APPENDIX 18.0

NOISE IMPACT ANALYSIS

FINAL - 02-02-2022

Clinton Keith Marketplace

NOISE IMPACT ANALYSIS

CITY OF WILDOMAR

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
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
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	Clinton Keith Marketplace
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed Clinton Keith Marketplace development ("Project"). The Project site is generally located on the northwest corner of Hidden Springs Road and Clinton Keith Road in the City of Wildomar. The Project is to consist of 4,800 square feet of fast food with drive-thru window, 22,000 square foot grocery store, 7,700 square feet of retail shops, 7,600 square foot automotive retail store, 13,000 square foot pharmacy with drive-through window (first floor), 8,000 square feet of professional business/medical office (second floor), 3,590 square foot car wash, and 4,800 square foot restaurant. This study has been prepared to satisfy applicable City of Wildomar standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Clinton Keith Marketplace Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the finding of significance for each potential noise and/or vibration impact under CEQA. All impacts are considered less than significant without mitigation.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Construction Noise	10	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

PROJECT DESIGN FEATURES

With the Project Design Features identified in this noise study, all nearby sensitive receiver locations will experience *less than significant* impacts. The following Project Design Features have been included in the noise study to reduce the potential project related noise levels.

PDF-1: Restrict all car wash, car wash vacuum and outdoor delivery truck activity to the daytime hours between 7:00 a.m. and 10:00 p.m. No car wash, car wash vacuum or outdoor delivery truck activity shall be permitted during the nighttime hours between 10:00 p.m. and 7:00 a.m.

PDF-2: Provide the planned 10-foot-high screenwall for the outdoor loading dock area of the Major A building adjacent to the existing noise sensitive residential homes on Crystal Way.

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Clinton Keith Marketplace ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational noise and short-term construction noise impacts.

1.1 SITE LOCATION

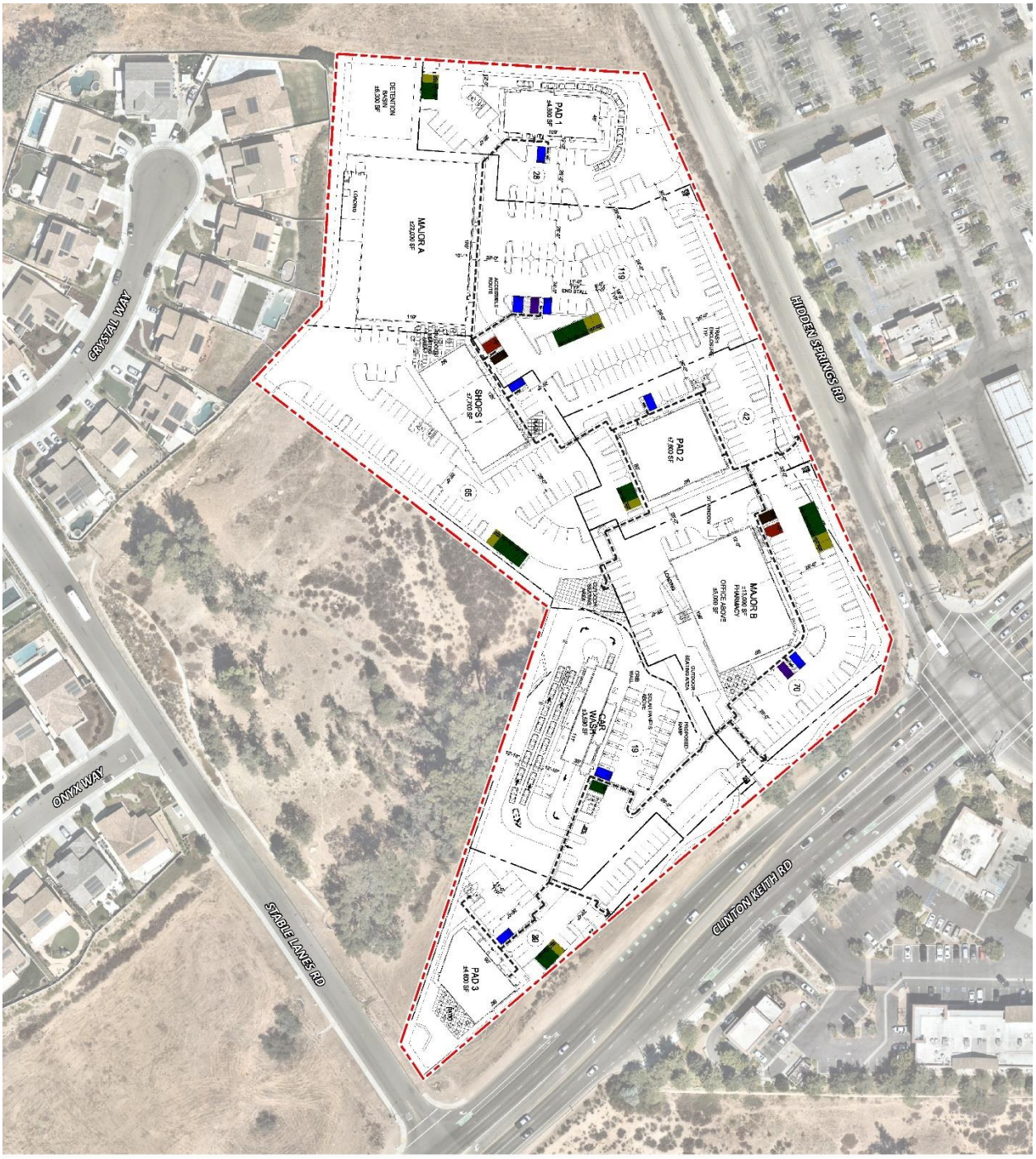
The proposed Clinton Keith Marketplace Project is generally located on the northwest corner of Hidden Springs Road and Clinton Keith Road in the City of Wildomar as shown on Exhibit 1-A. The Project site is currently vacant. Nearby existing single-family residential homes are located west of the Project site. The Bear Creek Village commercial retail center is located east of the Project site.

1.2 PROJECT DESCRIPTION

The Project is to consist of 4,800 square feet of fast food with drive-thru window, 22,000 square foot grocery store, 7,700 square feet of retail shops, 7,600 square foot automotive retail store, 13,000 square foot pharmacy with drive-through window (first floor), 8,000 square feet of professional business/medical office (second floor), 3,590 square foot car wash, and 4,800 square foot restaurant as shown on Exhibit 1-B. The on-site Project-related operational noise sources are expected to include: roof-top air conditioning units, outdoor seating activity, drive-through speakerphone, trash enclosure activity, parking lot vehicle movements, outdoor loading dock activity, car wash tunnel, and car wash vacuum activity.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

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

EXHIBIT 2-A: NOISE LEVELS

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

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

2.1 RANGE OF NOISE

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

at approximately 100 feet, which can cause serious discomfort (3). Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels 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 (typically one hour) 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. The relies on the percentile noise levels to describe the stationary source noise level limits. While the L_{50} describes the noise levels occurring 50 percent of the time, the L_{eq} accounts for the total energy (average) observed for the entire hour.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment, however. 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 Wildomar 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. Based on guidance from the U.S. Department of Transportation, Federal Highway Administration (FHWA), Office of Environment and Planning, Noise and Air Quality Branch, the way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

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

sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source (2).

2.3.2 GROUND ABSORPTION

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

2.3.3 ATMOSPHERIC EFFECTS

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

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearest residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure (4).

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels (4). If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by

ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source (4).

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. (5)

2.7 COMMUNITY RESPONSE TO NOISE

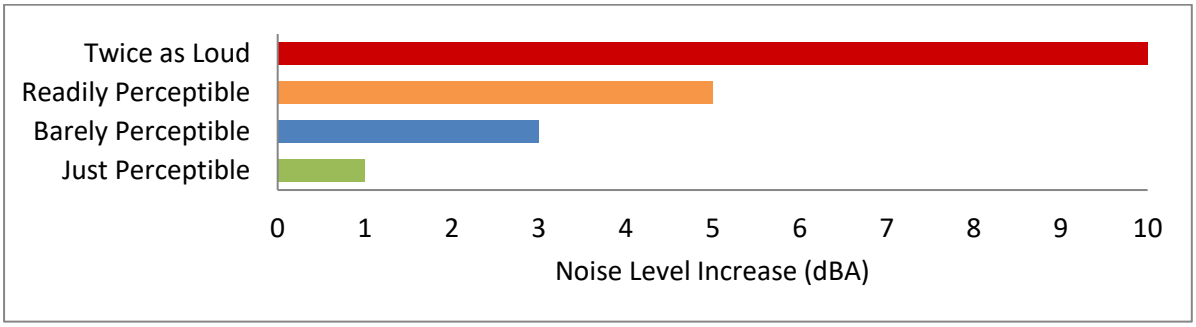
Community responses to noise varies depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints

will occur. Twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment (6). Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain (6). Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



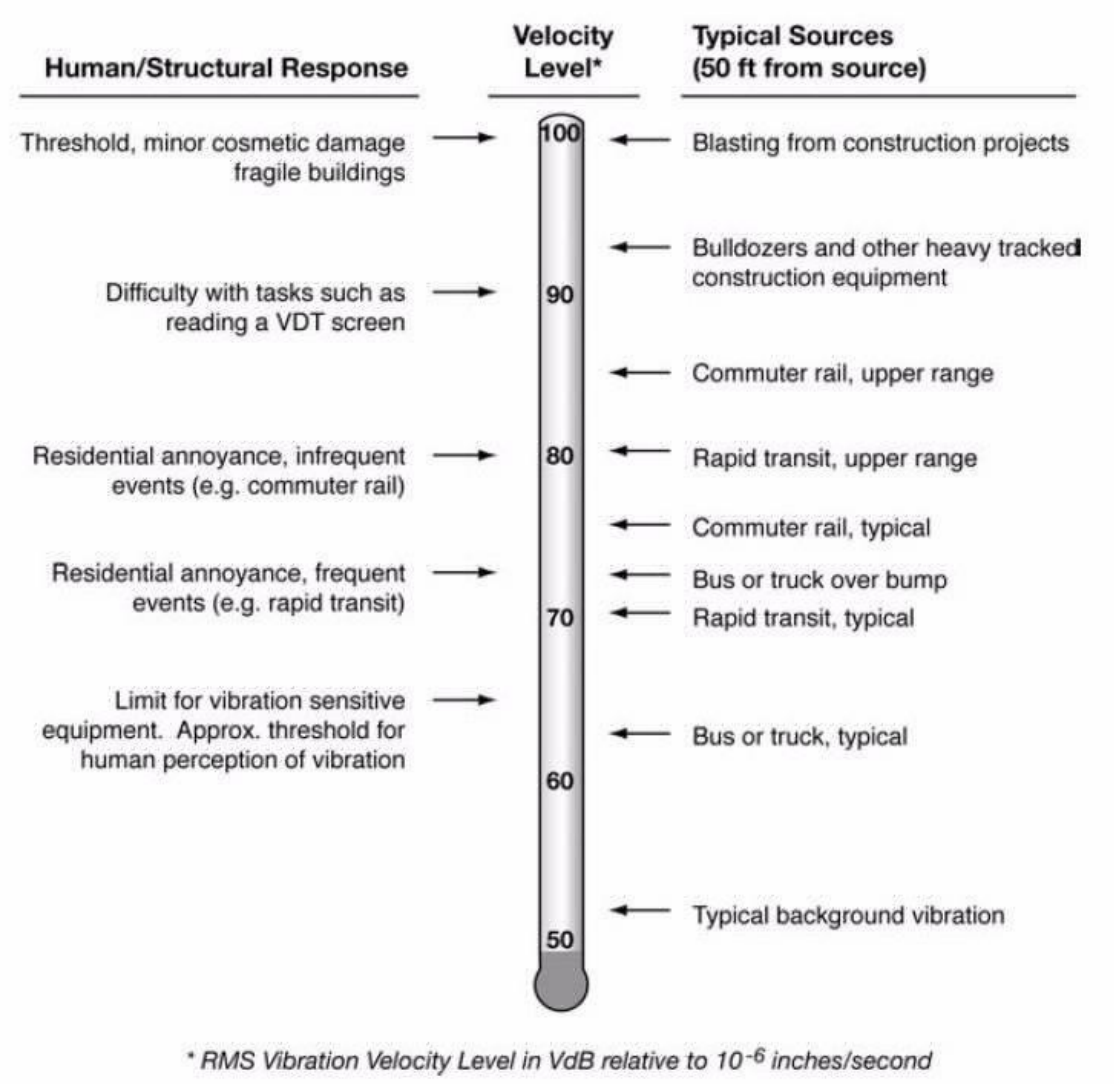
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (7), 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 and/or activities. The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. 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 background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: LEVELS OF GROUND-BORNE VIBRATION



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

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (8) 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.

3.3 CITY OF WILDOMAR GENERAL PLAN NOISE ELEMENT

The City of Wildomar was incorporated as a City in October of 2008. Through the incorporation process, the City adopted the 2003 Riverside County General Plan Noise Element to control and abate environmental noise, and to protect the citizens of the City of Wildomar from excessive exposure to noise. (9) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect City of Wildomar residents from excessive noise, the Noise Element contains the following seven policies:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider residential use as noise-sensitive and discourage this use in areas in excess of 65 CNEL.

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 1.7 Require proposed land uses, affected by unacceptable high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem.

N 12.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N 12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N 12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N1.3) by requiring the developer to submit a construction-related noise mitigation plan to the City for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

- *i. Temporary noise attenuation fences;*
- *ii. Preferential location and equipment; and*
- *iii. Use of current noise suppression technology and equipment.*

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as Clinton Keith Marketplace Project, stationary-source (operational) noise such as the expected roof-top air conditioning units, outdoor seating activity, drive-through speakerphone, trash enclosure activity, parking lot vehicle movements, outdoor loading dock activity, car wash tunnel, and car wash vacuum activity are typically evaluated against standards established under a jurisdiction's Municipal Code.

However, the City of Wildomar Noise Ordinance included in the Municipal Code (Chapter 9.48) indicates that *this chapter is not intended to establish thresholds of significance for the purpose of any analysis required by CEQA and no such thresholds are established*. (10) The City of Wildomar Municipal Code is included in Appendix 3.1. Therefore, potential Project related stationary-source (operational) noise impacts are limited to the absolute noise levels outlined in the General Plan and the generation of a substantial temporary or permanent relative increase in the ambient noise levels. Policy N 4.1 of the City of Wildomar General Plan Noise Element sets a stationary-source average L_{eq} exterior noise limit not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. (9)

3.4 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the City of Wildomar has established limits to the hours of operation. Section 9.48.020 (I) of the Noise Regulation ordinance indicates that *noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May*. (10) However, neither the City of Wildomar General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use. (7 p. 179)

3.5 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (7)

To analyze vibration impacts originating from the operation and construction of Clinton Keith Marketplace, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Wildomar does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (11 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

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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. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

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

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach *recognizes that there is no single noise increase that renders the noise impact significant.* (12) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (13) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}). The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (14 p. 2_48).

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.4, the vibration impacts originating from the construction of Clinton Keith Marketplace, vibration-generating activities are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or air strips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project site is not located within two miles of an airport or airstrip. The closest airport is the French Valley Airport located roughly 7 miles east of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

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

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	Nighttime
Operational	Exterior Noise Level Standards[1]	65 dBA L_{eq}	45 dBA L_{eq}
	If ambient is < 60 dBA Leq[2]	≥ 5 dBA L_{eq} Project increase	
	If ambient is 60 - 65 dBA Leq[2]	≥ 3 dBA L_{eq} Project increase	
	If ambient is > 65 dBA Leq[2]	≥ 1.5 dBA L_{eq} Project increase	
Construction	Exempt from the provisions of noise ordinance between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May[3]		
	Noise Level Threshold[4]	80 dBA L_{eq}	
	Vibration Level Threshold[5]	0.3 PPV (in/sec)	

[1] City of Wildomar General Plan Policy N 4.1.
[2] FICON, 1992.
[3] City of Wildomar Municipal Code Section 9.40.020[I].
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[5] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four 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, October 23rd, 2019. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the 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 every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat 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*. (7)

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. (7) 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 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. 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 5.2 provides a summary of the existing hourly ambient noise levels.

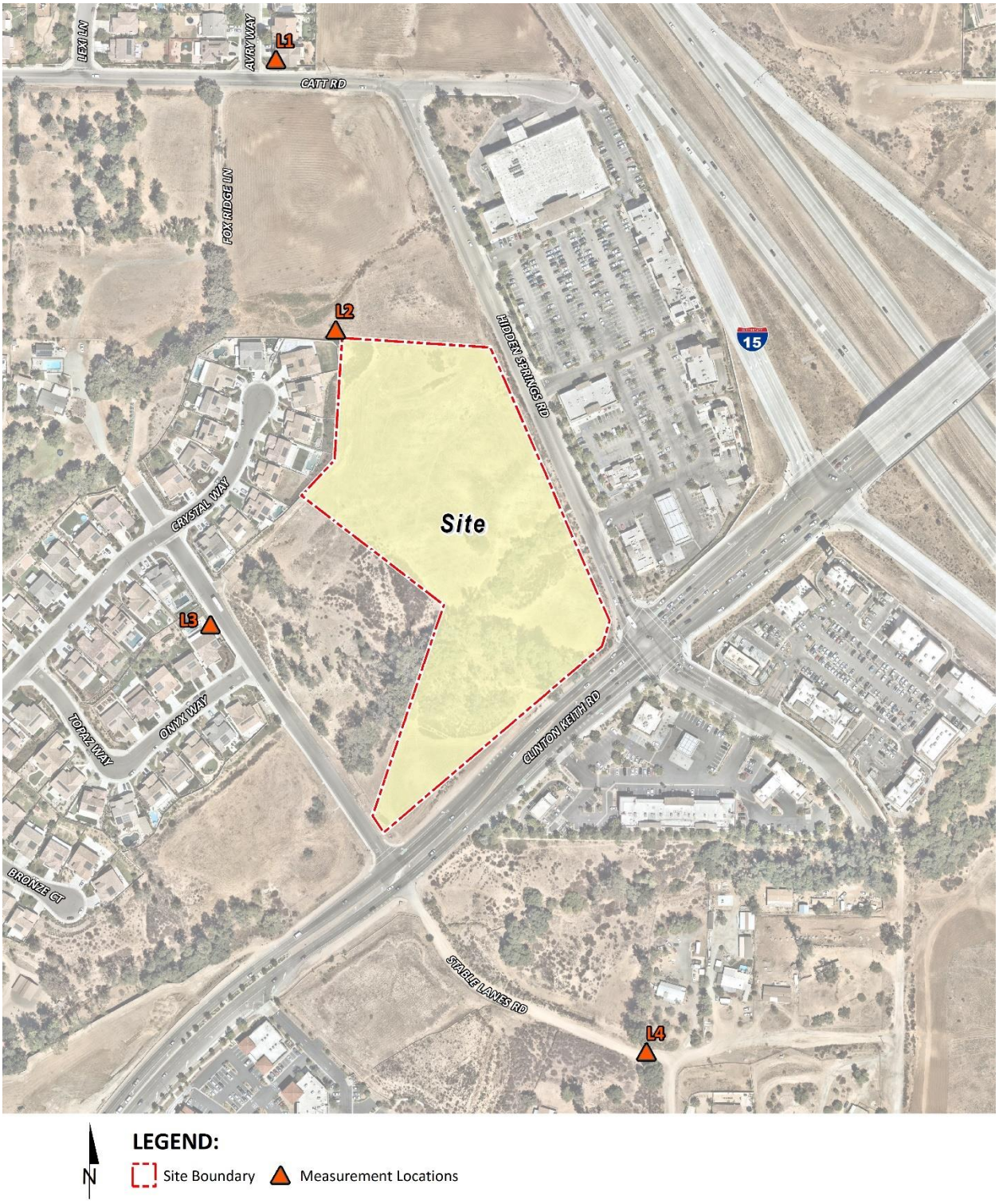
TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located north of Project site on Catt Road near existing single-family homes.	70.3	64.6
L2	Located at the northwestern boundary of the Project site near existing single-family residential homes.	53.0	57.2
L3	Located west of the Project site on Stable Lanes Road near existing single-family homes.	58.2	55.9
L4	Located south of the Project site on Stable Lanes Road and Villa Del Sol near existing residential homes.	49.6	51.1

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

Table 5-1 provides the (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 5.2 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.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 METHODS AND PROCEDURES

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

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (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 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the seven study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Wildomar General Plan Circulation Element, and the posted vehicle speeds. For this analysis, soft site conditions are used to analyze the traffic noise impacts within 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 noise study. (18)

Consistent with *Clinton Keith Marketplace Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (19) the off-site traffic noise analysis maintains a peak hour to average daily traffic (peak-to-daily) relationship of approximately 7.93% and includes the following traffic scenarios.

- Existing (2019)
- Existing Plus Project (E+P)
- Opening Year Cumulative (2021) Without Project
- Opening Year Cumulative (2021) With Project

The average daily traffic (ADT) volumes used for this study are presented on Table 6-2. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits and Table 6-4 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the

hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Distance from Centerline to Nearest Adjacent Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Palomar St.	n/o Clinton Keith Rd.	Commercial Retail	64'	50
2	Palomar St.	s/o Clinton Keith Rd.	Commercial Retail	64'	50
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	Commercial Retail	37'	25
4	Clinton Keith Rd.	w/o Palomar St.	Commercial Retail	76'	45
5	Clinton Keith Rd.	e/o Palomar St.	Commercial Retail	76'	45
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	Commercial Retail	76'	45
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	Commercial Retail	76'	45

[1] Sources: City of Wildomar General Plan Land Use Map.
[2] Distance to receiving land use is based upon the right-of-way distances for each functional roadway classification.
[3] Source: Clinton Keith Marketplace Traffic Impact Analysis, Urban Crossroads, Inc.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic[1]			
			Existing (2019)		Opening Year Cumulative (2021)	
			Without Project	With Project	Without Project	With Project
1	Palomar St.	n/o Clinton Keith Rd.	10,694	11,282	14,836	15,424
2	Palomar St.	s/o Clinton Keith Rd.	12,773	13,361	16,431	17,019
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	14,225	17,074	16,286	19,135
4	Clinton Keith Rd.	w/o Palomar St.	16,394	16,982	18,686	19,274
5	Clinton Keith Rd.	e/o Palomar St.	25,146	26,910	34,644	36,408
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	26,672	29,026	37,690	40,044
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	35,865	37,583	48,009	49,727

[1] Source: Clinton Keith Marketplace Traffic Impact Analysis, Urban Crossroads, Inc.

Table 6-3 presents the time-of-day vehicle splits and Table 6-4 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	75.55%	13.96%	10.49%	100.00%
Medium Trucks	48.91%	2.18%	48.91%	100.00%
Heavy Trucks	47.30%	5.40%	47.30%	100.00%

[1] Source: County of Riverside Office of Industrial Hygiene. Values rounded to the nearest one-hundredth.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Roadways[2]	97.42%	1.84%	0.74%	100.00%

[1] Source: County of Riverside Office of Industrial Hygiene.

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7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *Clinton Keith Marketplace Traffic Impact Analysis*. (19) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing 2019 Without / With Project: This scenario refers to the existing 2019 present-day noise conditions, without and with the proposed Project.
- Opening Year Cumulative 2021 Without / With Project: This scenario refers to the background noise conditions without and with the proposed Project for opening year cumulative conditions. Consistent with traffic impact analysis, Opening Year Cumulative conditions includes traffic associated with other known cumulative development projects in conjunction with an ambient growth factor from Existing conditions of 2% per year (compounded annually).

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 through 7-6 present a summary of the exterior traffic noise levels, without barrier attenuation, for the study area roadway segments analyzed from the without Project to the with Project conditions in each traffic scenario. Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING 2019 WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Palomar St.	n/o Clinton Keith Rd.	Commercial Retail	68.7	52	113	243
2	Palomar St.	s/o Clinton Keith Rd.	Commercial Retail	69.5	59	127	273
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	Commercial Retail	66.4	21	46	99
4	Clinton Keith Rd.	w/o Palomar St.	Commercial Retail	68.4	59	128	276
5	Clinton Keith Rd.	e/o Palomar St.	Commercial Retail	70.2	79	170	366
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	Commercial Retail	70.5	82	177	381
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	Commercial Retail	71.8	100	216	464

[1] Source: City of Wildomar General Plan Land Use Map.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING 2019 WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Palomar St.	n/o Clinton Keith Rd.	Commercial Retail	68.9	54	117	252
2	Palomar St.	s/o Clinton Keith Rd.	Commercial Retail	69.7	61	131	282
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	Commercial Retail	67.2	24	52	112
4	Clinton Keith Rd.	w/o Palomar St.	Commercial Retail	68.5	61	131	282
5	Clinton Keith Rd.	e/o Palomar St.	Commercial Retail	70.5	83	178	383
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	Commercial Retail	70.9	87	187	403
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	Commercial Retail	72.0	103	222	479

[1] Source: City of Wildomar General Plan Land Use Map.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: OPENING YEAR WITHOUT PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Palomar St.	n/o Clinton Keith Rd.	Commercial Retail	70.1	65	140	302
2	Palomar St.	s/o Clinton Keith Rd.	Commercial Retail	70.6	70	150	323
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	Commercial Retail	67.0	23	50	109
4	Clinton Keith Rd.	w/o Palomar St.	Commercial Retail	69.0	65	140	301
5	Clinton Keith Rd.	e/o Palomar St.	Commercial Retail	71.6	98	211	454
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	Commercial Retail	72.0	103	223	480
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	Commercial Retail	73.1	122	262	564

[1] Source: City of Wildomar General Plan Land Use Map.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: OPENING YEAR WITH PROJECT NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Palomar St.	n/o Clinton Keith Rd.	Commercial Retail	70.3	67	144	310
2	Palomar St.	s/o Clinton Keith Rd.	Commercial Retail	70.7	71	154	331
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	Commercial Retail	67.7	26	56	121
4	Clinton Keith Rd.	w/o Palomar St.	Commercial Retail	69.1	66	142	307
5	Clinton Keith Rd.	e/o Palomar St.	Commercial Retail	71.9	101	218	469
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	Commercial Retail	72.3	108	232	500
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	Commercial Retail	73.2	124	268	577

[1] Source: City of Wildomar General Plan Land Use Map.
[2] "RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITIONS 2019 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report. However, the analysis of existing traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until future cumulative conditions.

Table 7-1 presents the Existing without Project conditions CNEL noise levels. The exterior noise levels are shown to range from 66.4 to 71.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 67.2 to 72.0 dBA CNEL. As shown on Table 7-5 the Project will generate a noise level increase of up to 0.8 dBA CNEL on the study area roadway segments.

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

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Threshold[2]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Palomar St.	n/o Clinton Keith Rd.	Commercial Retail	68.7	68.9	0.2	1.5	No
2	Palomar St.	s/o Clinton Keith Rd.	Commercial Retail	69.5	69.7	0.2	1.5	No
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	Commercial Retail	66.4	67.2	0.8	1.5	No
4	Clinton Keith Rd.	w/o Palomar St.	Commercial Retail	68.4	68.5	0.1	1.5	No
5	Clinton Keith Rd.	e/o Palomar St.	Commercial Retail	70.2	70.5	0.3	1.5	No
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	Commercial Retail	70.5	70.9	0.4	1.5	No
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	Commercial Retail	71.8	72.0	0.2	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

7.3 OPENING YEAR CUMULATIVE CONDITION PROJECT TRAFFIC NOISE LEVELS

Table 7-3 presents the Opening Year Cumulative 2021 without Project conditions CNEL noise levels which are expected to range from 67.0 to 73.1 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the Opening Year Cumulative 2021 with Project conditions will range from 67.7 to 73.2 dBA CNEL. As shown on Table 7-6 the Project will generate a noise level increase of up to 0.7 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4, the Project-related noise level increases are considered *less than significant* under Opening Year Cumulative 2021 with Project conditions at the land uses adjacent to roadways conveying Project traffic.

TABLE 7-6: OPENING YEAR CUMULATIVE PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Threshold[2]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Palomar St.	n/o Clinton Keith Rd.	Commercial Retail	70.1	70.3	0.2	1.5	No
2	Palomar St.	s/o Clinton Keith Rd.	Commercial Retail	70.6	70.7	0.1	1.5	No
3	Hidden Springs Rd.	n/o Clinton Keith Rd.	Commercial Retail	67.0	67.7	0.7	1.5	No
4	Clinton Keith Rd.	w/o Palomar St.	Commercial Retail	69.0	69.1	0.1	1.5	No
5	Clinton Keith Rd.	e/o Palomar St.	Commercial Retail	71.6	71.9	0.3	1.5	No
6	Clinton Keith Rd.	e/o Stable Lanes Rd.	Commercial Retail	72.0	72.3	0.3	1.5	No
7	Clinton Keith Rd.	e/o Hidden Springs Rd.	Commercial Retail	73.1	73.2	0.1	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] Significance Criteria (Section 4).

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8 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for 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.

To describe the potential off-site Project noise levels, nine receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents the existing noise sensitive residence at 35992 Avry Way, approximately 636 feet north of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R1 is placed at the residential building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise sensitive residence at 23527 Crystal Way, approximately 39 feet west of the Project site. R2 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing noise sensitive residence at 23515 Crystal Way, approximately 44 feet west of the Project site. R3 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R4: Location R4 represents the existing noise sensitive residence at 23503 Crystal Way, approximately 58 feet west of the Project site. R4 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement near this location, L2, is used to describe the existing ambient noise environment.

R5: Location R5 represents the existing noise sensitive residence at 23491 Crystal Way, approximately 55 feet west of the Project site. R5 is placed in the private outdoor living

areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

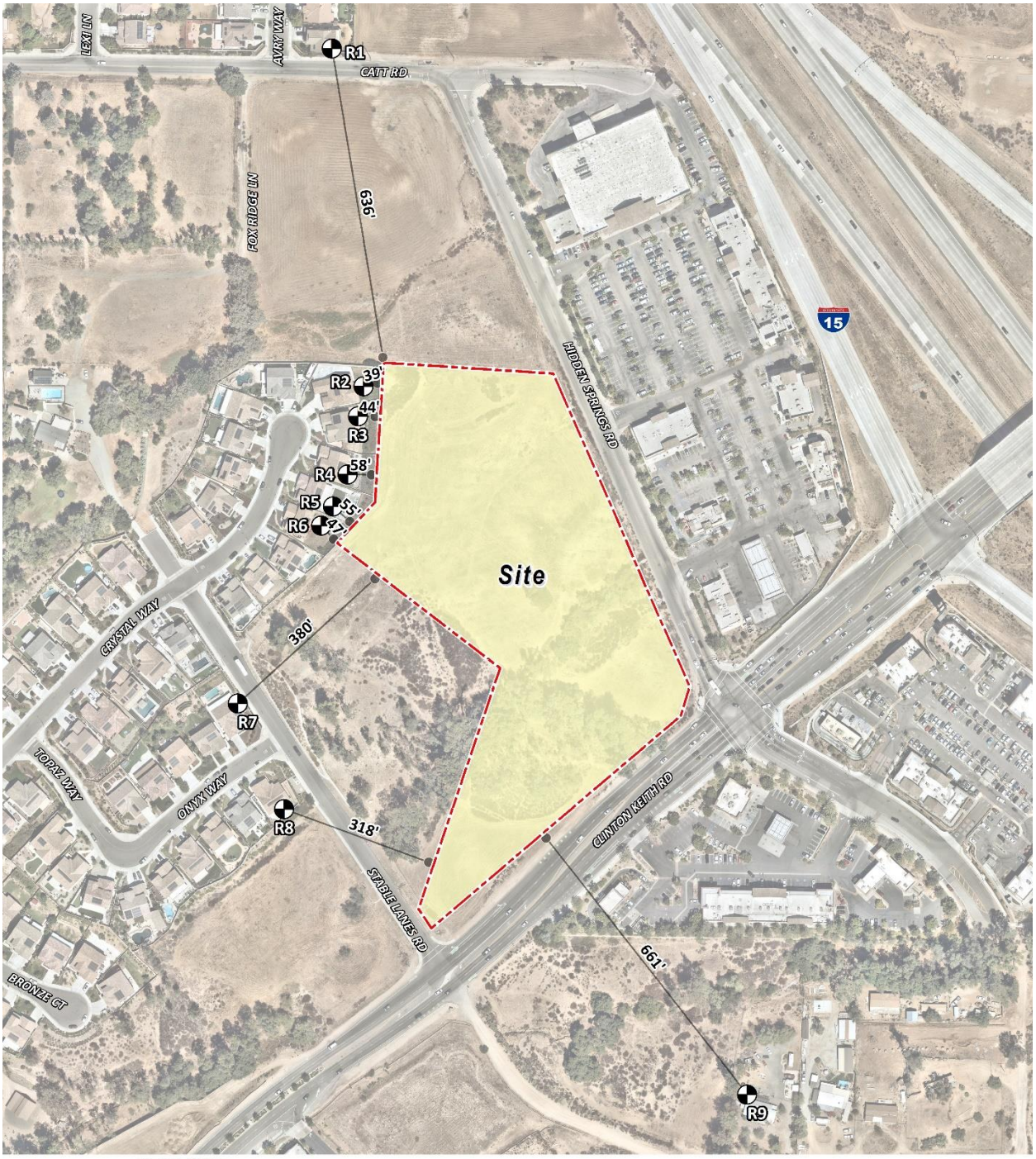
R6: Location R6 represents the existing noise sensitive residence at 23483 Crystal Way, approximately 47 feet west of the Project site. R5 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R7: Location R7 represents the existing noise sensitive residence at 23428 Onyx Way, approximately 380 feet west of the Project site. R5 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R8: Location R8 represents the existing noise sensitive residence at 23413 Onyx Way, approximately 318 feet west of the Project site. R5 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R9: Location R9 represents the existing noise sensitive residence at 23425 Onyx Way, approximately 661 feet south of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R9 is placed at the residential building façade. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS



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9 OPERATIONAL NOISE ANALYSIS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of Clinton Keith Marketplace Project. Exhibit 9-A identifies the representative noise source activities used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical daytime and nighttime activities at the Project site. The on-site Project-related noise sources are expected to include: roof-top air conditioning units, outdoor seating activity, drive-through speakerphone, trash enclosure activity, parking lot vehicle movements, outdoor loading dock activity, car wash tunnel, and car wash vacuum activity.

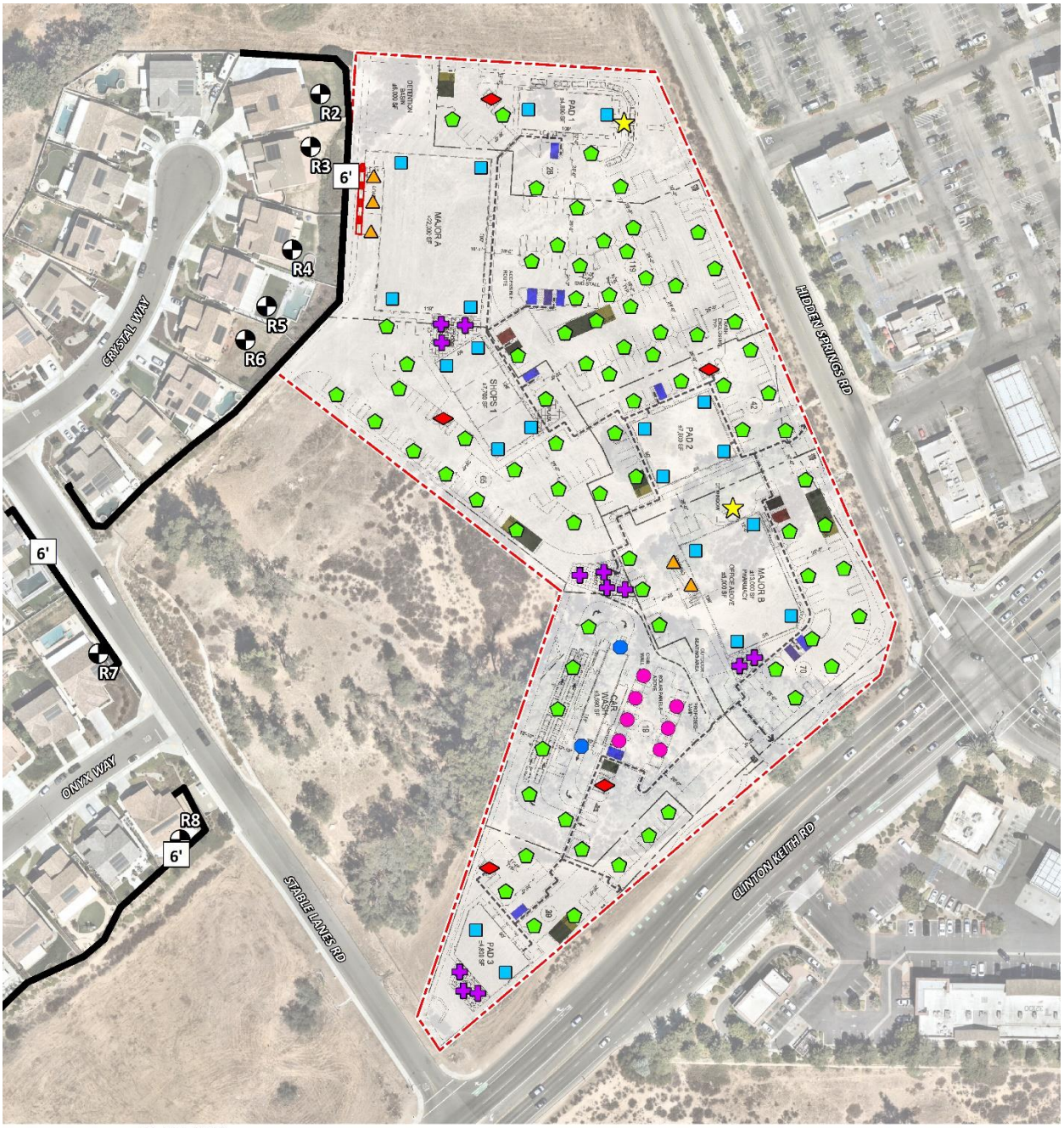
9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the roof-top air conditioning units, outdoor seating activity, drive-through speakerphone, trash enclosure activity, parking lot vehicle movements, outdoor loading dock activity, car wash tunnel, and car wash vacuum activity all operating at the same time. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. 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)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS



LEGEND:

- Receiver Locations
- 6' Existing Barrier Height (in feet)
- Existing Barrier
- Planned 10-Foot High Screenwall
- Roof-Top Air Conditioning Unit
- Outdoor Seating Activity
- Drive-Through Speakerphone
- Trash Enclosure Activity
- Parking Lot Vehicle Movements
- Loading Dock Activity
- Car Wash Vacuum
- Car Wash Tunnel

N

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source[1]	Noise Source Height (Feet)	Min./Hour[2]		Reference Noise Level @50 feet (dBA L_{eq})	Sound Power Level (dBA)[3]
		Day	Night		
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Outdoor Seating Activity	4'	60	0	59.8	91.5
Drive-Thru Activity	3'	60	30	51.5	83.2
Trash Enclosure Activity	5'	10	10	56.8	89.0
Parking Lot Vehicle Movements	5'	60	30	56.1	87.8
Outdoor Loading Dock Activity	8'	60	0	62.8	103.4
Car Wash Tunnel	8'	60	0	74.3	106.0
Car Wash Vacuum	3'	60	0	54.6	86.3

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source.

9.2.2 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units, reference noise level measurements were collected from a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise levels are 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for an average of 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. For this noise analysis, the air conditioning units are expected to be located on the roof of the proposed building. This reference noise level describes the expected roof-top air conditioning units located 5 feet above the roof for the planned air conditioning units at the Project site.

9.2.3 OUTDOOR SEATING ACTIVITY

To describe the outdoor common area courtyards activity areas, a reference noise level measurement was taken. At 50 feet, the reference noise level is 59.8 dBA L_{eq} at a noise source height of 5 feet. The reference noise level measurement includes outdoor eating, drinking, with laughing and talking. Outdoor common area activities are limited to the daytime hours only.

9.2.4 DRIVE-THRU SPEAKERPHONE ACTIVITY

To describe the potential noise level impacts associated with potential drive-thru speakerphones and vehicle activities, a reference noise level measurement was collected. The reference noise levels collected are expected to reflect potential drive-thru speakerphone noise level activities at the Project site, since the reference measurement includes both drive-thru speakerphone and vehicle activity noise. The noise sources included in the reference noise level measurement

consist of voices of the employees over the speakerphone, customers' voices ordering food, car engines idling, car radios playing music, and cars queuing in the drive-thru lane. At 50 feet from the speakerphone, a reference noise level of 51.5 dBA L_{eq} was measured.

9.2.5 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project site. The measured reference noise level at the uniform 50-foot reference distance is 56.8 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

9.2.6 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity a reference noise level of 56.1 dBA L_{eq} at 50 feet is used. Parking activities are expected to take place for the full hour (60 minutes) throughout the daytime hours and 30 minutes during nighttime hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination with sales staff talking to customers.

9.2.7 OUTDOOR LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck. Outdoor loading dock activities are limited to the daytime hours only.

9.2.8 CAR WASH TUNNEL

A reference noise level measurement was taken by Urban Crossroads to describe the air blowers used in a car wash tunnel. A reference noise level of 74.3 dBA L_{eq} was measured at the uniform distance of 50 feet. The reference noise level measurement includes an exposed five-unit air blower system with background pressure washer noise and is used to represent the proposed Project facilities. It is anticipated that the air dryers within the proposed car wash will operate

continuously during the peak operating conditions. Further, this noise analysis does not include any additional attenuation or directional influence provided by locating the car wash air blower and dryer equipment inside the tunnel itself, but rather, models the tunnel exit activities as occurring at the building façade. As such, the analysis may conservatively overstate actual noise levels produced by the car wash tunnel air blower and dryer equipment. The car wash tunnel will be limited to the daytime hours only.

9.2.9 CAR WASH VACUUM

To represent the self-serve vacuums within the Project site, a reference noise level measurement was collected at an express car wash. The reference noise level measurement represents up to four vacuums operating simultaneously. At a uniform reference distance of 50 feet, the vacuum reference noise level is 54.6 dBA L_{eq}. This reference car wash vacuum activity noise level is anticipated to conservatively overstate those of the Project, since this reference noise level includes more vacuums operating simultaneously (4 vacuums) than what will be possible at the Project site (2 vacuums). The car wash vacuum will be limited to the daytime hours only.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include roof-top air conditioning units, outdoor seating activity, drive-through speakerphone, trash enclosure activity, parking lot vehicle movements, outdoor loading dock activity, car wash tunnel, and car wash vacuum activity, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations with the existing 6-foot high walls shown on Exhibit 9-A. Table 9-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 42.4 to 55.1 dBA L_{eq}.

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)								
	R1	R2	R3	R4	R5	R6	R7	R8	R9
Roof-Top Air Conditioning Units	33.5	45.2	42.1	44.3	44.4	43.1	37.4	41.3	36.0
Outdoor Seating Activity	21.2	25.5	26.6	32.6	39.2	39.3	36.5	43.8	34.9
Drive-Thru Activity	2.4	10.5	9.7	7.3	7.0	6.6	10.9	17.0	8.9
Trash Enclosure Activity	16.3	28.8	24.0	22.9	24.5	24.0	23.0	29.4	20.9
Parking Lot Vehicle Movements	33.4	41.4	38.7	41.8	43.5	43.5	39.2	44.9	39.1
Outdoor Loading Dock Activity	40.8	50.1	53.1	53.3	50.7	49.9	43.1	49.4	43.1
Car Wash Tunnel	28.5	31.1	31.6	35.9	37.4	38.3	43.6	52.1	44.1
Car Wash Vacuum	11.1	13.3	13.7	16.1	15.9	16.2	16.8	31.3	26.9
Total (All Noise Sources)	**42.4**	**51.8**	**53.6**	**54.2**	**52.6**	**51.9**	**47.9**	**55.1**	**47.9**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

Table 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 33.4 to 44.0 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the duration of noise activity (Table 9-1). Appendix 9.1 includes the detailed noise model inputs including the existing perimeter walls used to estimate the Project operational noise levels presented in this section.

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)								
	R1	R2	R3	R4	R5	R6	R7	R8	R9
Roof-Top Air Conditioning Units	31.1	42.8	39.7	41.9	42.0	40.7	35.0	38.8	33.5
Outdoor Seating Activity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Drive-Thru Activity	0.0	6.5	5.7	3.4	3.0	2.7	6.9	13.0	5.0
Trash Enclosure Activity	15.3	27.9	23.0	21.9	23.5	23.0	22.1	28.4	19.9
Parking Lot Vehicle Movements	29.4	37.4	34.7	37.8	39.5	39.6	35.2	41.0	35.1
Outdoor Loading Dock Activity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Car Wash Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Car Wash Vacuum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total (All Noise Sources)	**33.4**	**44.0**	**41.0**	**43.4**	**44.0**	**43.2**	**38.2**	**43.2**	**37.5**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Wildomar exterior noise level standards at nearby noise-sensitive receiver locations. Table 9-4 shows the operational noise levels associated with Clinton Keith Marketplace Project will satisfy the City of Wildomar 65 dBA L_{eq} daytime and 45 dBA L_{eq} nighttime exterior noise level standards at all nearby receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	42.4	33.4	65	45	No	No
R2	51.8	44.0	65	45	No	No
R3	53.6	41.0	65	45	No	No
R4	54.2	43.4	65	45	No	No
R5	52.6	44.0	65	45	No	No
R6	51.9	43.2	65	45	No	No
R7	47.9	38.2	65	45	No	No
R8	55.1	43.2	65	45	No	No
R9	47.9	37.5	65	45	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-2 and 9-3.
[3] Exterior noise level standards for source (commercial) land use, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

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

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

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-5, and 9-6, respectively. As indicated on Tables 9-5, the Project will generate a daytime operational noise level increases ranging from 0.0 to 3.6 dBA L_{eq} at the nearest receiver locations. Table 9-6 shows that the Project will generate a nighttime operational noise level increases ranging from 0.0 to 2.6 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the increases at the sensitive receiver locations will be *less than significant.*

TABLE 9-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Noise Sensitive Land Use?	Increase Criteria[7]	Increase Criteria Exceeded?
R1	42.4	L1	70.3	70.3	0.0	Yes	1.5	No
R2	51.8	L2	53.0	55.5	2.5	Yes	5.0	No
R3	53.6	L2	53.0	56.3	3.3	Yes	5.0	No
R4	54.2	L2	53.0	56.6	3.6	Yes	5.0	No
R5	52.6	L2	53.0	55.8	2.8	Yes	5.0	No
R6	51.9	L2	53.0	55.5	2.5	Yes	5.0	No
R7	47.9	L3	58.2	58.6	0.4	Yes	5.0	No
R8	55.1	L3	58.2	59.9	1.7	Yes	5.0	No
R9	47.9	L4	49.6	51.9	2.3	Yes	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 9-6: NIGHTTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Noise Sensitive Land Use?	Increase Criteria[7]	Increase Criteria Exceeded?
R1	42.4	L1	64.6	64.6	0.0	Yes	3.0	No
R2	51.8	L2	57.2	58.3	1.1	Yes	5.0	No
R3	53.6	L2	57.2	58.8	1.6	Yes	5.0	No
R4	54.2	L2	57.2	59.0	1.8	Yes	5.0	No
R5	52.6	L2	57.2	58.5	1.3	Yes	5.0	No
R6	51.9	L2	57.2	58.3	1.1	Yes	5.0	No
R7	47.9	L3	55.9	56.5	0.6	Yes	5.0	No
R8	55.1	L3	55.9	58.5	2.6	Yes	5.0	No
R9	47.9	L4	51.1	52.8	1.7	Yes	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

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 nearest sensitive receiver locations previously described in Section 8. According the City of Wildomar Municipal Code Section 9.48.020 (I) *noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May*. (10)

In addition, since neither the City of Wildomar General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use. (7 p. 179)

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). (20). 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 (21) to describe the typical construction activities for each stage of Project construction.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})
Site Preparation	Crawler Tractors	77	79
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Compactors	67	
	Excavators	64	
Building Construction	Tractors	72	74
	Cranes	67	
	Welders	65	
Paving	Pavers	70	74
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	72
	Air Compressors	67	
	Generator Sets	67	

[1] Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA) expressed in hourly average L_{eq} based on estimated usage factors from the FHWA Roadway Construction Noise Model (RCNM).
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance for general construction noise assessment.

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. Consistent with FTA guidance for general construction noise assessment, Table 10-1 presents the combined noise level for all equipment, assuming they operate at the same time. As shown on Table 10-2, the construction noise levels are expected to range from 49.9 to 71.0 dBA L_{eq}, and the highest construction levels are expected to range from 56.9 to 71.0 dBA L_{eq} at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs. The construction noise analysis presents a conservative approach with the highest combined 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	56.9	56.9	51.9	51.9	49.9	56.9
R2	71.0	71.0	66.0	66.0	64.0	71.0
R3	67.4	67.4	62.4	62.4	60.4	67.4
R4	65.5	65.5	60.5	60.5	58.5	65.5
R5	66.8	66.8	61.8	61.8	59.8	66.8
R6	66.5	66.5	61.5	61.5	59.5	66.5
R7	59.5	59.5	54.5	54.5	52.5	59.5
R8	65.4	65.4	60.4	60.4	58.4	65.4
R9	59.0	59.0	54.0	54.0	52.0	59.0

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

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 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown 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	56.9	80	No
R2	71.0	80	No
R3	67.4	80	No
R4	65.5	80	No
R5	66.8	80	No
R6	66.5	80	No
R7	59.5	80	No
R8	65.4	80	No
R9	59.0	80	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 10-2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

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

Table 10-5 presents the expected Project related vibration levels at the nearest receiver locations. At distances ranging from 39 to 661 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.001 to 0.046 PPV (in/sec). Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec) for older residential buildings, the typical Project construction vibration levels will satisfy the building damage thresholds at all receiver locations. 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.

TABLE 10-5: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver[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	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level		
R1	636'	0.000	0.000	0.001	0.001	0.001	0.3	No
R2	39'	0.002	0.018	0.039	0.046	0.046	0.3	No
R3	44'	0.001	0.015	0.033	0.038	0.038	0.3	No
R4	58'	0.001	0.010	0.022	0.025	0.025	0.3	No
R5	55'	0.001	0.011	0.023	0.027	0.027	0.3	No
R6	47'	0.001	0.014	0.029	0.035	0.035	0.3	No
R7	380'	0.000	0.001	0.001	0.002	0.002	0.3	No
R8	318'	0.000	0.001	0.002	0.002	0.002	0.3	No
R9	661'	0.000	0.000	0.001	0.001	0.001	0.3	No

[1] 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 10-4).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2019.
2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **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.* March 1974. EPA/ONAC 550/9/74-004.
4. **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.
5. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
6. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
7. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
8. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
9. **City of Wildomar.** *General Plan Noise Element.* October 2003.
10. **City of Jurupa Valley.** *Municipal Code, Chapter 9.48 - Noise Regulations.*
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12. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
13. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
14. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
15. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
16. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
17. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
18. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
19. **Urban Crossroads, Inc.** *Clinton Keith Marketplace Traffic Impact Analysis.* October 2019.
20. **Department of Environment, Food and Rural Affiars (Defra).** *Update of Noise Database for Prediction of Noise on Construction and Open Sites.* 2004.
21. **FHWA.** *Roadway Construction Noise Model.* January 2006.

12 CERTIFICATIONS

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Clinton Keith Marketplace Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of San Diego • March, 2018
Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF WILDOMAR MUNICIPAL CODE

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Chapter 9.48 NOISE REGULATION

9.48.010 Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of the City of Wildomar residents and degrade their quality of life. Pursuant to its police power, the City Council declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish City-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established. (Ord. 18 § 2, 2008, RCC § 9.52.010)

9.48.020 Exemptions.

Sound emanating from the following sources is exempt from the provisions of this chapter:

A. Facilities owned or operated by or for a governmental agency;

B. Capital improvement projects of a governmental agency;

C. The maintenance or repair of public properties;

D. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;

E. Public or private schools and school-sponsored activities;

F. Agricultural operations on land designated “agriculture” in the City General Plan, or land zoned A-l (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;

G. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Title 17;

H. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;

I. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:

1. Construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, and

2. Construction does not occur between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May;

J. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of 7:00 a.m. and 8:00 p.m.;

K. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

L. Heating and air conditioning equipment;

M. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

N. The discharge of firearms consistent with all state laws. (Ord. 18 § 2, 2008, RCC § 9.52.020)

9.48.030 Definitions.

As used in this chapter, the following terms shall have the following meanings:

"Audio equipment" means a television, stereo, radio, tape player, compact disc player, mp3 player, iPod or other similar device.

"Decibel (dB)" means a unit for measuring the relative amplitude of a sound equal approximately to the smallest difference normally detectable by the human ear, the range of which includes approximately 130 decibels on a scale beginning with zero decibels for the faintest detectable sound. Decibels are measured with a sound level meter using different methodologies as defined below:

1. "A-weighting (dBA)" means the standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.
2. "Maximum sound level (L_{max})" means the maximum sound level measured on a sound level meter.

"Governmental agency" means the United States, the State of California, Riverside County, any city within Riverside County, any special district within Riverside County, the City of Wildomar or any combination of these agencies.

"Land use permit" means a discretionary permit issued by the City pursuant to Title 17.

"Motor vehicle" means a vehicle that is self-propelled.

"Motor vehicle sound system" means a stereo, radio, tape player, compact disc player, mp3 player, iPod or other similar device.

"Noise" means any loud, discordant or disagreeable sound.

"Occupied property" means property upon which is located a residence, business or industrial or manufacturing use.

"Off-highway vehicle" means a motor vehicle designed to travel over any terrain.

"Public or private school" means an institution conducting academic instruction at the preschool, elementary school, junior high school, high school, or college level.

"Public property" means property owned by a governmental agency or held open to the public, including, but not limited to, parks, streets, sidewalks, and alleys.

"Sensitive receptor" means a land use that is identified as sensitive to noise in the noise element of the City General Plan, including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

"Sound-amplifying equipment" means a loudspeaker, microphone, megaphone or other similar device.

"Sound level meter" means an instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data. (Ord. 18 § 2, 2008, RCC § 9.52.030)

9.48.040 General sound level standards.

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

TABLE 1

Sound Level Standards (Db L_{max})

GENERAL PLAN FOUNDATION COMPONENT	GENERAL PLAN LAND USE DESIGNATION	GENERAL PLAN LAND USE DESIGNATION NAME	DENSITY	MAXIMUM DECIBEL LEVEL	
				7 am—10 pm	10 pm—7 am
Community Development	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45

	MDR	Medium Density Residential	2—5	55	45
	MHDR	Medium High Density Residential	5—8	55	45
	HDR	High Density Residential	8—14	55	45
	VHDR	Very High Density Residential	14—20	55	45
	H'TDR	Highest Density Residential	20+	55	45
	CR	Retail Commercial		65	55
	CO	Office Commercial		65	55
	CT	Tourist Commercial		65	55
	CC	Community Center		65	55
	LI	Light Industrial		75	55
	HI	Heavy Industrial		75	75
	BP	Business Park		65	45
	PF	Public Facility		65	45
	SP	Specific Plan-Residential		55	45
		Specific Plan-Commercial		65	55
		Specific Plan-Light Industrial		75	55
		Specific Plan-Heavy Industrial		75	75
Rural Community	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
Rural	RR	Rural Residential	5 AC	45	45
	RM	Rural Mountainous	10 AC	45	45
	RD	Rural Desert	10 AC	45	45
Agriculture	AG	Agriculture	10 AC	45	45
Open Space	C	Conservation		45	45
	CH	Conservation Habitat		45	45
	REC	Recreation		45	45
	RUR	Rural	20 AC	45	45
	W	Watershed		45	45
	MR	Mineral Resources		75	45

(Ord. 18 § 2, 2008, RCC § 9.52.040)

9.48.050 Sound level measurement methodology.

Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in Section 9.48.080 of this chapter. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually. (Ord. 18 § 2, 2008, RCC § 9.52.050)

9.48.060 Special sound sources standards.

The general sound level standards set forth in Section 9.48.040 of this chapter apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitutes separate violations of this chapter:

A. Motor Vehicles.

1. Off-Highway Vehicles.

a. No person shall operate an off-highway vehicle unless it is equipped with a USDA-qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.

b. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than 96 dBA if the vehicle was manufactured on or after January 1, 1986 or is not more than 101 dBA if the vehicle was manufactured before January 1, 1986. For purposes of this subsection, emitted noise shall be measured a distance of 20 inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

2. Sound Systems. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of 10:00 p.m. and 8:00 a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than 100 feet from the vehicle.

B. Power Tools and Equipment. No person shall operate any power tools or equipment between the hours of 10:00 p.m. and 8:00 a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than 100 feet from the power tools or equipment.

C. Audio Equipment. No person shall operate any audio equipment, whether portable or not, between the hours of 10:00 p.m. and 8:00 a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than 100 feet from the equipment.

D. Sound-Amplifying Equipment and Live Music. No person shall install, use or operate sound-amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control:

1. Sound-amplifying equipment or live music is prohibited between the hours of 10:00 p.m. and 8:00 a.m.

2. Sound emanating from sound-amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than 200 feet from the equipment or music. (Ord. 18 § 2, 2008, RCC § 9.52.060)

9.48.070 Exceptions.

Exceptions may be requested from the standards set forth in Section 9.48.040 or 9.48.060 of this chapter and may be characterized as construction-related, single-event or continuous-events exceptions.

A. Application and Processing.

1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the Director of Building and Safety on forms provided by the Building and Safety Department and shall be accompanied by the appropriate filing fee. No public hearing is required.

2. Single-Event Exceptions. An application for a single-event exception shall be made to and considered by the Planning Director on forms provided by the Planning Department and shall be accompanied by the appropriate filing fee. No public hearing is required.

3. Continuous-Events Exceptions. An application for a continuous-events exception shall be made to the Planning Director on forms provided by the Planning Department and shall be accompanied by the appropriate filing fee. Upon receipt of an application for a continuous-events exception, the Planning Director shall set the matter for public hearing before the Planning Commission, notice of which shall be given as provided in Title 17. Notwithstanding the above, an application for a continuous-events exception that is associated with an application for a land use permit shall be processed concurrently with the land use permit in the same manner that the land use permit is required to be processed.

B. Requirements for Approval. The appropriate decision-making body or officer shall not approve an exception application unless the applicant demonstrates that the activities described in the application would not be detrimental to the health, safety or general welfare of the community. In determining whether activities are detrimental to the health, safety or general welfare of the community, the appropriate decision-making body or officer shall consider such factors as the proposed duration of the activities and their location in relation to sensitive receptors. If an exception application is approved, reasonable conditions may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours.

C. Appeals. The Director of Building and Safety's decision on an application for a construction-related exception is considered final. The Planning Director's decision on an application for a single-event exception is considered final. After making a decision on an application for a continuous-events exception, the appropriate decision-making body or officer shall mail notice of the decision to the applicant. Within 10 calendar days after the mailing of such notice, the applicant or an interested person may appeal the decision to the City Council. Upon receipt of an appeal and payment of the appropriate appeal fee, the City Clerk shall set the matter for hearing not less than five days nor more than 30 days thereafter and shall give written notice of the hearing in the same manner as notice of the hearing was given by the appropriate hearing officer or body. The City Council shall render its decision within 30 days after the appeal hearing is closed.

D. Effect of a Pending Continuous-Events Exception Application. For a period of 180 days from the effective date of the ordinance codified in this chapter, no person creating any sound prohibited by this chapter shall be considered in violation of this chapter if the sound is related to a use that is operating pursuant to an approved land use permit, if an application for a continuous-events exception has been filed to sanction the sound and if a decision on the application is pending. (Ord. 18 § 2, 2008, RCC § 9.52.070)

9.48.080 Enforcement.

The Chief of Police and Code Enforcement Department shall have the primary responsibility for enforcing this chapter; provided, however, the Chief of Police and Code Enforcement Department may be assisted by the Public Health Department. Violations shall be prosecuted as described in Section 9.48.100 of this chapter, but nothing in this chapter shall prevent the Chief of Police, Code Enforcement or the Department of

Public Health from engaging in efforts to obtain voluntary compliance by means of warnings, notices, or educational programs. (Ord. 18 § 2, 2008, RCC § 9.52.080)

9.48.090 Duty to cooperate.

No person shall refuse to cooperate with, or obstruct, the enforcement officials identified in Section 9.48.080 of this chapter when they are engaged in the process of enforcing the provisions of this chapter. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this chapter. (Ord. 18 § 2, 2008, RCC § 9.52.090)

9.48.100 Violations and penalties.

Any person who violates any provision of this chapter once or twice within a 180-day period shall be guilty of an infraction. Any person who violates any provision of this chapter more than twice within a 180-day period shall be guilty of a misdemeanor. Each day a violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. Penalties shall not exceed the following amounts:

A. For the first violation within a 180-day period, the minimum mandatory fine shall be $500.00.

B. For the second violation within a 180-day period, the minimum mandatory fine shall be $750.00.

C. For any further violations within a 180-day period, the minimum mandatory fine shall be $1,000.00 or imprisonment for a period not exceeding six months, or both. (Ord. 18 § 2, 2008, RCC § 9.52.100)

View the mobile version.

APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 12521 Study Area Photos

L1_E
33, 35' 52.470000", 117, 14' 59.370000"

L1_N
33, 35' 52.620000", 117, 14' 59.530000"

L1_S
33, 35' 52.540000", 117, 14' 59.400000"

L1_W
33, 35' 52.470000", 117, 14' 59.370000"

L2_E
33, 35' 46.450000", 117, 14' 57.720000"

L2_N
33, 35' 28.850000", 117, 15' 24.060000"

L2_S
33, 35' 46.540000", 117, 14' 57.470000"

L2_W
33, 35' 46.450000", 117, 14' 57.720000"

L3_G
33, 35' 39.750000", 117, 15' 0.960000"

L3_N
33, 35' 40.590000", 117, 15' 3.540000"

L3_S
33, 35' 39.750000", 117, 15' 0.960000"

L3_W
33, 35' 39.770000", 117, 15' 1.020000"

JN: 12521 Study Area Photos

L4_E
33, 35' 30.030000", 117, 14' 49.210000"

L4_N
33, 35' 31.220000", 117, 14' 53.790000"

L4_S
33, 35' 30.030000", 117, 14' 49.210000"

L4_W
33, 35' 30.190000", 117, 14' 49.120000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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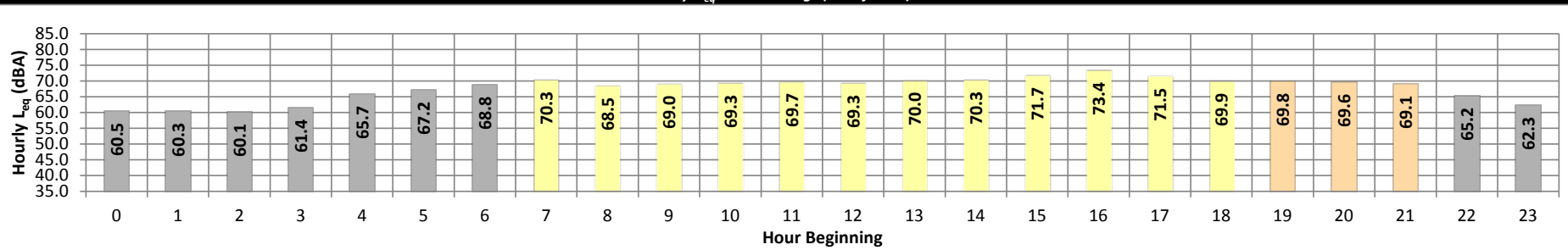
24-Hour Noise Level Measurement Summary

Date: Wednesday, October 23, 2019 *Location:* L1 - Located north of Project site on Catt road near existing single-family homes. *Meter:* Piccolo I *JN:* 12521

Project: The Commons at Hidden Springs *Analyst:* P. Mara

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	60.5	79.5	43.7	72.0	70.0	66.0	64.0	57.0	54.0	49.0	48.0	46.0	60.5	10.0	70.5
	1	60.3	78.9	45.5	72.0	70.0	64.0	62.0	58.0	55.0	51.0	50.0	48.0	60.3	10.0	70.3
	2	60.1	86.7	44.9	71.0	69.0	63.0	61.0	56.0	54.0	49.0	49.0	47.0	60.1	10.0	70.1
	3	61.4	82.9	47.9	73.0	71.0	67.0	64.0	58.0	55.0	51.0	50.0	49.0	61.4	10.0	71.4
	4	65.7	83.2	52.9	74.0	73.0	72.0	70.0	64.0	61.0	57.0	56.0	54.0	65.7	10.0	75.7
	5	67.2	85.8	57.1	74.0	74.0	72.0	71.0	67.0	63.0	60.0	60.0	58.0	67.2	10.0	77.2
	6	68.8	84.3	57.9	76.0	75.0	73.0	73.0	70.0	65.0	61.0	60.0	59.0	68.8	10.0	78.8
Day	7	70.3	82.3	56.7	77.0	76.0	75.0	74.0	71.0	68.0	60.0	59.0	57.0	70.3	0.0	70.3
	8	68.5	86.1	50.1	76.0	75.0	73.0	73.0	69.0	64.0	56.0	55.0	52.0	68.5	0.0	68.5
	9	69.0	89.0	48.9	76.0	75.0	74.0	73.0	69.0	65.0	55.0	53.0	51.0	69.0	0.0	69.0
	10	69.3	86.9	47.0	78.0	76.0	74.0	73.0	70.0	65.0	55.0	53.0	50.0	69.3	0.0	69.3
	11	69.7	93.2	45.7	77.0	75.0	74.0	73.0	70.0	65.0	53.0	51.0	48.0	69.7	0.0	69.7
	12	69.3	91.1	47.7	77.0	75.0	74.0	73.0	70.0	66.0	55.0	53.0	50.0	69.3	0.0	69.3
	13	70.0	92.0	46.2	77.0	75.0	74.0	73.0	70.0	66.0	55.0	53.0	49.0	70.0	0.0	70.0
	14	70.3	89.2	51.7	78.0	76.0	74.0	74.0	71.0	67.0	57.0	56.0	54.0	70.3	0.0	70.3
	15	71.7	97.5	52.9	79.0	77.0	75.0	74.0	71.0	68.0	58.0	56.0	54.0	71.7	0.0	71.7
	16	73.4	100.5	54.5	81.0	78.0	76.0	75.0	72.0	69.0	60.0	59.0	57.0	73.4	0.0	73.4
	17	71.5	92.0	55.5	78.0	77.0	75.0	74.0	72.0	69.0	61.0	59.0	57.0	71.5	0.0	71.5
	18	69.9	84.7	53.7	77.0	76.0	74.0	73.0	71.0	67.0	60.0	58.0	57.0	69.9	0.0	69.9
Evening	19	69.8	88.6	56.1	78.0	76.0	74.0	73.0	70.0	66.0	60.0	59.0	57.0	69.8	5.0	74.8
	20	69.6	94.2	53.4	78.0	76.0	74.0	73.0	69.0	64.0	57.0	56.0	54.0	69.6	5.0	74.6
	21	69.1	96.4	53.4	76.0	75.0	73.0	71.0	67.0	62.0	58.0	57.0	54.0	69.1	5.0	74.1
Night	22	65.2	85.2	45.0	75.0	73.0	71.0	70.0	64.0	58.0	51.0	49.0	47.0	65.2	10.0	75.2
	23	62.3	77.3	43.2	73.0	71.0	68.0	66.0	61.0	53.0	47.0	46.0	45.0	62.3	10.0	72.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	68.5	82.3	45.7	76.0	75.0	73.0	73.0	69.0	64.0	53.0	51.0	48.0
	Max	73.4	100.5	56.7	81.0	78.0	76.0	75.0	72.0	69.0	61.0	59.0	57.0
Energy Average		70.5	Average:		77.6	75.9	74.3	73.5	70.5	66.6	57.1	55.4	53.0
Evening	Min	69.1	88.6	53.4	76.0	75.0	73.0	71.0	67.0	62.0	57.0	56.0	54.0
	Max	69.8	96.4	56.1	78.0	76.0	74.0	73.0	70.0	66.0	60.0	59.0	57.0
Energy Average		69.5	Average:		77.3	75.7	73.7	72.3	68.7	64.0	58.3	57.3	55.0
Night	Min	60.1	77.3	43.2	71.0	69.0	63.0	61.0	56.0	53.0	47.0	46.0	45.0
	Max	68.8	86.7	57.9	76.0	75.0	73.0	73.0	70.0	65.0	61.0	60.0	59.0
Energy Average		64.6	Average:		73.3	71.8	68.4	66.8	61.7	57.6	52.9	52.0	50.3

L_{eq} (dBA)

24-Hour	*Daytime*	*Nighttime*
68.9	**70.3**	**64.6**

24-Hour CNEL (dBA)

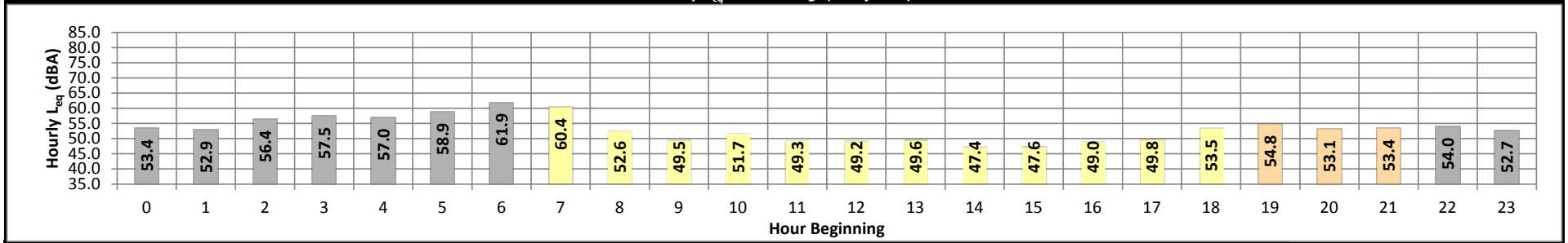
73.0

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 23, 2019 *Location:* L2 - Located at the northwestern boundary of the Project site near existing single-family residential homes. *Meter:* Piccolo I *JN:* 12521

Project: The Commons at Hidden Springs *Analyst:* P. Mara

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	53.4	66.5	40.6	61.0	60.0	58.0	57.0	54.0	51.0	45.0	44.0	42.0	53.4	10.0	63.4
	1	52.9	63.7	41.2	59.0	58.0	57.0	57.0	54.0	50.0	46.0	45.0	43.0	52.9	10.0	62.9
	2	56.4	72.2	41.5	63.0	62.0	60.0	59.0	57.0	54.0	49.0	48.0	45.0	56.4	10.0	66.4
	3	57.5	66.5	45.9	62.0	61.0	60.0	60.0	58.0	57.0	54.0	53.0	50.0	57.5	10.0	67.5
	4	57.0	63.8	52.0	60.0	60.0	59.0	59.0	57.0	56.0	54.0	53.0	52.0	57.0	10.0	67.0
	5	58.9	68.0	52.7	64.0	63.0	62.0	61.0	59.0	58.0	55.0	55.0	54.0	58.9	10.0	68.9
	6	61.9	69.3	54.9	66.0	66.0	65.0	64.0	62.0	61.0	58.0	58.0	56.0	61.9	10.0	71.9
Day	7	60.4	72.2	51.6	65.0	65.0	64.0	63.0	61.0	59.0	54.0	53.0	52.0	60.4	0.0	60.4
	8	52.6	67.3	46.3	56.0	55.0	54.0	53.0	53.0	52.0	50.0	49.0	48.0	52.6	0.0	52.6
	9	49.5	65.0	44.2	54.0	53.0	52.0	51.0	49.0	48.0	46.0	46.0	45.0	49.5	0.0	49.5
	10	51.7	72.1	44.4	60.0	57.0	54.0	53.0	50.0	48.0	46.0	45.0	45.0	51.7	0.0	51.7
	11	49.3	63.3	43.0	58.0	55.0	53.0	51.0	49.0	47.0	45.0	45.0	44.0	49.3	0.0	49.3
	12	49.2	63.2	42.7	58.0	56.0	53.0	51.0	49.0	47.0	45.0	44.0	43.0	49.2	0.0	49.2
	13	49.6	65.4	42.0	59.0	57.0	54.0	52.0	49.0	47.0	44.0	44.0	43.0	49.6	0.0	49.6
	14	47.4	60.7	42.0	53.0	51.0	50.0	49.0	48.0	46.0	44.0	43.0	43.0	47.4	0.0	47.4
	15	47.6	62.1	41.9	55.0	53.0	51.0	49.0	47.0	46.0	44.0	43.0	43.0	47.6	0.0	47.6
	16	49.0	65.9	44.4	56.0	54.0	51.0	50.0	49.0	47.0	46.0	45.0	45.0	49.0	0.0	49.0
	17	49.8	63.9	44.2	55.0	54.0	52.0	51.0	50.0	48.0	46.0	46.0	45.0	49.8	0.0	49.8
	18	53.5	64.8	47.2	58.0	57.0	56.0	55.0	54.0	53.0	50.0	49.0	49.0	53.5	0.0	53.5
Evening	19	54.8	64.5	47.6	59.0	58.0	57.0	56.0	55.0	54.0	52.0	51.0	50.0	54.8	5.0	59.8
	20	53.1	70.0	45.0	60.0	58.0	56.0	56.0	53.0	51.0	48.0	47.0	46.0	53.1	5.0	58.1
	21	53.4	66.2	45.5	59.0	58.0	56.0	56.0	54.0	52.0	49.0	48.0	47.0	53.4	5.0	58.4
Night	22	54.0	65.0	45.8	60.0	59.0	58.0	57.0	54.0	52.0	49.0	48.0	47.0	54.0	10.0	64.0
	23	52.7	64.6	42.5	59.0	58.0	57.0	56.0	53.0	51.0	47.0	46.0	44.0	52.7	10.0	62.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	47.4	60.7	41.9	53.0	51.0	50.0	49.0	47.0	46.0	44.0	43.0	43.0
	Max	60.4	72.2	51.6	65.0	65.0	64.0	63.0	61.0	59.0	54.0	53.0	52.0
Energy Average		52.8	Average:		57.3	55.6	53.7	52.3	50.7	49.0	46.7	46.0	45.4
Evening	Min	53.1	64.5	45.0	59.0	58.0	56.0	56.0	53.0	51.0	48.0	47.0	46.0
	Max	54.8	70.0	47.6	60.0	58.0	57.0	56.0	55.0	54.0	52.0	51.0	50.0
Energy Average		53.8	Average:		59.3	58.0	56.3	56.0	54.0	52.3	49.7	48.7	47.7
Night	Min	52.7	63.7	40.6	59.0	58.0	57.0	56.0	53.0	50.0	45.0	44.0	42.0
	Max	61.9	72.2	54.9	66.0	66.0	65.0	64.0	62.0	61.0	58.0	58.0	56.0
Energy Average		57.2	Average:		61.6	60.8	59.6	58.9	56.4	54.4	50.8	50.0	48.1

L_{eq} (dBA)

24-Hour	*Daytime*	*Nighttime*
55.1	**53.0**	**57.2**

24-Hour CNEL (dBA)

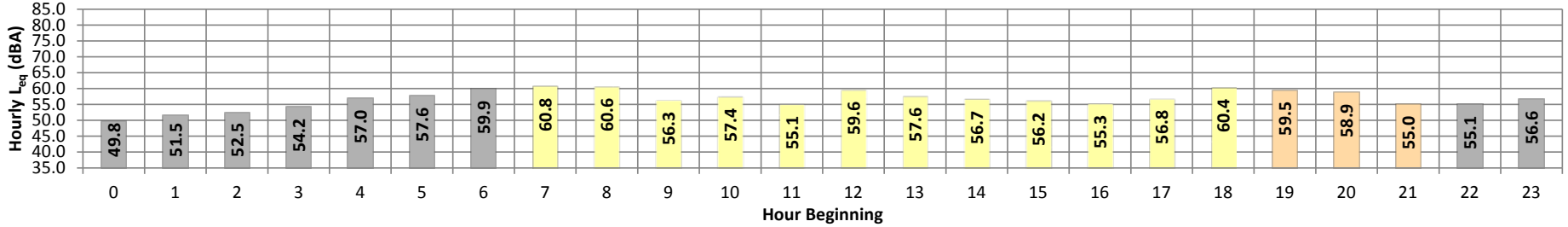
63.3

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 23, 2019 *Location:* L3 - Located west of the Project site on Stable Lanes road near existing single-family homes. *Meter:* Piccolo I *JN:* 12521

Project: The Commons at Hidden Springs *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	49.8	70.3	42.6	56.0	54.0	52.0	51.0	49.0	48.0	45.0	44.0	43.0	49.8	10.0	59.8
	1	51.5	69.7	41.8	57.0	56.0	55.0	54.0	52.0	50.0	46.0	45.0	44.0	51.5	10.0	61.5
	2	52.5	70.4	44.1	59.0	58.0	56.0	55.0	52.0	50.0	46.0	46.0	45.0	52.5	10.0	62.5
	3	54.2	72.7	47.8	58.0	57.0	56.0	56.0	54.0	53.0	51.0	50.0	49.0	54.2	10.0	64.2
	4	57.0	74.6	51.0	66.0	62.0	58.0	58.0	56.0	55.0	53.0	53.0	52.0	57.0	10.0	67.0
	5	57.6	72.0	52.5	65.0	62.0	59.0	59.0	57.0	56.0	55.0	54.0	53.0	57.6	10.0	67.6
	6	59.9	77.8	54.1	69.0	67.0	63.0	61.0	58.0	57.0	56.0	55.0	55.0	59.9	10.0	69.9
Day	7	60.8	82.0	52.5	71.0	68.0	64.0	61.0	58.0	57.0	55.0	54.0	53.0	60.8	0.0	60.8
	8	60.6	83.1	49.0	71.0	68.0	64.0	61.0	58.0	54.0	51.0	51.0	50.0	60.6	0.0	60.6
	9	56.3	78.6	46.2	68.0	65.0	59.0	55.0	52.0	51.0	48.0	48.0	47.0	56.3	0.0	56.3
	10	57.4	77.1	45.8	70.0	67.0	62.0	59.0	52.0	50.0	47.0	47.0	46.0	57.4	0.0	57.4
	11	55.1	74.6	41.3	68.0	65.0	59.0	56.0	50.0	47.0	44.0	43.0	42.0	55.1	0.0	55.1
	12	59.6	84.6	41.3	71.0	67.0	62.0	58.0	50.0	47.0	44.0	43.0	42.0	59.6	0.0	59.6
	13	57.6	83.1	41.2	69.0	67.0	62.0	60.0	52.0	49.0	43.0	43.0	41.0	57.6	0.0	57.6
	14	56.7	78.4	43.3	69.0	66.0	62.0	58.0	52.0	49.0	46.0	45.0	44.0	56.7	0.0	56.7
	15	56.2	78.7	44.0	68.0	65.0	60.0	57.0	52.0	50.0	46.0	46.0	45.0	56.2	0.0	56.2
	16	55.3	71.9	45.3	67.0	64.0	61.0	58.0	53.0	51.0	47.0	47.0	46.0	55.3	0.0	55.3
	17	56.8	76.2	44.7	67.0	65.0	62.0	60.0	55.0	51.0	48.0	47.0	45.0	56.8	0.0	56.8
	18	60.4	75.9	47.0	69.0	67.0	64.0	63.0	59.0	58.0	56.0	55.0	54.0	60.4	0.0	60.4
Evening	19	59.5	75.6	52.2	68.0	66.0	63.0	61.0	59.0	57.0	55.0	55.0	53.0	59.5	5.0	64.5
	20	58.9	79.0	50.0	69.0	67.0	63.0	60.0	57.0	55.0	52.0	52.0	51.0	58.9	5.0	63.9
	21	55.0	70.4	47.8	64.0	60.0	57.0	56.0	55.0	53.0	50.0	49.0	48.0	55.0	5.0	60.0
Night	22	55.1	75.5	46.7	61.0	59.0	58.0	57.0	55.0	53.0	50.0	50.0	48.0	55.1	10.0	65.1
	23	56.6	70.9	46.9	63.0	62.0	60.0	59.0	57.0	55.0	51.0	50.0	49.0	56.6	10.0	66.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	55.1	71.9	41.2	67.0	64.0	59.0	55.0	50.0	47.0	43.0	43.0	41.0
	Max	60.8	84.6	52.5	71.0	68.0	64.0	63.0	59.0	58.0	56.0	55.0	54.0
Energy Average		58.2	Average:		69.0	66.2	61.8	58.8	53.6	51.2	47.9	47.4	46.3
Evening	Min	55.0	70.4	47.8	64.0	60.0	57.0	56.0	55.0	53.0	50.0	49.0	48.0
	Max	59.5	79.0	52.2	69.0	67.0	63.0	61.0	59.0	57.0	55.0	55.0	53.0
Energy Average		58.2	Average:		67.0	64.3	61.0	59.0	57.0	55.0	52.3	52.0	50.7
Night	Min	49.8	69.7	41.8	56.0	54.0	52.0	51.0	49.0	48.0	45.0	44.0	43.0
	Max	59.9	77.8	54.1	69.0	67.0	63.0	61.0	58.0	57.0	56.0	55.0	55.0
Energy Average		55.9	Average:		61.6	59.7	57.4	56.7	54.4	53.0	50.3	49.7	48.7

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
57.5	58.2	55.9

24-Hour CNEL (dBA)

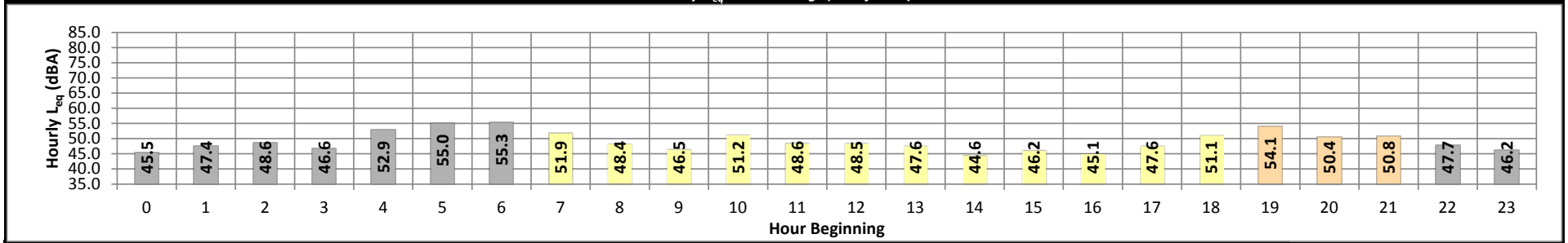
63.1

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 23, 2019 *Location:* L4 - Located south of the Project site on Stable Lanes Road and Villa Del Sol near existing residential homes. *Meter:* Piccolo I *JN:* 12521

Project: The Commons at Hidden Springs *Analyst:* P. Mara

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	45.5	64.8	38.3	51.0	50.0	48.0	47.0	45.0	44.0	41.0	41.0	40.0	45.5	10.0	55.5
	1	47.4	56.7	38.3	54.0	54.0	52.0	51.0	47.0	45.0	41.0	41.0	40.0	47.4	10.0	57.4
	2	48.6	62.6	38.7	56.0	55.0	53.0	52.0	49.0	46.0	42.0	41.0	40.0	48.6	10.0	58.6
	3	46.6	52.6	41.0	50.0	49.0	49.0	48.0	47.0	46.0	44.0	43.0	42.0	46.6	10.0	56.6
	4	52.9	65.6	43.7	57.0	56.0	55.0	55.0	53.0	52.0	48.0	47.0	45.0	52.9	10.0	62.9
	5	55.0	69.3	49.7	59.0	58.0	57.0	57.0	55.0	54.0	52.0	51.0	50.0	55.0	10.0	65.0
	6	55.3	78.3	49.6	63.0	60.0	57.0	56.0	54.0	53.0	51.0	51.0	50.0	55.3	10.0	65.3
Day	7	51.9	73.0	46.2	58.0	56.0	54.0	54.0	52.0	50.0	47.0	47.0	46.0	51.9	0.0	51.9
	8	48.4	69.7	41.6	58.0	56.0	52.0	49.0	47.0	45.0	43.0	42.0	42.0	48.4	0.0	48.4
	9	46.5	65.2	40.0	55.0	53.0	51.0	49.0	46.0	43.0	41.0	41.0	40.0	46.5	0.0	46.5
	10	51.2	74.3	38.3	60.0	58.0	55.0	53.0	49.0	45.0	41.0	40.0	40.0	51.2	0.0	51.2
	11	48.6	75.8	38.3	59.0	57.0	53.0	51.0	45.0	42.0	40.0	40.0	38.0	48.6	0.0	48.6
	12	48.5	67.4	38.3	59.0	57.0	54.0	52.0	46.0	42.0	40.0	39.0	38.0	48.5	0.0	48.5
	13	47.6	67.1	38.3	59.0	57.0	53.0	51.0	44.0	42.0	40.0	39.0	38.0	47.6	0.0	47.6
	14	44.6	58.1	39.9	52.0	51.0	49.0	48.0	44.0	42.0	40.0	40.0	40.0	44.6	0.0	44.6
	15	46.2	63.7	39.9	57.0	54.0	50.0	48.0	44.0	43.0	41.0	40.0	40.0	46.2	0.0	46.2
	16	45.1	64.9	40.0	53.0	50.0	47.0	46.0	44.0	43.0	41.0	41.0	40.0	45.1	0.0	45.1
	17	47.6	62.7	40.8	58.0	57.0	53.0	50.0	45.0	43.0	42.0	41.0	41.0	47.6	0.0	47.6
	18	51.1	76.9	42.0	60.0	57.0	54.0	52.0	49.0	47.0	45.0	44.0	43.0	51.1	0.0	51.1
Evening	19	54.1	72.2	48.9	58.0	58.0	56.0	55.1	54.0	53.0	51.0	50.0	49.0	54.1	5.0	59.1
	20	50.4	65.5	44.1	56.0	55.0	54.0	53.0	51.0	49.0	46.0	46.0	45.0	50.4	5.0	55.4
	21	50.8	59.5	42.2	55.0	54.0	54.0	53.0	51.0	50.0	46.0	45.0	43.0	50.8	5.0	55.8
Night	22	47.7	64.7	41.2	53.0	52.0	50.0	49.0	48.0	46.0	44.0	43.0	42.0	47.7	10.0	57.7
	23	46.2	55.0	41.1	51.0	50.0	49.0	48.0	47.0	45.0	43.0	42.0	42.0	46.2	10.0	56.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	44.6	58.1	38.3	52.0	50.0	47.0	46.0	44.0	42.0	40.0	39.0	38.0
	Max	51.9	76.9	46.2	60.0	58.0	55.0	54.0	52.0	50.0	47.0	47.0	46.0
Energy Average		48.7	Average:		57.3	55.3	52.1	50.3	46.3	43.9	41.8	41.2	40.5
Evening	Min	50.4	59.5	42.2	55.0	54.0	54.0	53.0	51.0	49.0	46.0	45.0	43.0
	Max	54.1	72.2	48.9	58.0	58.0	56.0	55.1	54.0	53.0	51.0	50.0	49.0
Energy Average		52.1	Average:		56.3	55.7	54.7	53.7	52.0	50.7	47.7	47.0	45.7
Night	Min	45.5	52.6	38.3	50.0	49.0	48.0	47.0	45.0	44.0	41.0	41.0	40.0
	Max	55.3	78.3	49.7	63.0	60.0	57.0	57.0	55.0	54.0	52.0	51.0	50.0
Energy Average		51.1	Average:		54.9	53.8	52.2	51.4	49.4	47.9	45.1	44.4	43.4

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
50.2	49.6	51.1

24-Hour CNEL (dBA)
57.7

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Palomar St.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10694 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	848 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.12	-1.24	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-20.36	-1.22	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.32	-1.23	-1.20	-5.31	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:	64.6	63.6	62.3	56.3	64.7	65.4
Medium Trucks:	58.2	55.3	47.8	56.6	62.7	62.8
Heavy Trucks:	58.6	55.6	52.2	56.8	63.0	63.1
Vehicle Noise:	66.3	64.8	62.9	61.4	68.4	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	50	107	231	498
CNEL:	52	113	243	523

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Palomar St.
Road Segment: s/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12773 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,013 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.35	-1.24	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.59	-1.22	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.55	-1.23	-1.20	-5.31	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:	65.4	64.4	63.1	57.1	65.5	66.1
Medium Trucks:	59.0	56.1	48.6	57.3	63.5	63.6
Heavy Trucks:	59.4	56.4	53.0	57.6	63.8	63.9
Vehicle Noise:	67.1	65.6	63.6	62.1	69.1	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	260	561
CNEL:	59	127	273	589

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Hidden Springs Rd.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14225 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,128 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.851
Medium Trucks:	36.610
Heavy Trucks:	36.634

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.12	1.88	-1.20	-4.56	0.000	0.000
Medium Trucks:	70.80	-16.11	1.93	-1.20	-4.87	0.000	0.000
Heavy Trucks:	77.97	-20.07	1.92	-1.20	-5.61	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:	60.5	59.5	58.2	52.2	60.6	61.3
Medium Trucks:	55.4	52.5	45.0	53.8	59.9	60.0
Heavy Trucks:	58.6	55.6	52.2	56.8	63.0	63.1
Vehicle Noise:	63.4	61.6	59.4	59.5	66.2	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	44	96	206
CNEL:	21	46	99	214

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: w/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16394 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,300 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.81	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-18.05	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-22.01	-2.32	-1.20	-5.25	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:	64.1	63.1	61.8	55.8	64.2	64.8
Medium Trucks:	57.9	55.0	47.5	56.2	62.4	62.4
Heavy Trucks:	58.7	55.7	52.3	56.9	63.1	63.2
Vehicle Noise:	66.0	64.4	62.4	61.1	68.1	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	122	263	566
CNEL:	59	128	276	594

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: e/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25146	vehicles
Peak Hour Percentage:	7.93%	
Peak Hour Volume:	1,994	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	76.0	feet
Centerline Dist. to Observer:	76.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	1.05	-2.33	-1.20	*-4.73*	0.000	0.000
Medium Trucks:	79.45	-16.19	-2.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-20.15	-2.32	-1.20	*-5.25*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.0	65.0	63.7	57.6	66.1	66.7
Medium Trucks:	59.7	56.8	49.3	58.1	64.3	64.3
Heavy Trucks:	60.6	57.5	54.1	58.8	65.0	65.1
Vehicle Noise:	67.8	66.2	64.3	63.0	69.9	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	75	162	350	753
CNEL:	79	170	366	790

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: e/o Stable Lanes Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26672	vehicles
Peak Hour Percentage:	7.93%	
Peak Hour Volume:	2,115	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	76.0	feet
Centerline Dist. to Observer:	76.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	1.30	-2.33	-1.20	*-4.73*	0.000	0.000
Medium Trucks:	79.45	-15.94	-2.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-19.89	-2.32	-1.20	*-5.25*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.2	65.2	63.9	57.9	66.3	66.9
Medium Trucks:	60.0	57.1	49.6	58.3	64.5	64.6
Heavy Trucks:	60.8	57.8	54.4	59.0	65.2	65.3
Vehicle Noise:	68.1	66.5	64.5	63.2	70.2	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	78	169	364	783
CNEL:	82	177	381	821

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: e/o Hidden Springs Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35865	vehicles
Peak Hour Percentage:	7.93%	
Peak Hour Volume:	2,844	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	76.0	feet
Centerline Dist. to Observer:	76.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	2.59	-2.33	-1.20	*-4.73*	0.000	0.000
Medium Trucks:	79.45	-14.65	-2.32	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-18.61	-2.32	-1.20	*-5.25*	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	66.5	65.2	59.2	67.6	68.2
Medium Trucks:	61.3	58.4	50.9	59.6	65.8	65.8
Heavy Trucks:	62.1	59.1	55.7	60.3	66.5	66.6
Vehicle Noise:	69.4	67.8	65.8	64.5	71.5	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	95	206	443	954
CNEL:	100	216	464	1,000

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Palomar St.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11282	vehicles
Peak Hour Percentage:	7.93%	
Peak Hour Volume:	895	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	48	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	64.0	feet
Centerline Dist. to Observer:	64.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-2.89	-1.24	-1.20	*-4.70*	0.000	0.000
Medium Trucks:	81.00	-20.13	-1.22	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-24.09	-1.23	-1.20	*-5.31*	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:	64.9	63.9	62.6	56.5	65.0	65.6
Medium Trucks:	58.4	55.6	48.1	56.8	63.0	63.0
Heavy Trucks:	58.9	55.8	52.4	57.1	63.3	63.4
Vehicle Noise:	66.6	65.0	63.1	61.6	68.6	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	111	240	516
CNEL:	54	117	252	542

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Palomar St.
Road Segment: s/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13361 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,060 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.16	-1.24	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.40	-1.22	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.35	-1.23	-1.20	-5.31	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:	65.6	64.6	63.3	57.3	65.7	66.3
Medium Trucks:	59.2	56.3	48.8	57.5	63.7	63.7
Heavy Trucks:	59.6	56.6	53.2	57.8	64.0	64.1
Vehicle Noise:	67.3	65.8	63.8	62.3	69.3	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	268	578
CNEL:	61	131	282	607

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Hidden Springs Rd.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17074 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,354 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.851
Medium Trucks:	36.610
Heavy Trucks:	36.634

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.92	1.88	-1.20	-4.56	0.000	0.000
Medium Trucks:	70.80	-15.32	1.93	-1.20	-4.87	0.000	0.000
Heavy Trucks:	77.97	-19.28	1.92	-1.20	-5.61	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:	61.3	60.3	59.0	53.0	61.4	62.1
Medium Trucks:	56.2	53.3	45.8	54.6	60.7	60.8
Heavy Trucks:	59.4	56.4	53.0	57.6	63.8	63.9
Vehicle Noise:	64.2	62.4	60.2	60.3	67.0	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	108	233
CNEL:	24	52	112	241

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Clinton Keith Rd.
Road Segment: w/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16982 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,347 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.66	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-17.90	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-21.85	-2.32	-1.20	-5.25	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:	64.3	63.3	62.0	55.9	64.4	65.0
Medium Trucks:	58.0	55.1	47.6	56.4	62.6	62.6
Heavy Trucks:	58.9	55.8	52.4	57.1	63.3	63.4
Vehicle Noise:	66.1	64.5	62.6	61.3	68.2	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	125	269	580
CNEL:	61	131	282	608

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Clinton Keith Rd.
Road Segment: e/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26910 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	2,134 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.34	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-15.90	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.85	-2.32	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	65.3	64.0	57.9	66.4	67.0
Medium Trucks:	60.0	57.1	49.6	58.4	64.6	64.6
Heavy Trucks:	60.9	57.8	54.4	59.1	65.3	65.4
Vehicle Noise:	68.1	66.5	64.6	63.3	70.2	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	366	788
CNEL:	83	178	383	826

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Clinton Keith Rd.
Road Segment: e/o Stable Lanes Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	29026 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	2,302 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.67	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-15.57	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.52	-2.32	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.6	65.6	64.3	58.3	66.7	67.3
Medium Trucks:	60.4	57.5	50.0	58.7	64.9	64.9
Heavy Trucks:	61.2	58.2	54.8	59.4	65.6	65.7
Vehicle Noise:	68.4	66.8	64.9	63.6	70.6	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	83	179	385	829
CNEL:	87	187	403	869

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P
Road Name: Clinton Keith Rd.
Road Segment: e/o Hidden Springs Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37583 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	2,980 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.79	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-14.45	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.40	-2.32	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	66.7	65.4	59.4	67.8	68.4
Medium Trucks:	61.5	58.6	51.1	59.8	66.0	66.0
Heavy Trucks:	62.3	59.3	55.9	60.5	66.7	66.8
Vehicle Noise:	69.6	68.0	66.0	64.7	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	98	212	457	985
CNEL:	103	222	479	1,032

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY
Road Name: Palomar St.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14836 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,176 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.70	-1.24	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-18.94	-1.22	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.90	-1.23	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.1	65.1	63.7	57.7	66.2	66.8
Medium Trucks:	59.6	56.7	49.2	58.0	64.2	64.2
Heavy Trucks:	60.1	57.0	53.6	58.3	64.5	64.6
Vehicle Noise:	67.8	66.2	64.3	62.8	69.8	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	134	288	620
CNEL:	65	140	302	651

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY
Road Name: Palomar St.
Road Segment: s/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16431 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,303 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.26	-1.24	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-18.50	-1.22	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.45	-1.23	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	65.5	64.2	58.2	66.6	67.2
Medium Trucks:	60.1	57.2	49.7	58.4	64.6	64.6
Heavy Trucks:	60.5	57.5	54.1	58.7	64.9	65.0
Vehicle Noise:	68.2	66.7	64.7	63.2	70.2	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	143	308	663
CNEL:	70	150	323	697

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY
Road Name: Hidden Springs Rd.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16286 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,291 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.851
Medium Trucks:	36.610
Heavy Trucks:	36.634

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	1.71	1.88	-1.20	-4.56	0.000	0.000
Medium Trucks:	70.80	-15.53	1.93	-1.20	-4.87	0.000	0.000
Heavy Trucks:	77.97	-19.48	1.92	-1.20	-5.61	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:	61.1	60.1	58.8	52.8	61.2	61.9
Medium Trucks:	56.0	53.1	45.6	54.4	60.5	60.6
Heavy Trucks:	59.2	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	64.0	62.2	59.9	60.1	66.8	67.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	49	105	226
CNEL:	23	50	109	234

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY
Road Name: Clinton Keith Rd.
Road Segment: w/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18686 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,482 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.24	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-17.48	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-21.44	-2.32	-1.20	-5.25	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:	64.7	63.7	62.4	56.4	64.8	65.4
Medium Trucks:	58.4	55.6	48.1	56.8	63.0	63.0
Heavy Trucks:	59.3	56.3	52.9	57.5	63.7	63.8
Vehicle Noise:	66.5	64.9	63.0	61.7	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	133	287	618
CNEL:	65	140	301	648

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY
Road Name: Clinton Keith Rd.
Road Segment: e/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34644 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	2,747 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.44	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-14.80	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.76	-2.32	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	66.4	65.0	59.0	67.5	68.1
Medium Trucks:	61.1	58.2	50.7	59.5	65.7	65.7
Heavy Trucks:	62.0	58.9	55.5	60.2	66.4	66.5
Vehicle Noise:	69.2	67.6	65.7	64.4	71.3	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	433	933
CNEL:	98	211	454	978

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY
Road Name: Clinton Keith Rd.
Road Segment: e/o Stable Lanes Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37690 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	2,989 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.80	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-14.43	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.39	-2.32	-1.20	-5.25	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	66.7	65.4	59.4	67.8	68.4
Medium Trucks:	61.5	58.6	51.1	59.9	66.0	66.1
Heavy Trucks:	62.3	59.3	55.9	60.6	66.8	66.8
Vehicle Noise:	69.6	68.0	66.0	64.7	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	99	213	458	987
CNEL:	103	223	480	1,034

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY
Road Name: Clinton Keith Rd.
Road Segment: e/o Hidden Springs Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	48009 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	3,807 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.85	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-13.38	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.34	-2.32	-1.20	-5.25	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:	68.8	67.8	66.5	60.5	68.9	69.5
Medium Trucks:	62.5	59.7	52.2	60.9	67.1	67.1
Heavy Trucks:	63.4	60.4	57.0	61.6	67.8	67.9
Vehicle Noise:	70.6	69.0	67.1	65.8	72.8	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	116	250	538	1,159
CNEL:	122	262	564	1,215

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY+P
Road Name: Palomar St.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15424 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,223 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.53	-1.24	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-18.77	-1.22	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.73	-1.23	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.2	65.2	63.9	57.9	66.3	66.9
Medium Trucks:	59.8	56.9	49.4	58.2	64.3	64.4
Heavy Trucks:	60.2	57.2	53.8	58.4	64.6	64.7
Vehicle Noise:	67.9	66.4	64.5	62.9	70.0	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	137	295	636
CNEL:	67	144	310	668

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY+P
Road Name: Palomar St.
Road Segment: s/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17019 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,350 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	59.540
Medium Trucks:	59.391
Heavy Trucks:	59.406

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.11	-1.24	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-18.34	-1.22	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.30	-1.23	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	65.7	64.3	58.3	66.7	67.4
Medium Trucks:	60.2	57.3	49.8	58.6	64.8	64.8
Heavy Trucks:	60.7	57.6	54.2	58.9	65.1	65.2
Vehicle Noise:	68.4	66.8	64.9	63.4	70.4	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	68	146	315	679
CNEL:	71	154	331	713

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY+P
Road Name: Hidden Springs Rd.
Road Segment: n/o Clinton Keith Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19135 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,517 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.851
Medium Trucks:	36.610
Heavy Trucks:	36.634

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	58.73	2.41	1.88	-1.20	-4.56	0.000	0.000
Medium Trucks:	70.80	-14.83	1.93	-1.20	-4.87	0.000	0.000
Heavy Trucks:	77.97	-18.78	1.92	-1.20	-5.61	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:	61.8	60.8	59.5	53.5	61.9	62.6
Medium Trucks:	56.7	53.8	46.3	55.1	61.2	61.3
Heavy Trucks:	59.9	56.9	53.5	58.1	64.3	64.4
Vehicle Noise:	64.7	62.9	60.6	60.8	67.5	67.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	54	117	251
CNEL:	26	56	121	260

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY+P
Road Name: Clinton Keith Rd.
Road Segment: w/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19274 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	1,528 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-0.11	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-17.35	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-21.30	-2.32	-1.20	-5.25	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:	64.8	63.8	62.5	56.5	64.9	65.5
Medium Trucks:	58.6	55.7	48.2	56.9	63.1	63.1
Heavy Trucks:	59.4	56.4	53.0	57.6	63.8	63.9
Vehicle Noise:	66.7	65.1	63.1	61.8	68.8	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	63	136	293	631
CNEL:	66	142	307	661

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY+P
Road Name: Clinton Keith Rd.
Road Segment: e/o Palomar St.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36408 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	2,887 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	2.65	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-14.58	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.54	-2.32	-1.20	-5.25	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:	67.6	66.6	65.3	59.3	67.7	68.3
Medium Trucks:	61.3	58.5	51.0	59.7	65.9	65.9
Heavy Trucks:	62.2	59.2	55.8	60.4	66.6	66.7
Vehicle Noise:	69.4	67.8	65.9	64.6	71.5	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	208	447	964
CNEL:	101	218	469	1,010

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY+P
Road Name: Clinton Keith Rd.
Road Segment: e/o Stable Lanes Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40044 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	3,175 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	3.07	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-14.17	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-18.13	-2.32	-1.20	-5.25	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:	68.0	67.0	65.7	59.7	68.1	68.7
Medium Trucks:	61.8	58.9	51.4	60.1	66.3	66.3
Heavy Trucks:	62.6	59.6	56.2	60.8	67.0	67.1
Vehicle Noise:	69.8	68.2	66.3	65.0	72.0	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	103	221	477	1,027
CNEL:	108	232	500	1,077

Friday, December 13, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY+P
Road Name: Clinton Keith Rd.
Road Segment: e/o Hidden Springs Rd.
Project Name: The Commons
Job Number: 12521

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	49727 vehicles
Peak Hour Percentage:	7.93%
Peak Hour Volume:	3,943 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	76.0 feet
Centerline Dist. to Observer:	76.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.42%
Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Heavy Trucks:	47.3%	5.4%	47.3%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	70.427
Medium Trucks:	70.302
Heavy Trucks:	70.314

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	4.01	-2.33	-1.20	-4.73	0.000	0.000
Medium Trucks:	79.45	-13.23	-2.32	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-17.19	-2.32	-1.20	-5.25	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:	68.9	67.9	66.6	60.6	69.0	69.7
Medium Trucks:	62.7	59.8	52.3	61.1	67.2	67.3
Heavy Trucks:	63.5	60.5	57.1	61.8	68.0	68.0
Vehicle Noise:	70.8	69.2	67.2	65.9	72.9	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	119	256	551	1,187
CNEL:	124	268	577	1,244

Friday, December 13, 2019

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APPENDIX 9.1:

OPERATIONAL NOISE LEVEL CALCULATIONS

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12521 - The Commons at Hidden Springs

CadnaA Noise Prediction Model: 12521-03.cna
Date: 14.10.21
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)	365.76
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 Rvcr - 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)
R1		R1	45.4	33.4	44.1	65.0	45.0	0.0				5.00	r	6257260.99	2162641.57	1308.11
R2		R2	57.3	44.2	55.7	65.0	45.0	0.0				5.00	r	6257324.17	2161967.50	1300.04
R3		R3	61.1	42.0	58.5	65.0	45.0	0.0				5.00	r	6257313.32	2161907.82	1300.63
R4		R4	60.6	43.5	58.2	65.0	45.0	0.0				5.00	r	6257292.30	2161791.63	1299.00
R5		R5	60.2	43.9	57.9	65.0	45.0	0.0				5.00	r	6257263.40	2161727.70	1297.58
R6		R6	59.2	43.4	57.0	65.0	45.0	0.0				5.00	r	6257239.53	2161689.72	1297.08
R7		R7	50.7	38.2	49.2	65.0	45.0	0.0				5.00	r	6257073.55	2161335.03	1288.63
R8		R8	55.7	43.2	54.2	65.0	45.0	0.0				5.00	r	6257165.75	2161124.40	1286.95
R9		R9	48.7	37.5	47.7	65.0	45.0	0.0				5.00	r	6258089.09	2160555.09	1292.85

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257533.34	2160974.49	1304.90
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257499.86	2161022.11	1304.90
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257780.27	2161563.44	1325.20
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257758.39	2161619.18	1325.20
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257690.68	2161588.74	1325.20
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257711.54	2161535.06	1325.20
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257795.32	2161348.69	1332.50

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC08	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257856.19	2161377.41	1332.50
POINTSOURCE		AC09	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257814.13	2161480.69	1332.50
POINTSOURCE		AC10	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257748.47	2161451.28	1332.50
POINTSOURCE		AC11	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257647.94	2161944.04	1326.60
POINTSOURCE		AC12	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257559.37	2161949.85	1326.60
POINTSOURCE		AC13	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257562.45	2161590.45	1326.50
POINTSOURCE		AC14	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257524.83	2161566.18	1326.50
POINTSOURCE		AC15	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257467.04	2161660.21	1326.50
POINTSOURCE		AC16	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257502.26	2161680.73	1326.50
POINTSOURCE		AC17	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257494.19	2161878.89	1326.80
POINTSOURCE		AC18	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257487.86	2161736.28	1326.80
POINTSOURCE		AC19	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257412.56	2161739.67	1326.80
POINTSOURCE		AC20	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6257422.48	2161881.71	1326.80
POINTSOURCE		DOCK01	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257384.29	2161874.62	1307.80
POINTSOURCE		DOCK02	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257382.58	2161837.35	1307.80
POINTSOURCE		DOCK03	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257379.16	2161795.63	1307.80
POINTSOURCE		DOCK04	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257376.08	2161750.83	1307.80
POINTSOURCE		DOCK05	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257355.90	2161704.33	1307.50
POINTSOURCE		DOCK06	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257743.00	2161412.64	1305.50
POINTSOURCE		DOCK07	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257722.98	2161438.47	1305.50
POINTSOURCE		DOCK08	103.4	103.4	103.4	Lw	103.4		900.00	0.00	0.00	0.0	8.00	r	6257702.99	2161464.61	1305.50
POINTSOURCE		DT01	83.2	83.2	83.2	Lw	83.2		900.00	0.00	270.00	0.0	3.00	r	6257667.77	2161935.15	1302.60
POINTSOURCE		DT02	83.2	83.2	83.2	Lw	83.2		900.00	0.00	270.00	0.0	3.00	r	6257790.53	2161499.49	1300.50
POINTSOURCE		PARK01	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257385.74	2161597.73	1304.50
POINTSOURCE		PARK02	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257556.78	2161106.55	1282.90
POINTSOURCE		PARK03	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257533.71	2161066.38	1282.90
POINTSOURCE		PARK04	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257565.71	2161027.69	1282.90
POINTSOURCE		PARK05	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257611.09	2161039.22	1282.90
POINTSOURCE		PARK06	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257661.68	2161096.14	1282.90
POINTSOURCE		PARK07	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257695.53	2161129.62	1286.34
POINTSOURCE		PARK08	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257717.85	2161156.03	1289.13
POINTSOURCE		PARK09	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257619.65	2161113.99	1288.70
POINTSOURCE		PARK10	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257627.46	2161365.46	1288.70
POINTSOURCE		PARK11	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257609.60	2161319.33	1288.70
POINTSOURCE		PARK12	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257592.49	2161272.46	1288.70
POINTSOURCE		PARK13	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257575.38	2161227.82	1288.70
POINTSOURCE		PARK14	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257560.50	2161176.12	1288.70
POINTSOURCE		PARK15	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257601.42	2161147.47	1288.70
POINTSOURCE		PARK16	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257640.11	2161516.12	1303.20
POINTSOURCE		PARK17	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257681.03	2161535.47	1303.20
POINTSOURCE		PARK18	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257657.22	2161584.57	1303.20
POINTSOURCE		PARK19	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257590.63	2161573.04	1304.50
POINTSOURCE		PARK20	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257593.23	2161521.33	1304.50
POINTSOURCE		PARK21	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257543.39	2161542.91	1304.50
POINTSOURCE		PARK22	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257610.72	2161483.39	1304.50
POINTSOURCE		PARK23	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257545.62	2161475.20	1304.50
POINTSOURCE		PARK24	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257500.98	2161509.05	1304.50
POINTSOURCE		PARK25	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257673.24	2161443.07	1302.50
POINTSOURCE		PARK26	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257688.29	2161407.85	1302.50
POINTSOURCE		PARK27	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257707.44	2161367.50	1302.50
POINTSOURCE		PARK28	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257839.09	2161317.57	1302.50
POINTSOURCE		PARK29	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257879.78	2161351.77	1302.50
POINTSOURCE		PARK30	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257875.68	2161423.24	1302.50
POINTSOURCE		PARK31	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257854.48	2161473.50	1302.50
POINTSOURCE		PARK32	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257861.32	2161285.09	1302.50
POINTSOURCE		PARK33	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257902.01	2161320.99	1302.50
POINTSOURCE		PARK34	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257933.47	2161377.41	1302.50
POINTSOURCE		PARK35	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257916.03	2161431.44	1302.50
POINTSOURCE		PARK36	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257894.83	2161480.69	1302.50
POINTSOURCE		PARK37	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257872.60	2161531.64	1302.12
POINTSOURCE		PARK38	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257779.93	2161638.33	1303.20
POINTSOURCE		PARK39	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257801.48	2161588.40	1303.20
POINTSOURCE		PARK40	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257850.03	2161587.38	1299.32
POINTSOURCE		PARK41	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257830.88	2161629.78	1302.97
POINTSOURCE		PARK42	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257810.37	2161678.68	1303.20
POINTSOURCE		PARK43	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257578.86	2161622.94	1304.50
POINTSOURCE		PARK44	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257678.37	2161620.89	1303.20
POINTSOURCE		PARK45	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257732.06	2161643.46	1303.20
POINTSOURCE		PARK46	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257792.93	2161710.48	1304.80
POINTSOURCE		PARK47	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257650.67	2161651.32	1304.80
POINTSOURCE		PARK48	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257699.91	2161673.21	1304.80
POINTSOURCE		PARK49	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257750.18	2161695.78	1304.80
POINTSOURCE		PARK50	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257708.46	2161698.51	1304.80
POINTSOURCE		PARK51	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257667.43	2161681.76	1304.80
POINTSOURCE		PARK52	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257624.68	2161663.29	1304.80
POINTSOURCE		PARK53	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257635.97	2161711.51	1304.80
POINTSOURCE		PARK54	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257600.75	2161697.83	1304.80

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARK55	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257547.40	2161672.18	1304.80
POINTSOURCE		PARK56	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257617.50	2161773.74	1304.80
POINTSOURCE		PARK57	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257592.20	2161797.00	1304.80
POINTSOURCE		PARK58	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257562.79	2161778.87	1304.80
POINTSOURCE		PARK59	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257613.40	2161736.81	1304.80
POINTSOURCE		PARK60	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257650.67	2161740.92	1304.80
POINTSOURCE		PARK61	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257674.61	2161727.58	1304.80
POINTSOURCE		PARK62	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257692.05	2161760.07	1304.80
POINTSOURCE		PARK63	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257725.90	2161751.18	1304.80
POINTSOURCE		PARK64	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257770.02	2161770.67	1304.80
POINTSOURCE		PARK65	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257751.21	2161811.36	1304.80
POINTSOURCE		PARK66	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257670.85	2161790.16	1304.80
POINTSOURCE		PARK67	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257678.03	2161816.83	1304.80
POINTSOURCE		PARK68	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257644.52	2161801.79	1304.80
POINTSOURCE		PARK69	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257614.42	2161839.06	1304.80
POINTSOURCE		PARK70	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257663.32	2161863.34	1304.60
POINTSOURCE		PARK71	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257568.26	2161861.63	1304.60
POINTSOURCE		PARK72	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257630.15	2161900.61	1304.60
POINTSOURCE		PARK73	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257530.30	2161944.04	1304.60
POINTSOURCE		PARK74	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257473.54	2161939.25	1304.60
POINTSOURCE		PARK75	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257466.01	2161538.13	1304.50
POINTSOURCE		PARK76	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257487.90	2161578.49	1304.50
POINTSOURCE		PARK77	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257429.53	2161564.40	1304.50
POINTSOURCE		PARK78	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257413.01	2161634.91	1304.50
POINTSOURCE		PARK79	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257342.22	2161628.07	1304.50
POINTSOURCE		PARK80	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257421.90	2161662.61	1304.50
POINTSOURCE		PARK81	87.8	87.8	87.8	Lw	87.8		900.00	0.00	270.00	0.0	5.00	r	6257398.99	2161705.01	1304.56
POINTSOURCE		SEAT01	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257502.11	2160950.77	1281.90
POINTSOURCE		SEAT02	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257485.79	2160953.57	1281.90
POINTSOURCE		SEAT03	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257481.60	2160975.01	1281.90
POINTSOURCE		SEAT04	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257668.45	2161407.16	1303.50
POINTSOURCE		SEAT05	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257648.28	2161409.22	1303.50
POINTSOURCE		SEAT06	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257644.52	2161427.00	1303.50
POINTSOURCE		SEAT07	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257617.16	2161423.24	1303.50
POINTSOURCE		SEAT08	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257814.81	2161330.22	1301.50
POINTSOURCE		SEAT09	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257798.06	2161320.99	1301.50
POINTSOURCE		SEAT10	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257461.23	2161686.20	1303.50
POINTSOURCE		SEAT11	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257487.90	2161706.04	1303.75
POINTSOURCE		SEAT12	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	0.0	4.00	r	6257460.54	2161707.40	1303.74
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	r	6257462.94	2161600.71	1304.50
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	r	6257517.31	2161961.82	1304.60
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	r	6257763.52	2161656.11	1303.20
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	r	6257515.11	2161092.42	1282.90
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	5.00	r	6257645.31	2161185.79	1288.70
POINTSOURCE		TUNNEL01	106.0	106.0	106.0	Lw	106		900.00	0.00	0.00	0.0	8.00	r	6257619.27	2161230.06	1291.70
POINTSOURCE		TUNNEL02	106.0	106.0	106.0	Lw	106		900.00	0.00	0.00	0.0	8.00	r	6257663.17	2161342.03	1291.70
POINTSOURCE		VAC01	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	r	6257689.58	2161309.66	1286.70
POINTSOURCE		VAC02	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	r	6257680.28	2161284.37	1286.70
POINTSOURCE		VAC03	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	r	6257670.98	2161260.19	1286.70
POINTSOURCE		VAC04	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	r	6257661.68	2161236.01	1286.70
POINTSOURCE		VAC05	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	r	6257708.18	2161225.96	1286.70
POINTSOURCE		VAC06	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	r	6257717.11	2161250.14	1286.70
POINTSOURCE		VAC07	86.3	86.3	86.3	Lw	86.3		900.00	0.00	0.00	0.0	3.00	r	6257726.78	2161275.07	1286.70

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						6.00	r		6257233.09	2162014.07	1300.00	1294.00
											6257341.03	2162007.49	1299.63	1293.63
											6257352.54	2161995.44	1300.24	1294.24
											6257356.37	2161941.74	1301.92	1295.92
											6257356.37	2161931.88	1304.27	1298.27
											6257350.89	2161831.06	1313.96	1307.96
											6257345.41	2161733.53	1309.45	1303.45
											6257246.79	2161628.87	1301.51	1295.51
											6257227.06	2161607.50	1296.18	1290.18
											6257181.03	2161571.89	1296.01	1290.01
											6257124.05	2161523.67	1296.00	1290.00
											6257080.21	2161478.74	1292.91	1286.91
											6257068.16	2161479.28	1293.06	1287.06
											6257038.57	2161523.12	1293.88	1287.88
											6257043.50	2161525.86	1293.99	1287.99
BARRIEREXISTING		0						6.00	r		6256968.30	2161492.12	1292.00	1286.00
											6256976.11	2161497.70	1292.00	1286.00
											6257096.00	2161323.72	1290.00	1284.00

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
											6257084.84	2161315.91	1289.84	1283.84
BARRIEREXISTING		0						6.00	r		6257157.34	2161174.27	1287.69	1281.69
											6257169.60	2161183.19	1286.19	1280.19
											6257194.14	2161135.24	1282.79	1276.79
											6257107.44	2161056.90	1286.48	1280.48
BARRIEREXISTING		0						6.00	r		6257188.67	2162647.83	1307.81	1301.81
											6257200.69	2162633.49	1307.98	1301.98
											6257304.31	2162632.57	1310.00	1304.00
											6257304.77	2162753.30	1206.00	1200.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates				
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		PAD_1	x	0		22.00	r	6257550.27	2161972.24	1321.60	1299.60
								6257653.89	2161965.68	1321.60	1299.60
								6257655.10	2161921.28	1321.60	1299.60
								6257547.60	2161928.80	1321.60	1299.60
BUILDING		MAJOR_A	x	0		22.00	r	6257375.31	2161903.80	1321.80	1299.80
								6257517.51	2161893.61	1321.80	1299.80
								6257505.87	2161715.50	1321.80	1299.80
								6257386.47	2161723.02	1321.80	1299.80
								6257396.91	2161883.42	1321.80	1299.80
								6257374.34	2161885.60	1321.80	1299.80
BUILDING		SHOPS_1	x	0		22.00	r	6257505.14	2161694.38	1321.50	1299.50
								6257573.81	2161587.37	1321.50	1299.50
								6257522.61	2161555.58	1321.50	1299.50
								6257453.93	2161663.32	1321.50	1299.50
BUILDING		PAD_2	x	0		22.00	r	6257675.73	2161594.16	1320.20	1298.20
								6257761.88	2161631.29	1320.20	1298.20
								6257794.39	2161558.98	1320.20	1298.20
								6257707.52	2161521.85	1320.20	1298.20
BUILDING		MAJOR_B	x	0		30.00	r	6257730.33	2161456.82	1327.50	1297.50
								6257818.66	2161493.46	1327.50	1297.50
								6257867.44	2161380.86	1327.50	1297.50
								6257860.40	2161364.60	1327.50	1297.50
								6257785.17	2161332.81	1327.50	1297.50
BUILDING		CARWASH	x	0		19.00	r	6257649.52	2161340.82	1302.70	1283.70
								6257672.58	2161332.57	1302.70	1283.70
								6257632.05	2161230.17	1302.70	1283.70
								6257610.45	2161238.42	1302.70	1283.70
BUILDING		PAD_3	x	0		22.00	r	6257491.92	2161043.08	1299.90	1277.90
								6257504.20	2161053.77	1299.90	1277.90
								6257561.84	2160985.64	1299.90	1278.33
								6257516.09	2160947.21	1299.90	1278.09
								6257475.28	2160994.75	1299.90	1277.90
BUILDING		RES01	x	0		20.00	r	6257221.58	2161974.62	1314.00	1294.00
								6257298.84	2161992.70	1314.00	1294.45
								6257318.02	2161938.45	1314.00	1295.50
								6257245.14	2161923.11	1314.00	1294.24
BUILDING		RES02	x	0		20.00	r	6257236.37	2161909.96	1314.00	1294.00
								6257298.29	2161919.27	1314.00	1295.25
								6257308.70	2161867.77	1314.00	1294.00
								6257255.55	2161856.26	1314.00	1294.00
BUILDING		RES03	x	0		20.00	r	6257238.57	2161848.04	1313.26	1293.26
								6257297.20	2161827.77	1313.26	1294.00
								6257282.95	2161780.65	1313.26	1293.81
								6257230.35	2161794.35	1313.26	1294.00
BUILDING		RES04	x	0		20.00	r	6257198.02	2161794.35	1312.55	1292.55
								6257250.62	2161774.62	1312.55	1293.58
								6257230.90	2161725.85	1312.55	1293.38
								6257184.87	2161743.39	1312.55	1292.40
BUILDING		RES05	x	0		20.00	r	6257175.55	2161734.07	1312.03	1292.03
								6257226.51	2161714.90	1312.03	1292.69
								6257208.98	2161667.77	1312.03	1292.00
								6257161.31	2161684.76	1312.03	1291.33
BUILDING		RES06	x	0		20.00	r	6257159.66	2161672.70	1311.24	1291.24
								6257210.62	2161636.54	1311.24	1291.58
								6257183.77	2161595.99	1311.24	1290.62
								6257137.75	2161622.84	1311.24	1290.32
BUILDING		RES07	x	0		20.00	r	6257109.80	2161629.97	1310.00	1290.00
								6257148.16	2161594.35	1310.00	1290.41
								6257114.73	2161557.09	1310.00	1290.00
								6257081.31	2161589.42	1310.00	1289.42
BUILDING		RES08	x	0		20.00	r	6257068.71	2161586.13	1308.90	1288.90
								6257102.68	2161537.91	1308.90	1289.92

Name	M.	ID	RB	Residents	Absorption	Height	Coordinates			
						Begin	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)
							6257062.68	2161504.49	1308.90	1287.82
							6257028.71	2161547.78	1308.90	1288.00

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APPENDIX 10.1:

CONSTRUCTION NOISE LEVEL CALCULATIONS

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12521 - The Commons at Hidden Springs

CadnaA Noise Prediction Model: 12521-03_Construction.cna
Date: 14.10.21
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)	365.76
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 Rvcr - 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)
R1		R1	56.9	56.9	63.6	65.0	45.0	0.0				5.00	r	6257260.99	2162641.57	1308.11
R2		R2	71.0	71.0	77.7	65.0	45.0	0.0				5.00	r	6257324.17	2161967.50	1300.04
R3		R3	67.4	67.4	74.1	65.0	45.0	0.0				5.00	r	6257313.32	2161907.82	1300.63
R4		R4	65.5	65.5	72.2	65.0	45.0	0.0				5.00	r	6257292.30	2161791.63	1299.00
R5		R5	66.8	66.8	73.5	65.0	45.0	0.0				5.00	r	6257263.40	2161727.70	1297.58
R6		R6	66.5	66.5	73.1	65.0	45.0	0.0				5.00	r	6257239.53	2161689.72	1297.08
R7		R7	59.5	59.5	66.1	65.0	45.0	0.0				5.00	r	6257073.55	2161335.03	1288.63
R8		R8	65.4	65.4	72.0	65.0	45.0	0.0				5.00	r	6257165.75	2161124.40	1286.95
R9		R9	59.0	59.0	65.7	65.0	45.0	0.0				5.00	r	6258089.09	2160555.09	1292.85

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height	Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)	(ft)	(ft)	(ft)

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height				Coordinates			
			left	right		horz.	vert.	Begin		End		x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						6.00	r			6257233.09	2162014.07	1300.00	1294.00

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
											6257246.15	2162013.27	1300.00	1294.00
											6257252.37	2162012.89	1300.00	1294.00
											6257254.88	2162012.74	1300.05	1294.05
											6257299.48	2162010.02	1300.00	1294.00
											6257341.03	2162007.49	1299.63	1293.63
											6257352.54	2161995.44	1300.24	1294.24
											6257354.37	2161969.72	1300.91	1294.91
											6257356.37	2161941.74	1301.92	1295.92
											6257356.37	2161931.88	1304.27	1298.27
											6257356.14	2161927.54	1306.00	1300.00
											6257355.93	2161923.75	1307.65	1301.65
											6257355.87	2161922.66	1308.00	1302.00
											6257355.66	2161918.69	1309.57	1303.57
											6257355.50	2161915.74	1310.00	1304.00
											6257355.41	2161914.21	1310.51	1304.51
											6257355.12	2161908.78	1312.00	1306.00
											6257354.66	2161900.40	1313.51	1307.51
											6257354.45	2161896.50	1314.00	1308.00
											6257354.04	2161888.94	1314.00	1308.00
											6257350.89	2161831.06	1313.96	1307.96
											6257350.62	2161826.26	1313.60	1307.60
											6257350.49	2161823.90	1313.72	1307.72
											6257350.18	2161818.31	1314.00	1308.00
											6257349.35	2161803.67	1314.00	1308.00
											6257349.22	2161801.25	1313.72	1307.72
											6257347.24	2161765.97	1312.00	1306.00
											6257347.15	2161764.41	1311.82	1305.82
											6257346.32	2161749.74	1311.29	1305.29
											6257345.41	2161733.53	1309.45	1303.45
											6257342.82	2161730.78	1309.77	1303.77
											6257331.27	2161718.52	1307.90	1301.90
											6257330.82	2161718.04	1307.88	1301.88
											6257330.58	2161717.79	1307.87	1301.87
											6257318.41	2161704.88	1305.84	1299.84
											6257310.91	2161696.92	1305.80	1299.80
											6257293.19	2161678.11	1305.99	1299.99
											6257292.62	2161677.51	1305.99	1299.99
											6257272.13	2161655.76	1304.63	1298.63
											6257264.85	2161648.04	1304.00	1298.00
											6257255.73	2161638.36	1302.97	1296.97
											6257252.02	2161634.43	1302.00	1296.00
											6257246.79	2161628.87	1301.51	1295.51
											6257242.38	2161624.09	1301.10	1295.10
											6257237.05	2161618.32	1300.00	1294.00
											6257236.45	2161617.67	1299.76	1293.76
											6257233.28	2161614.24	1298.00	1292.00
											6257230.22	2161610.93	1296.68	1290.68
											6257227.06	2161607.50	1296.18	1290.18
											6257216.52	2161599.34	1296.00	1290.00
											6257211.49	2161595.46	1296.00	1290.00
											6257181.03	2161571.89	1296.01	1290.01
											6257169.31	2161561.97	1294.00	1288.00
											6257163.11	2161556.72	1293.62	1287.62
											6257161.08	2161555.00	1293.43	1287.43
											6257153.18	2161548.31	1294.00	1288.00
											6257144.80	2161541.23	1294.96	1288.96
											6257127.46	2161526.56	1296.00	1290.00
											6257124.05	2161523.67	1296.00	1290.00
											6257111.37	2161510.67	1294.83	1288.83
											6257109.71	2161508.97	1294.51	1288.51
											6257105.31	2161504.46	1294.00	1288.00
											6257090.66	2161489.44	1292.35	1286.35
											6257080.21	2161478.74	1292.91	1286.91
											6257068.16	2161479.28	1293.06	1287.06
											6257062.31	2161487.96	1293.52	1287.52
											6257038.57	2161523.12	1293.88	1287.88
											6257043.50	2161525.86	1293.99	1287.99
BARRIEREXISTING		0						6.00	r		6256968.30	2161492.12	1292.00	1286.00
											6256976.11	2161497.70	1292.00	1286.00
											6257096.00	2161323.72	1290.00	1284.00
											6257084.84	2161315.91	1289.84	1283.84
BARRIEREXISTING		0						6.00	r		6257157.34	2161174.27	1287.69	1281.69
											6257169.60	2161183.19	1286.19	1280.19
											6257194.14	2161135.24	1282.79	1276.79
											6257107.44	2161056.90	1286.48	1280.48
BARRIEREXISTING		0						6.00	r		6257188.67	2162647.83	1307.81	1301.81
											6257200.69	2162633.49	1307.98	1301.98

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
											6257304.31	2162632.57	1310.00	1304.00
											6257304.77	2162753.30	1206.00	1200.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		RES01	x	0		20.00	r	6257221.58	2161974.62	1314.00	1294.00
								6257298.84	2161992.70	1314.00	1294.45
								6257318.02	2161938.45	1314.00	1295.50
								6257245.14	2161923.11	1314.00	1294.24
BUILDING		RES02	x	0		20.00	r	6257236.37	2161909.96	1314.00	1294.00
								6257298.29	2161919.27	1314.00	1295.25
								6257308.70	2161867.77	1314.00	1294.00
								6257255.55	2161856.26	1314.00	1294.00
BUILDING		RES03	x	0		20.00	r	6257238.57	2161848.04	1313.26	1293.26
								6257297.20	2161827.77	1313.26	1294.00
								6257282.95	2161780.65	1313.26	1293.81
								6257230.35	2161794.35	1313.26	1294.00
BUILDING		RES04	x	0		20.00	r	6257198.02	2161794.35	1312.55	1292.55
								6257250.62	2161774.62	1312.55	1293.58
								6257230.90	2161725.85	1312.55	1293.38
								6257184.87	2161743.39	1312.55	1292.40
BUILDING		RES05	x	0		20.00	r	6257175.55	2161734.07	1312.03	1292.03
								6257226.51	2161714.90	1312.03	1292.69
								6257208.98	2161667.77	1312.03	1292.00
								6257161.31	2161684.76	1312.03	1291.33
BUILDING		RES06	x	0		20.00	r	6257159.66	2161672.70	1311.24	1291.24
								6257210.62	2161636.54	1311.24	1291.58
								6257183.77	2161595.99	1311.24	1290.62
								6257137.75	2161622.84	1311.24	1290.32
BUILDING		RES07	x	0		20.00	r	6257109.80	2161629.97	1310.00	1290.00
								6257148.16	2161594.35	1310.00	1290.41
								6257114.73	2161557.09	1310.00	1290.00
								6257081.31	2161589.42	1310.00	1289.42
BUILDING		RES08	x	0		20.00	r	6257068.71	2161586.13	1308.90	1288.90
								6257102.68	2161537.91	1308.90	1289.92
								6257062.68	2161504.49	1308.90	1287.82
								6257028.71	2161547.78	1308.90	1288.00

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