucks:	58.8	57.4	48.4	39.6	55.0	55.3
Vehicle Noise:	73.0	71.1	69.1	63.1	71.8	72.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.6	70.7	69.0	62.9	71.5	72.1
Medium Trucks:	39.8	38.3	31.9	30.4	38.9	39.1
Heavy Trucks:	39.5	38.1	29.1	20.3	35.7	36.0
Vehicle Noise:	72.6	70.7	69.0	62.9	71.5	72.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 6a

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 96.0 feet		Autos: 0.00				
Barrier Distance to Observer: 96.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 45.177				
Barrier Elevation: 0.0 feet		Medium Trucks: 98.427				
Road Grade: 0.0%		Heavy Trucks: 104.136				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	0.56	-1.20	-73.30	0.000	0.000
Medium Trucks:	79.85	-13.72	-4.52	-1.20	73.52	-19.300	-22.300
Heavy Trucks:	83.81	-17.67	-4.88	-1.20	74.26	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.6	73.7	71.9	65.9	74.5	75.1
Medium Trucks:	60.4	58.9	52.6	51.0	59.5	59.7
Heavy Trucks:	60.1	58.6	49.6	40.9	56.3	56.5
Vehicle Noise:	75.9	74.0	72.0	66.0	74.7	75.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.6	73.7	71.9	65.9	74.5	75.1
Medium Trucks:	41.1	39.6	33.3	31.7	40.2	40.4
Heavy Trucks:	40.8	39.3	30.3	21.6	37.0	37.2
Vehicle Noise:	75.6	73.7	71.9	65.9	74.5	75.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 6b

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 83.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 59.950				
Barrier Elevation: 0.0 feet		Medium Trucks: 85.447				
Road Grade: 0.0%		Heavy Trucks: 91.156				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-1.29	-1.20	-39.09	0.000	0.000
Medium Trucks:	77.62	-14.83	-3.59	-1.20	39.36	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-4.02	-1.20	40.72	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	58.0	56.5	50.1	48.6	57.0	57.3
Heavy Trucks:	58.1	56.7	47.7	38.9	54.3	54.6
Vehicle Noise:	69.9	68.0	65.8	59.9	68.7	69.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.3	67.4	65.6	59.5	68.2	68.8
Medium Trucks:	39.0	37.5	31.1	29.6	38.1	38.3
Heavy Trucks:	39.1	37.7	28.7	19.9	35.3	35.6
Vehicle Noise:	69.3	67.4	65.6	59.6	68.2	68.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 7

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 95.0 feet		Autos: 0.00				
Barrier Distance to Observer: 95.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 72.457				
Barrier Elevation: 0.0 feet		Medium Trucks: 97.428				
Road Grade: 0.0%		Heavy Trucks: 103.137				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-2.52	-1.20	-39.10	0.000	0.000
Medium Trucks:	77.62	-14.83	-4.45	-1.20	39.35	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-4.82	-1.20	40.72	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	57.1	55.6	49.3	47.7	56.2	56.4
Heavy Trucks:	57.3	55.9	46.9	38.1	53.5	53.8
Vehicle Noise:	68.7	66.9	64.6	58.7	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:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	38.2	36.7	30.3	28.7	37.2	37.4
Heavy Trucks:	38.3	36.9	27.9	19.1	34.5	34.8
Vehicle Noise:	68.0	66.1	64.4	58.3	66.9	67.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 8

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 196.0 feet		Autos: 0.00				
Barrier Distance to Observer: 196.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 174.931				
Barrier Elevation: 0.0 feet		Medium Trucks: 198.361				
Road Grade: 0.0%		Heavy Trucks: 204.070				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-8.26	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-9.08	-1.20	39.31	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-9.27	-1.20	40.68	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	52.5	51.0	44.6	43.1	51.6	51.8
Heavy Trucks:	52.9	51.5	42.4	33.7	49.1	49.3
Vehicle Noise:	63.2	61.3	58.9	53.1	61.9	62.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	33.5	32.0	25.7	24.1	32.6	32.8
Heavy Trucks:	33.9	32.5	23.4	14.7	30.1	30.3
Vehicle Noise:	62.3	60.4	58.6	52.6	61.2	61.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 9

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 254.0 feet		Autos: 0.00				
Barrier Distance to Observer: 254.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 233.197				
Barrier Elevation: 0.0 feet		Medium Trucks: 256.346				
Road Grade: 0.0%		Heavy Trucks: 262.055				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-10.13	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-10.75	-1.20	39.30	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-10.89	-1.20	40.68	-19.014	-22.014

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.8	50.7	59.3	59.9
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	51.3	49.8	40.8	32.1	47.5	47.7
Vehicle Noise:	61.3	59.5	57.0	51.2	60.0	60.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.8	50.7	59.3	59.9
Medium Trucks:	31.9	30.3	24.0	22.4	30.9	31.1
Heavy Trucks:	32.2	30.8	21.8	13.0	28.4	28.7
Vehicle Noise:	60.4	58.5	56.8	50.7	59.3	59.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 10

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 293.0 feet		Autos: 0.00				
Barrier Distance to Observer: 293.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 272.312				
Barrier Elevation: 0.0 feet		Medium Trucks: 295.340				
Road Grade: 0.0%		Heavy Trucks: 301.049				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-11.14	-1.20	-39.13	0.000	0.000
Medium Trucks:	77.62	-14.83	-11.67	-1.20	39.29	-18.986	-21.986
Heavy Trucks:	82.14	-18.78	-11.80	-1.20	40.67	-19.013	-22.013

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	49.9	48.4	42.1	40.5	49.0	49.2
Heavy Trucks:	50.4	48.9	39.9	31.2	46.6	46.8
Vehicle Noise:	60.3	58.5	56.0	50.2	59.0	59.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	30.9	29.4	23.1	21.5	30.0	30.2
Heavy Trucks:	31.3	29.9	20.9	12.1	27.5	27.8
Vehicle Noise:	59.4	57.5	55.7	49.7	58.3	58.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Pool

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 8.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 174.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 198.0 feet		Autos: 0.00				
Barrier Distance to Observer: 24.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 159.305				
Barrier Elevation: 0.0 feet		Medium Trucks: 158.859				
Road Grade: 0.0%		Heavy Trucks: 157.891				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.65	-1.20	-6.86	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.63	-1.20	-7.18	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.59	-1.20	-7.98	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	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	57.3	55.8	49.4	47.9	56.3	56.6
Heavy Trucks:	57.3	55.9	46.9	38.1	53.5	53.8
Vehicle Noise:	68.2	66.4	64.0	58.2	66.9	67.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.5	63.7	57.7	66.3	66.9
Medium Trucks:	57.3	55.8	49.4	47.9	56.3	56.6
Heavy Trucks:	57.3	55.9	46.9	38.1	53.5	53.8
Vehicle Noise:	68.2	66.4	64.0	58.2	66.9	67.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 186.0 feet		Autos: 0.00				
Barrier Distance to Observer: 186.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 147.207				
Barrier Elevation: 0.0 feet		Medium Trucks: 146.725				
Road Grade: 0.0%		Heavy Trucks: 196.739				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.14	-1.20	-72.72	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.12	-1.20	-73.25	0.000	0.000
Heavy Trucks:	83.81	-17.67	-9.03	-1.20	75.00	-19.350	-22.350

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	57.8	56.3	50.0	48.4	56.9	57.1
Heavy Trucks:	55.9	54.5	45.5	36.7	52.1	52.4
Vehicle Noise:	68.6	66.7	64.5	58.7	67.4	67.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	57.8	56.3	50.0	48.4	56.9	57.1
Heavy Trucks:	36.6	35.1	26.1	17.4	32.8	33.0
Vehicle Noise:	68.3	66.5	64.4	58.6	67.2	67.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 192.0 feet		Autos: 0.00				
Barrier Distance to Observer: 192.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 153.258				
Barrier Elevation: 0.0 feet		Medium Trucks: 152.795				
Road Grade: 0.0%		Heavy Trucks: 202.654				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.40	-1.20	-72.76	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.38	-1.20	-73.27	0.000	0.000
Heavy Trucks:	83.81	-17.67	-9.22	-1.20	74.99	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	64.0	57.9	66.6	67.2
Medium Trucks:	57.6	56.0	49.7	48.1	56.6	56.8
Heavy Trucks:	55.7	54.3	45.3	36.5	51.9	52.2
Vehicle Noise:	68.3	66.5	64.2	58.4	67.1	67.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.7	64.0	57.9	66.6	67.2
Medium Trucks:	57.6	56.0	49.7	48.1	56.6	56.8
Heavy Trucks:	36.4	35.0	26.0	17.2	32.6	32.9
Vehicle Noise:	68.1	66.2	64.1	58.4	67.0	67.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 181.0 feet		Autos: 0.00				
Barrier Distance to Observer: 181.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 142.162				
Barrier Elevation: 0.0 feet		Medium Trucks: 141.663				
Road Grade: 0.0%		Heavy Trucks: 191.813				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.91	-1.20	-72.68	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.89	-1.20	-73.22	0.000	0.000
Heavy Trucks:	83.81	-17.67	-8.86	-1.20	75.00	-19.350	-22.350

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.5	58.4	67.0	67.6
Medium Trucks:	58.0	56.5	50.2	48.6	57.1	57.3
Heavy Trucks:	56.1	54.7	45.6	36.9	52.3	52.5
Vehicle Noise:	68.8	66.9	64.7	58.9	67.6	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	66.2	64.5	58.4	67.0	67.6
Medium Trucks:	58.0	56.5	50.2	48.6	57.1	57.3
Heavy Trucks:	36.7	35.3	26.3	17.5	32.9	33.2
Vehicle Noise:	68.5	66.7	64.6	58.9	67.5	68.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 153.0 feet		Autos: 0.00				
Barrier Distance to Observer: 153.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 113.833				
Barrier Elevation: 0.0 feet		Medium Trucks: 113.209				
Road Grade: 0.0%		Heavy Trucks: 164.317				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-5.46	-1.20	-72.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-5.43	-1.20	-73.01	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.85	-1.20	75.03	-19.350	-22.350

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.9	68.5	69.1
Medium Trucks:	59.5	58.0	51.6	50.1	58.6	58.8
Heavy Trucks:	57.1	55.7	46.6	37.9	53.3	53.5
Vehicle Noise:	70.2	68.4	66.1	60.3	69.0	69.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.9	68.5	69.1
Medium Trucks:	59.5	58.0	51.6	50.1	58.6	58.8
Heavy Trucks:	37.7	36.3	27.3	18.5	33.9	34.2
Vehicle Noise:	70.0	68.1	66.1	60.3	68.9	69.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 147.0 feet		Autos: 0.00				
Barrier Distance to Observer: 147.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 107.740				
Barrier Elevation: 0.0 feet		Medium Trucks: 107.081				
Road Grade: 0.0%		Heavy Trucks: 105.640				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-5.10	-1.20	-72.27	0.000	0.000
Medium Trucks:	79.85	-13.72	-5.06	-1.20	-72.95	0.000	0.000
Heavy Trucks:	83.81	-17.67	-4.98	-1.20	-75.03	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:	69.9	68.0	66.3	60.2	68.8	69.5
Medium Trucks:	59.9	58.4	52.0	50.5	58.9	59.2
Heavy Trucks:	60.0	58.5	49.5	40.8	56.2	56.4
Vehicle Noise:	70.7	68.9	66.5	60.7	69.5	70.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.9	68.0	66.3	60.2	68.8	69.5
Medium Trucks:	59.9	58.4	52.0	50.5	58.9	59.2
Heavy Trucks:	60.0	58.5	49.5	40.8	56.2	56.4
Vehicle Noise:	70.7	68.9	66.5	60.7	69.5	70.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 3

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 89.387				
Barrier Elevation: 0.0 feet		Medium Trucks: 88.590				
Road Grade: 0.0%		Heavy Trucks: 86.843				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.89	-1.20	-71.89	0.000	0.000
Medium Trucks:	79.85	-13.72	-3.83	-1.20	-72.68	0.000	0.000
Heavy Trucks:	83.81	-17.67	-3.70	-1.20	-75.01	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:	71.2	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	61.1	59.6	53.2	51.7	60.2	60.4
Heavy Trucks:	61.2	59.8	50.8	42.0	57.4	57.7
Vehicle Noise:	72.0	70.1	67.7	61.9	70.7	71.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.2	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	61.1	59.6	53.2	51.7	60.2	60.4
Heavy Trucks:	61.2	59.8	50.8	42.0	57.4	57.7
Vehicle Noise:	72.0	70.1	67.7	61.9	70.7	71.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 4

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 89.387				
Barrier Elevation: 0.0 feet		Medium Trucks: 88.590				
Road Grade: 0.0%		Heavy Trucks: 86.843				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.89	-1.20	-71.89	0.000	0.000
Medium Trucks:	79.85	-13.72	-3.83	-1.20	-72.68	0.000	0.000
Heavy Trucks:	83.81	-17.67	-3.70	-1.20	-75.01	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:	71.2	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	61.1	59.6	53.2	51.7	60.2	60.4
Heavy Trucks:	61.2	59.8	50.8	42.0	57.4	57.7
Vehicle Noise:	72.0	70.1	67.7	61.9	70.7	71.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.2	69.3	67.5	61.4	70.1	70.7
Medium Trucks:	61.1	59.6	53.2	51.7	60.2	60.4
Heavy Trucks:	61.2	59.8	50.8	42.0	57.4	57.7
Vehicle Noise:	72.0	70.1	67.7	61.9	70.7	71.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 5

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 118.0 feet		Autos: 0.00				
Barrier Distance to Observer: 118.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 78.090				
Barrier Elevation: 0.0 feet		Medium Trucks: 77.177				
Road Grade: 0.0%		Heavy Trucks: 75.165				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.01	-1.20	-71.56	0.000	0.000
Medium Trucks:	79.85	-13.72	-2.93	-1.20	-72.43	0.000	0.000
Heavy Trucks:	83.81	-17.67	-2.76	-1.20	-74.95	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:	72.0	70.1	68.4	62.3	70.9	71.5
Medium Trucks:	62.0	60.5	54.1	52.6	61.1	61.3
Heavy Trucks:	62.2	60.8	51.7	43.0	58.4	58.6
Vehicle Noise:	72.8	71.0	68.6	62.8	71.6	72.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.0	70.1	68.4	62.3	70.9	71.5
Medium Trucks:	62.0	60.5	54.1	52.6	61.1	61.3
Heavy Trucks:	62.2	60.8	51.7	43.0	58.4	58.6
Vehicle Noise:	72.8	71.0	68.6	62.8	71.6	72.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 6a

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 96.0 feet		Autos: 0.00				
Barrier Distance to Observer: 96.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 55.136				
Barrier Elevation: 0.0 feet		Medium Trucks: 53.836				
Road Grade: 0.0%		Heavy Trucks: 50.909				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-0.74	-1.20	-70.46	0.000	0.000
Medium Trucks:	79.85	-13.72	-0.58	-1.20	-71.57	0.000	0.000
Heavy Trucks:	83.81	-17.67	-0.22	-1.20	-74.66	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:	74.3	72.4	70.6	64.6	73.2	73.8
Medium Trucks:	64.4	62.8	56.5	54.9	63.4	63.6
Heavy Trucks:	64.7	63.3	54.3	45.5	60.9	61.2
Vehicle Noise:	75.1	73.3	70.9	65.1	73.9	74.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.3	72.4	70.6	64.6	73.2	73.8
Medium Trucks:	64.4	62.8	56.5	54.9	63.4	63.6
Heavy Trucks:	64.7	63.3	54.3	45.5	60.9	61.2
Vehicle Noise:	75.1	73.3	70.9	65.1	73.9	74.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 6b

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 83.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 67.772				
Barrier Elevation: 0.0 feet		Medium Trucks: 66.718				
Road Grade: 0.0%		Heavy Trucks: 96.961				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-2.08	-1.20	-37.47	0.000	0.000
Medium Trucks:	77.62	-14.83	-1.98	-1.20	-38.58	0.000	0.000
Heavy Trucks:	82.14	-18.78	-4.42	-1.20	42.15	-19.043	-22.043

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	59.6	58.1	51.7	50.2	58.7	58.9
Heavy Trucks:	57.7	56.3	47.3	38.5	53.9	54.2
Vehicle Noise:	69.3	67.5	65.1	59.4	68.1	68.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.5	66.6	64.8	58.8	67.4	68.0
Medium Trucks:	59.6	58.1	51.7	50.2	58.7	58.9
Heavy Trucks:	38.7	37.3	28.2	19.5	34.9	35.1
Vehicle Noise:	69.0	67.2	65.0	59.3	67.9	68.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 7

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 95.0 feet		Autos: 0.00				
Barrier Distance to Observer: 95.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 79.051				
Barrier Elevation: 0.0 feet		Medium Trucks: 78.149				
Road Grade: 0.0%		Heavy Trucks: 108.251				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-3.09	-1.20	-37.87	0.000	0.000
Medium Trucks:	77.62	-14.83	-3.01	-1.20	-38.85	0.000	0.000
Heavy Trucks:	82.14	-18.78	-5.14	-1.20	42.11	-19.042	-22.042

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:	58.6	57.1	50.7	49.2	57.6	57.9
Heavy Trucks:	57.0	55.6	46.6	37.8	53.2	53.5
Vehicle Noise:	68.3	66.5	64.1	58.4	67.1	67.6

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:	58.6	57.1	50.7	49.2	57.6	57.9
Heavy Trucks:	38.0	36.6	27.5	18.8	34.2	34.4
Vehicle Noise:	68.0	66.1	64.0	58.3	66.9	67.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 8

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 196.0 feet		Autos: 0.00				
Barrier Distance to Observer: 196.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 177.764				
Barrier Elevation: 0.0 feet		Medium Trucks: 177.365				
Road Grade: 0.0%		Heavy Trucks: 206.601				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-8.37	-1.20	-38.85	0.000	0.000
Medium Trucks:	77.62	-14.83	-8.35	-1.20	-39.37	0.000	0.000
Heavy Trucks:	82.14	-18.78	-9.35	-1.20	41.59	-19.032	-22.032

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	60.3	58.5	52.5	61.1	61.7
Medium Trucks:	53.2	51.7	45.4	43.8	52.3	52.5
Heavy Trucks:	52.8	51.4	42.4	33.6	49.0	49.3
Vehicle Noise:	63.1	61.3	58.8	53.1	61.9	62.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	60.3	58.5	52.5	61.1	61.7
Medium Trucks:	53.2	51.7	45.4	43.8	52.3	52.5
Heavy Trucks:	33.8	32.4	23.3	14.6	30.0	30.2
Vehicle Noise:	62.7	60.9	58.7	53.0	61.6	62.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 9

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 254.0 feet		Autos: 0.00				
Barrier Distance to Observer: 254.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 235.330				
Barrier Elevation: 0.0 feet		Medium Trucks: 235.028				
Road Grade: 0.0%		Heavy Trucks: 264.014				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-10.19	-1.20	-38.97	0.000	0.000
Medium Trucks:	77.62	-14.83	-10.19	-1.20	-39.39	0.000	0.000
Heavy Trucks:	82.14	-18.78	-10.94	-1.20	41.41	-19.028	-22.028

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.7	50.6	59.3	59.9
Medium Trucks:	51.4	49.9	43.5	42.0	50.5	50.7
Heavy Trucks:	51.2	49.8	40.8	32.0	47.4	47.7
Vehicle Noise:	61.3	59.5	57.0	51.2	60.0	60.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.7	50.6	59.3	59.9
Medium Trucks:	51.4	49.9	43.5	42.0	50.5	50.7
Heavy Trucks:	32.2	30.8	21.7	13.0	28.4	28.6
Vehicle Noise:	60.9	59.0	56.9	51.2	59.8	60.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 10

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 293.0 feet		Autos: 0.00				
Barrier Distance to Observer: 293.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 274.140				
Barrier Elevation: 0.0 feet		Medium Trucks: 297.039				
Road Grade: 0.0%		Heavy Trucks: 302.748				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-11.19	-1.20	-39.01	0.000	0.000
Medium Trucks:	77.62	-14.83	-11.71	-1.20	39.39	-18.988	-21.988
Heavy Trucks:	82.14	-18.78	-11.84	-1.20	41.32	-19.026	-22.026

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.6	58.3	58.9
Medium Trucks:	49.9	48.4	42.0	40.5	48.9	49.2
Heavy Trucks:	50.3	48.9	39.9	31.1	46.5	46.8
Vehicle Noise:	60.3	58.5	56.0	50.2	59.0	59.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.6	58.3	58.9
Medium Trucks:	30.9	29.4	23.0	21.5	29.9	30.2
Heavy Trucks:	31.3	29.9	20.8	12.1	27.5	27.7
Vehicle Noise:	59.4	57.5	55.7	49.7	58.3	58.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Pool

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 8.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 174.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 198.0 feet		Autos: 0.00				
Barrier Distance to Observer: 24.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 156.684				
Barrier Elevation: 0.0 feet		Medium Trucks: 156.496				
Road Grade: 0.0%		Heavy Trucks: 156.173				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.54	-1.20	-0.36	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.54	-1.20	-0.42	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.52	-1.20	-0.61	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	57.8	66.4	67.0
Medium Trucks:	57.4	55.9	49.5	48.0	56.4	56.7
Heavy Trucks:	57.4	56.0	47.0	38.2	53.6	53.9
Vehicle Noise:	68.3	66.5	64.1	58.3	67.0	67.6

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	57.8	66.4	67.0
Medium Trucks:	57.4	55.9	49.5	48.0	56.4	56.7
Heavy Trucks:	57.4	56.0	47.0	38.2	53.6	53.9
Vehicle Noise:	68.3	66.5	64.1	58.3	67.0	67.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 186.0 feet		Autos: 0.00				
Barrier Distance to Observer: 186.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 144.368				
Barrier Elevation: 0.0 feet		Medium Trucks: 144.163				
Road Grade: 0.0%		Heavy Trucks: 194.532				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.01	-1.20	-73.25	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.00	-1.20	-73.51	0.000	0.000
Heavy Trucks:	83.81	-17.67	-8.95	-1.20	74.60	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	57.9	56.4	50.1	48.5	57.0	57.2
Heavy Trucks:	56.0	54.6	45.5	36.8	52.2	52.4
Vehicle Noise:	68.7	66.8	64.6	58.8	67.5	68.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.4	58.3	66.9	67.5
Medium Trucks:	57.9	56.4	50.1	48.5	57.0	57.2
Heavy Trucks:	36.7	35.3	26.2	17.5	32.9	33.1
Vehicle Noise:	68.4	66.6	64.5	58.8	67.4	67.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 192.0 feet		Autos: 0.00				
Barrier Distance to Observer: 192.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 150.532				
Barrier Elevation: 0.0 feet		Medium Trucks: 150.336				
Road Grade: 0.0%		Heavy Trucks: 200.516				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.28	-1.20	-73.26	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.27	-1.20	-73.52	0.000	0.000
Heavy Trucks:	83.81	-17.67	-9.15	-1.20	74.59	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.0	66.7	67.3
Medium Trucks:	57.7	56.2	49.8	48.2	56.7	56.9
Heavy Trucks:	55.8	54.4	45.3	36.6	52.0	52.2
Vehicle Noise:	68.4	66.6	64.3	58.5	67.2	67.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.1	58.0	66.7	67.3
Medium Trucks:	57.7	56.2	49.8	48.2	56.7	56.9
Heavy Trucks:	36.5	35.1	26.0	17.3	32.7	32.9
Vehicle Noise:	68.2	66.3	64.3	58.5	67.1	67.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 181.0 feet		Autos: 0.00				
Barrier Distance to Observer: 181.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 139.219				
Barrier Elevation: 0.0 feet		Medium Trucks: 139.007				
Road Grade: 0.0%		Heavy Trucks: 189.547				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.77	-1.20	-73.24	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.76	-1.20	-73.51	0.000	0.000
Heavy Trucks:	83.81	-17.67	-8.78	-1.20	74.61	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	58.2	56.7	50.3	48.8	57.2	57.5
Heavy Trucks:	56.2	54.7	45.7	37.0	52.4	52.6
Vehicle Noise:	68.9	67.1	64.8	59.0	67.7	68.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	66.4	64.6	58.6	67.2	67.8
Medium Trucks:	58.2	56.7	50.3	48.8	57.2	57.5
Heavy Trucks:	36.9	35.4	26.4	17.7	33.1	33.3
Vehicle Noise:	68.7	66.8	64.8	59.0	67.6	68.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 153.0 feet		Autos: 0.00				
Barrier Distance to Observer: 153.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 110.136				
Barrier Elevation: 0.0 feet		Medium Trucks: 109.868				
Road Grade: 0.0%		Heavy Trucks: 161.645				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-5.25	-1.20	-73.18	0.000	0.000
Medium Trucks:	79.85	-13.72	-5.23	-1.20	-73.50	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.75	-1.20	74.68	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.1	68.7	69.3
Medium Trucks:	59.7	58.2	51.8	50.3	58.8	59.0
Heavy Trucks:	57.2	55.8	46.7	38.0	53.4	53.6
Vehicle Noise:	70.4	68.6	66.3	60.5	69.2	69.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.8	67.9	66.1	60.1	68.7	69.3
Medium Trucks:	59.7	58.2	51.8	50.3	58.8	59.0
Heavy Trucks:	37.9	36.5	27.4	18.7	34.1	34.3
Vehicle Noise:	70.2	68.3	66.3	60.5	69.1	69.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 147.0 feet		Autos: 0.00				
Barrier Distance to Observer: 147.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 103.827				
Barrier Elevation: 0.0 feet		Medium Trucks: 103.542				
Road Grade: 0.0%		Heavy Trucks: 155.671				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-4.86	-1.20	-73.16	0.000	0.000
Medium Trucks:	79.85	-13.72	-4.85	-1.20	-73.49	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.50	-1.20	74.70	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	57.4	56.0	47.0	38.2	53.6	53.9
Vehicle Noise:	70.8	69.0	66.7	60.9	69.6	70.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.2	68.3	66.5	60.5	69.1	69.7
Medium Trucks:	60.1	58.6	52.2	50.7	59.1	59.4
Heavy Trucks:	38.1	36.7	27.7	18.9	34.3	34.6
Vehicle Noise:	70.6	68.7	66.7	60.9	69.5	70.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 3

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 84.629				
Barrier Elevation: 0.0 feet		Medium Trucks: 84.279				
Road Grade: 0.0%		Heavy Trucks: 137.763				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.53	-1.20	-73.08	0.000	0.000
Medium Trucks:	79.85	-13.72	-3.50	-1.20	-73.46	0.000	0.000
Heavy Trucks:	83.81	-17.67	-6.71	-1.20	74.76	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.9	61.8	70.4	71.0
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	58.2	56.8	47.8	39.0	54.4	54.7
Vehicle Noise:	72.1	70.3	68.1	62.3	70.9	71.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.9	61.8	70.4	71.0
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	38.9	37.5	28.5	19.7	35.1	35.4
Vehicle Noise:	71.9	70.1	68.0	62.2	70.8	71.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
 Road Name: Clinton Keith Rd
 Lot No: Condo 4

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 84.629				
Barrier Elevation: 0.0 feet		Medium Trucks: 84.279				
Road Grade: 0.0%		Heavy Trucks: 137.763				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.53	-1.20	-73.08	0.000	0.000
Medium Trucks:	79.85	-13.72	-3.50	-1.20	-73.46	0.000	0.000
Heavy Trucks:	83.81	-17.67	-6.71	-1.20	74.76	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.9	61.8	70.4	71.0
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	58.2	56.8	47.8	39.0	54.4	54.7
Vehicle Noise:	72.1	70.3	68.1	62.3	70.9	71.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.9	61.8	70.4	71.0
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	38.9	37.5	28.5	19.7	35.1	35.4
Vehicle Noise:	71.9	70.1	68.0	62.2	70.8	71.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 5

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 118.0 feet		Autos: 0.00				
Barrier Distance to Observer: 118.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 72.595				
Barrier Elevation: 0.0 feet		Medium Trucks: 72.187				
Road Grade: 0.0%		Heavy Trucks: 126.834				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-2.53	-1.20	-73.01	0.000	0.000
Medium Trucks:	79.85	-13.72	-2.50	-1.20	-73.43	0.000	0.000
Heavy Trucks:	83.81	-17.67	-6.17	-1.20	74.80	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.9	62.8	71.4	72.0
Medium Trucks:	62.4	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	58.8	57.4	48.3	39.6	55.0	55.2
Vehicle Noise:	73.1	71.2	69.0	63.3	71.9	72.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.5	70.6	68.9	62.8	71.4	72.0
Medium Trucks:	62.4	60.9	54.6	53.0	61.5	61.7
Heavy Trucks:	39.5	38.1	29.0	20.3	35.7	35.9
Vehicle Noise:	72.9	71.1	69.0	63.2	71.8	72.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 6a

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 96.0 feet		Autos: 0.00				
Barrier Distance to Observer: 96.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 47.032				
Barrier Elevation: 0.0 feet		Medium Trucks: 46.400				
Road Grade: 0.0%		Heavy Trucks: 105.021				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	0.30	-1.20	-72.76	0.000	0.000
Medium Trucks:	79.85	-13.72	0.38	-1.20	-73.31	0.000	0.000
Heavy Trucks:	83.81	-17.67	-4.94	-1.20	74.90	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.3	73.4	71.7	65.6	74.2	74.9
Medium Trucks:	65.3	63.8	57.5	55.9	64.4	64.6
Heavy Trucks:	60.0	58.6	49.5	40.8	56.2	56.4
Vehicle Noise:	75.9	74.0	71.9	66.1	74.7	75.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	75.3	73.4	71.7	65.6	74.2	74.9
Medium Trucks:	65.3	63.8	57.5	55.9	64.4	64.6
Heavy Trucks:	40.7	39.3	30.2	21.5	36.9	37.1
Vehicle Noise:	75.8	73.9	71.8	66.1	74.7	75.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
 Road Name: Whitewood Rd
 Lot No: Condo 6b

Project Name: Murrieta Apartments
 Job Number: 14027
 Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 83.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 61.360				
Barrier Elevation: 0.0 feet		Medium Trucks: 60.877				
Road Grade: 0.0%		Heavy Trucks: 92.178				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-1.44	-1.20	-38.78	0.000	0.000
Medium Trucks:	77.62	-14.83	-1.39	-1.20	-39.36	0.000	0.000
Heavy Trucks:	82.14	-18.78	-4.09	-1.20	41.51	-19.030	-22.030

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.1	67.2	65.5	59.4	68.0	68.6
Medium Trucks:	60.2	58.7	52.3	50.8	59.3	59.5
Heavy Trucks:	58.1	56.6	47.6	38.9	54.3	54.5
Vehicle Noise:	69.9	68.1	65.7	60.0	68.7	69.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.1	67.2	65.5	59.4	68.0	68.6
Medium Trucks:	60.2	58.7	52.3	50.8	59.3	59.5
Heavy Trucks:	39.0	37.6	28.6	19.8	35.2	35.5
Vehicle Noise:	69.6	67.8	65.7	60.0	68.6	69.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 7

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 95.0 feet		Autos: 0.00				
Barrier Distance to Observer: 95.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 73.627				
Barrier Elevation: 0.0 feet		Medium Trucks: 73.225				
Road Grade: 0.0%		Heavy Trucks: 104.032				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-2.62	-1.20	-38.87	0.000	0.000
Medium Trucks:	77.62	-14.83	-2.59	-1.20	-39.38	0.000	0.000
Heavy Trucks:	82.14	-18.78	-4.88	-1.20	41.42	-19.028	-22.028

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.3	58.2	66.8	67.4
Medium Trucks:	59.0	57.5	51.1	49.6	58.1	58.3
Heavy Trucks:	57.3	55.9	46.8	38.1	53.5	53.7
Vehicle Noise:	68.8	67.0	64.5	58.8	67.5	68.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.3	58.2	66.8	67.4
Medium Trucks:	59.0	57.5	51.1	49.6	58.1	58.3
Heavy Trucks:	38.3	36.8	27.8	19.0	34.5	34.7
Vehicle Noise:	68.5	66.6	64.5	58.8	67.4	67.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 8

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 196.0 feet		Autos: 0.00				
Barrier Distance to Observer: 196.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 175.419				
Barrier Elevation: 0.0 feet		Medium Trucks: 198.796				
Road Grade: 0.0%		Heavy Trucks: 204.505				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-8.28	-1.20	-39.08	0.000	0.000
Medium Trucks:	77.62	-14.83	-9.09	-1.20	39.37	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-9.28	-1.20	41.03	-19.021	-22.021

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	52.5	51.0	44.6	43.1	51.5	51.8
Heavy Trucks:	52.9	51.5	42.4	33.7	49.1	49.3
Vehicle Noise:	63.1	61.3	58.9	53.1	61.9	62.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	33.5	32.0	25.6	24.1	32.6	32.8
Heavy Trucks:	33.9	32.4	23.4	14.6	30.1	30.3
Vehicle Noise:	62.3	60.4	58.6	52.6	61.2	61.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 9

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 254.0 feet		Autos: 0.00				
Barrier Distance to Observer: 254.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 233.564				
Barrier Elevation: 0.0 feet		Medium Trucks: 256.683				
Road Grade: 0.0%		Heavy Trucks: 262.392				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-10.14	-1.20	-39.10	0.000	0.000
Medium Trucks:	77.62	-14.83	-10.76	-1.20	39.36	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-10.90	-1.20	40.95	-19.019	-22.019

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.7	50.7	59.3	59.9
Medium Trucks:	50.8	49.3	43.0	41.4	49.9	50.1
Heavy Trucks:	51.3	49.8	40.8	32.0	47.5	47.7
Vehicle Noise:	61.3	59.5	57.0	51.2	60.0	60.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.7	50.7	59.3	59.9
Medium Trucks:	31.8	30.3	24.0	22.4	30.9	31.1
Heavy Trucks:	32.2	30.8	21.8	13.0	28.4	28.7
Vehicle Noise:	60.4	58.5	56.7	50.7	59.3	59.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 10

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 293.0 feet		Autos: 0.00				
Barrier Distance to Observer: 293.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 272.626				
Barrier Elevation: 0.0 feet		Medium Trucks: 295.631				
Road Grade: 0.0%		Heavy Trucks: 301.340				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-11.15	-1.20	-39.11	0.000	0.000
Medium Trucks:	77.62	-14.83	-11.68	-1.20	39.35	-18.987	-21.987
Heavy Trucks:	82.14	-18.78	-11.80	-1.20	40.91	-19.018	-22.018

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	49.9	48.4	42.0	40.5	49.0	49.2
Heavy Trucks:	50.4	48.9	39.9	31.1	46.6	46.8
Vehicle Noise:	60.3	58.5	56.0	50.2	59.0	59.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	30.9	29.4	23.1	21.5	30.0	30.2
Heavy Trucks:	31.3	29.9	20.9	12.1	27.5	27.8
Vehicle Noise:	59.4	57.5	55.7	49.7	58.3	58.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Pool

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 8.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 174.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 198.0 feet		Autos: 0.00				
Barrier Distance to Observer: 24.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 157.743				
Barrier Elevation: 0.0 feet		Medium Trucks: 157.425				
Road Grade: 0.0%		Heavy Trucks: 156.776				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.59	-1.20	-2.83	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.57	-1.20	-3.02	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.55	-1.20	-3.53	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.5	65.6	63.8	57.7	66.4	67.0
Medium Trucks:	57.4	55.9	49.5	47.9	56.4	56.6
Heavy Trucks:	57.4	56.0	46.9	38.2	53.6	53.8
Vehicle Noise:	68.2	66.4	64.0	58.2	67.0	67.5

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:	57.4	55.9	49.5	47.9	56.4	56.6
Heavy Trucks:	57.4	56.0	46.9	38.2	53.6	53.8
Vehicle Noise:	68.2	66.4	64.0	58.2	67.0	67.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 186.0 feet		Autos: 0.00				
Barrier Distance to Observer: 186.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 145.516				
Barrier Elevation: 0.0 feet		Medium Trucks: 145.171				
Road Grade: 0.0%		Heavy Trucks: 195.423				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.06	-1.20	-73.03	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.05	-1.20	-73.43	0.000	0.000
Heavy Trucks:	83.81	-17.67	-8.98	-1.20	74.85	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	57.9	56.4	50.0	48.5	56.9	57.2
Heavy Trucks:	56.0	54.5	45.5	36.8	52.2	52.4
Vehicle Noise:	68.6	66.8	64.5	58.7	67.4	68.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	57.9	56.4	50.0	48.5	56.9	57.2
Heavy Trucks:	36.7	35.2	26.2	17.5	32.9	33.1
Vehicle Noise:	68.4	66.5	64.5	58.7	67.3	67.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 192.0 feet		Autos: 0.00				
Barrier Distance to Observer: 192.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 151.634				
Barrier Elevation: 0.0 feet		Medium Trucks: 151.303				
Road Grade: 0.0%		Heavy Trucks: 201.379				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-7.33	-1.20	-73.06	0.000	0.000
Medium Trucks:	79.85	-13.72	-7.32	-1.20	-73.44	0.000	0.000
Heavy Trucks:	83.81	-17.67	-9.18	-1.20	74.84	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	57.6	56.1	49.8	48.2	56.7	56.9
Heavy Trucks:	55.8	54.3	45.3	36.6	52.0	52.2
Vehicle Noise:	68.4	66.5	64.3	58.5	67.2	67.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	57.6	56.1	49.8	48.2	56.7	56.9
Heavy Trucks:	36.5	35.0	26.0	17.3	32.7	32.9
Vehicle Noise:	68.1	66.3	64.2	58.4	67.0	67.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Bldg 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 181.0 feet		Autos: 0.00				
Barrier Distance to Observer: 181.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 140.410				
Barrier Elevation: 0.0 feet		Medium Trucks: 140.052				
Road Grade: 0.0%		Heavy Trucks: 190.461				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-6.83	-1.20	-73.01	0.000	0.000
Medium Trucks:	79.85	-13.72	-6.81	-1.20	-73.42	0.000	0.000
Heavy Trucks:	83.81	-17.67	-8.82	-1.20	74.87	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	66.3	64.6	58.5	67.1	67.7
Medium Trucks:	58.1	56.6	50.3	48.7	57.2	57.4
Heavy Trucks:	56.1	54.7	45.7	36.9	52.3	52.6
Vehicle Noise:	68.9	67.0	64.8	59.0	67.7	68.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	66.3	64.6	58.5	67.1	67.7
Medium Trucks:	58.1	56.6	50.3	48.7	57.2	57.4
Heavy Trucks:	36.8	35.4	26.4	17.6	33.0	33.3
Vehicle Noise:	68.6	66.8	64.7	58.9	67.5	68.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 1

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 153.0 feet		Autos: 0.00				
Barrier Distance to Observer: 153.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 111.638				
Barrier Elevation: 0.0 feet		Medium Trucks: 111.187				
Road Grade: 0.0%		Heavy Trucks: 162.725				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-5.34	-1.20	-72.84	0.000	0.000
Medium Trucks:	79.85	-13.72	-5.31	-1.20	-73.33	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.79	-1.20	74.94	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	57.2	55.7	46.7	37.9	53.4	53.6
Vehicle Noise:	70.3	68.5	66.3	60.5	69.1	69.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	67.8	66.0	60.0	68.6	69.2
Medium Trucks:	59.6	58.1	51.8	50.2	58.7	58.9
Heavy Trucks:	37.9	36.4	27.4	18.6	34.1	34.3
Vehicle Noise:	70.1	68.3	66.2	60.4	69.0	69.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 2

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 147.0 feet		Autos: 0.00				
Barrier Distance to Observer: 147.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 105.418				
Barrier Elevation: 0.0 feet		Medium Trucks: 104.941				
Road Grade: 0.0%		Heavy Trucks: 156.794				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-4.96	-1.20	-72.79	0.000	0.000
Medium Trucks:	79.85	-13.72	-4.93	-1.20	-73.30	0.000	0.000
Heavy Trucks:	83.81	-17.67	-7.55	-1.20	74.96	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.1	68.2	66.4	60.4	69.0	69.6
Medium Trucks:	60.0	58.5	52.1	50.6	59.1	59.3
Heavy Trucks:	57.4	56.0	46.9	38.2	53.6	53.8
Vehicle Noise:	70.7	68.9	66.6	60.8	69.5	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.1	68.2	66.4	60.4	69.0	69.6
Medium Trucks:	60.0	58.5	52.1	50.6	59.1	59.3
Heavy Trucks:	38.1	36.7	27.6	18.9	34.3	34.5
Vehicle Noise:	70.5	68.6	66.6	60.8	69.4	70.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 3

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 86.574				
Barrier Elevation: 0.0 feet		Medium Trucks: 85.992				
Road Grade: 0.0%		Heavy Trucks: 139.040				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.68	-1.20	-72.59	0.000	0.000
Medium Trucks:	79.85	-13.72	-3.64	-1.20	-73.18	0.000	0.000
Heavy Trucks:	83.81	-17.67	-6.77	-1.20	75.00	-19.350	-22.350

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.6	70.3	70.9
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	58.2	56.8	47.7	39.0	54.4	54.6
Vehicle Noise:	72.0	70.1	67.9	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.6	70.3	70.9
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	38.8	37.4	28.4	19.6	35.0	35.3
Vehicle Noise:	71.8	69.9	67.9	62.1	70.7	71.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 4

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 129.0 feet		Autos: 0.00				
Barrier Distance to Observer: 129.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 86.574				
Barrier Elevation: 0.0 feet		Medium Trucks: 85.992				
Road Grade: 0.0%		Heavy Trucks: 139.040				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-3.68	-1.20	-72.59	0.000	0.000
Medium Trucks:	79.85	-13.72	-3.64	-1.20	-73.18	0.000	0.000
Heavy Trucks:	83.81	-17.67	-6.77	-1.20	75.00	-19.350	-22.350

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.6	70.3	70.9
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	58.2	56.8	47.7	39.0	54.4	54.6
Vehicle Noise:	72.0	70.1	67.9	62.1	70.8	71.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.4	69.5	67.7	61.6	70.3	70.9
Medium Trucks:	61.3	59.8	53.4	51.9	60.3	60.6
Heavy Trucks:	38.8	37.4	28.4	19.6	35.0	35.3
Vehicle Noise:	71.8	69.9	67.9	62.1	70.7	71.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 5

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 118.0 feet		Autos: 0.00				
Barrier Distance to Observer: 118.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 74.853				
Barrier Elevation: 0.0 feet		Medium Trucks: 74.180				
Road Grade: 0.0%		Heavy Trucks: 128.227				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-2.73	-1.20	-72.40	0.000	0.000
Medium Trucks:	79.85	-13.72	-2.67	-1.20	-73.06	0.000	0.000
Heavy Trucks:	83.81	-17.67	-6.24	-1.20	75.03	-19.350	-22.350

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.7	62.6	71.2	71.8
Medium Trucks:	62.3	60.8	54.4	52.9	61.3	61.5
Heavy Trucks:	58.7	57.3	48.2	39.5	54.9	55.1
Vehicle Noise:	72.9	71.0	68.8	63.1	71.7	72.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.3	70.4	68.7	62.6	71.2	71.8
Medium Trucks:	62.3	60.8	54.4	52.9	61.3	61.5
Heavy Trucks:	39.4	37.9	28.9	20.1	35.6	35.8
Vehicle Noise:	72.7	70.9	68.8	63.0	71.6	72.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Clinton Keith Rd
Lot No: Condo 6a

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 43,100 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 4,310 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 55 mph		Vehicle Mix				
Near/Far Lane Distance: 75 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 96.0 feet		Autos: 0.00				
Barrier Distance to Observer: 96.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 50.448				
Barrier Elevation: 0.0 feet		Medium Trucks: 49.443				
Road Grade: 0.0%		Heavy Trucks: 47.337				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	72.73	3.52	-0.16	-1.20	-71.77	0.000	0.000
Medium Trucks:	79.85	-13.72	-0.03	-1.20	-72.63	0.000	0.000
Heavy Trucks:	83.81	-17.67	0.25	-1.20	-75.02	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:	74.9	73.0	71.2	65.2	73.8	74.4
Medium Trucks:	64.9	63.4	57.0	55.5	64.0	64.2
Heavy Trucks:	65.2	63.8	54.7	46.0	61.4	61.6
Vehicle Noise:	75.7	73.9	71.5	65.7	74.4	75.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	74.9	73.0	71.2	65.2	73.8	74.4
Medium Trucks:	64.9	63.4	57.0	55.5	64.0	64.2
Heavy Trucks:	65.2	63.8	54.7	46.0	61.4	61.6
Vehicle Noise:	75.7	73.9	71.5	65.7	74.4	75.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 6b

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 83.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 64.016				
Barrier Elevation: 0.0 feet		Medium Trucks: 63.227				
Road Grade: 0.0%		Heavy Trucks: 94.134				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-1.71	-1.20	-38.22	0.000	0.000
Medium Trucks:	77.62	-14.83	-1.63	-1.20	-39.08	0.000	0.000
Heavy Trucks:	82.14	-18.78	-4.23	-1.20	41.98	-19.040	-22.040

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.8	66.9	65.2	59.1	67.7	68.4
Medium Trucks:	60.0	58.5	52.1	50.5	59.0	59.2
Heavy Trucks:	57.9	56.5	47.5	38.7	54.1	54.4
Vehicle Noise:	69.7	67.8	65.5	59.7	68.5	69.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.8	66.9	65.2	59.1	67.7	68.4
Medium Trucks:	60.0	58.5	52.1	50.5	59.0	59.2
Heavy Trucks:	38.9	37.5	28.4	19.7	35.1	35.3
Vehicle Noise:	69.4	67.5	65.4	59.7	68.3	68.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 7

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 95.0 feet		Autos: 0.00				
Barrier Distance to Observer: 95.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 75.855				
Barrier Elevation: 0.0 feet		Medium Trucks: 75.191				
Road Grade: 0.0%		Heavy Trucks: 105.751				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-2.82	-1.20	-38.45	0.000	0.000
Medium Trucks:	77.62	-14.83	-2.76	-1.20	-39.21	0.000	0.000
Heavy Trucks:	82.14	-18.78	-4.98	-1.20	41.88	-19.038	-22.038

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	58.8	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	57.2	55.8	46.7	38.0	53.4	53.6
Vehicle Noise:	68.6	66.8	64.4	58.6	67.4	67.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	58.8	57.3	51.0	49.4	57.9	58.1
Heavy Trucks:	38.1	36.7	27.7	18.9	34.3	34.6
Vehicle Noise:	68.3	66.4	64.3	58.6	67.2	67.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 8

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 196.0 feet		Autos: 0.00				
Barrier Distance to Observer: 196.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 176.366				
Barrier Elevation: 0.0 feet		Medium Trucks: 176.081				
Road Grade: 0.0%		Heavy Trucks: 205.351				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-8.32	-1.20	-38.99	0.000	0.000
Medium Trucks:	77.62	-14.83	-8.30	-1.20	-39.39	0.000	0.000
Heavy Trucks:	82.14	-18.78	-9.31	-1.20	41.34	-19.027	-22.027

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	53.3	51.8	45.4	43.9	52.3	52.6
Heavy Trucks:	52.9	51.4	42.4	33.6	49.0	49.3
Vehicle Noise:	63.2	61.4	58.9	53.1	61.9	62.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.2	60.3	58.6	52.5	61.1	61.7
Medium Trucks:	53.3	51.8	45.4	43.9	52.3	52.6
Heavy Trucks:	33.8	32.4	23.4	14.6	30.0	30.3
Vehicle Noise:	62.8	60.9	58.8	53.1	61.7	62.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 9

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 254.0 feet		Autos: 0.00				
Barrier Distance to Observer: 254.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 234.275				
Barrier Elevation: 0.0 feet		Medium Trucks: 257.336				
Road Grade: 0.0%		Heavy Trucks: 263.045				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-10.16	-1.20	-39.05	0.000	0.000
Medium Trucks:	77.62	-14.83	-10.78	-1.20	39.39	-18.988	-21.988
Heavy Trucks:	82.14	-18.78	-10.92	-1.20	41.19	-19.024	-22.024

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.7	50.7	59.3	59.9
Medium Trucks:	50.8	49.3	42.9	41.4	49.9	50.1
Heavy Trucks:	51.2	49.8	40.8	32.0	47.4	47.7
Vehicle Noise:	61.3	59.5	57.0	51.2	60.0	60.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.4	58.5	56.7	50.7	59.3	59.9
Medium Trucks:	31.8	30.3	24.0	22.4	30.9	31.1
Heavy Trucks:	32.2	30.8	21.8	13.0	28.4	28.7
Vehicle Noise:	60.4	58.5	56.7	50.7	59.3	59.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Whitewood Rd
Lot No: Condo 10

Project Name: Murrieta Apartments
Job Number: 14027
Analyst: B Maddux

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 40 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 1.1% 0.74%				
Centerline Dist. to Barrier: 0.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 293.0 feet		Autos: 0.00				
Barrier Distance to Observer: 293.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 273.236				
Barrier Elevation: 0.0 feet		Medium Trucks: 296.198				
Road Grade: 0.0%		Heavy Trucks: 301.907				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	2.41	-11.17	-1.20	-39.07	0.000	0.000
Medium Trucks:	77.62	-14.83	-11.69	-1.20	39.38	-18.988	-21.988
Heavy Trucks:	82.14	-18.78	-11.82	-1.20	41.13	-19.023	-22.023

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	49.9	48.4	42.0	40.5	48.9	49.2
Heavy Trucks:	50.3	48.9	39.9	31.1	46.5	46.8
Vehicle Noise:	60.3	58.5	56.0	50.2	59.0	59.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	57.5	55.7	49.7	58.3	58.9
Medium Trucks:	30.9	29.4	23.0	21.5	30.0	30.2
Heavy Trucks:	31.3	29.9	20.9	12.1	27.5	27.8
Vehicle Noise:	59.4	57.5	55.7	49.7	58.3	58.9

APPENDIX 10.1:

CONSTRUCTION NOISE LEVEL CALCULATIONS

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13679 - Tentative Parcel Map 2015-06

CadnaA Noise Prediction Model: 14027_Construction.cna

Date: 12.08.21

Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
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	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
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 (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
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)	
RECEIVERS	1		72.6	72.6	79.2	75.0	0.0	0.0				5.00	a	6283332.70	2161876.43	5.00
RECEIVERS	2		68.0	68.0	74.6	75.0	0.0	0.0				5.00	a	6283628.28	2162492.32	5.00
RECEIVERS	3		74.4	74.4	81.1	75.0	0.0	0.0				5.00	a	6284530.42	2162570.16	5.00
RECEIVERS	4		71.4	71.4	78.1	75.0	0.0	0.0				5.00	a	6285184.80	2162630.40	5.00
RECEIVERS	5		71.1	71.1	77.8	75.0	0.0	0.0				5.00	a	6285089.49	2160967.90	5.00

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		Construction00001	133.2	133.2	133.2	82.5	82.5	82.5	Lw"	82.5					8

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a	6283738.68	2162240.62	8.00	0.00
			6283779.31	2162241.31	8.00	0.00
			6283779.31	2162286.45	8.00	0.00
			6283805.35	2162309.72	8.00	0.00
			6283902.23	2162309.72	8.00	0.00
			6283947.02	2162294.44	8.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
			6284009.17	2162294.44	8.00	0.00
			6284052.23	2162307.63	8.00	0.00
			6284369.93	2162306.25	8.00	0.00
			6284369.93	2162301.04	8.00	0.00
			6285099.45	2162299.30	8.00	0.00
			6285064.73	2162264.58	8.00	0.00
			6285064.03	2161946.87	8.00	0.00
			6285107.09	2161672.91	8.00	0.00
			6285066.46	2161404.51	8.00	0.00
			6284352.23	2161411.11	8.00	0.00
			6284101.18	2161335.41	8.00	0.00
			6283702.31	2161273.00	8.00	0.00
			6283704.92	2161975.69	8.00	0.00
			6283715.77	2162017.28	8.00	0.00
			6283726.18	2162069.15	8.00	0.00
			6283733.35	2162121.45	8.00	0.00
			6283737.47	2162172.88	8.00	0.00
			6283738.99	2162215.42	8.00	0.00