



Tentative Tract Map

38483

NOISE IMPACT ANALYSIS
COUNTY OF RIVERSIDE

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
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
NR	Noise Reduction
Project	Tentative Tract Map 38483
REMEL	Reference Energy Mean Emission Level
STC	Sound Transmission Class

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise abatement measures for the proposed residential development Tentative Tract Map 38483 ("Project"). The Project site is located between Eucalyptus Road and Holland Road in the County of Riverside. It is our understanding that the Project consists of the development of 89 new residential units, and common area amenities. This noise impact analysis was prepared to satisfy the County of Riverside noise level standards and ensure that adequate noise abatement measures are incorporated into the Project's development.

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this Tentative Tract Map 38483 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 findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report	Significance Findings	
	Section	Unmitigated	Mitigated
On-Site Traffic Noise	7	-- ¹	-- ¹
Off-Site Traffic Noise	8	<i>Less Than Significant</i>	-
Operational Noise	10	<i>Less Than Significant</i>	-
Construction Noise	11	<i>Less Than Significant</i>	-
Construction Vibration		<i>Less Than Significant</i>	-

¹ Impacts of the environment on a Project are excluded from CEQA.

EXTERIOR NOISE ABATEMENT

To satisfy the potential conflict with the County of Riverside 65 dBA CNEL exterior noise level standard for residential land uses, the Project should implement noise control measure Noise-1, which includes the construction of a minimum 6-foot-high noise barrier for the outdoor living area (backyards) of lots adjacent to or facing Holcomb Road and Holland Road, and a 7-foot-high noise barrier is recommended for the outdoor living area (backyards) of lots adjacent to Eucalyptus Road. With the recommended noise barriers, this noise analysis shows that the Project will satisfy the County of Riverside 65 dBA CNEL exterior noise level standards for residential land uses. The effective noise barrier height recommendations represent the minimum wall and/or berm combination height required to satisfy the County of Riverside exterior noise level standards.

Noise 1: The Project will construct a minimum 6-foot-high noise barrier to shield the outdoor living area (backyards) of residential lots facing Holland Road and Holcomb Road, and a 7-foot-high noise barrier to shield the outdoor living area

(backyards) of residential lots adjacent to Eucalyptus Road as shown in Exhibit ES-A.

Barriers shall be constructed so that the top of each wall and /or berm combination extends to the planned height above the pad elevation of the lot it is shielding. When the road is elevated above the pad elevation, the barrier shall extend to the recommended height above the highest point between the residential home and the road. The barrier shall provide a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the roadways or a minimum transmission loss of 20 dBA. (2) The noise barrier shall be constructed using the following materials:

- Masonry block;
- Stucco veneer over wood framing (or foam core), or 1-inch-thick tongue and groove wood of sufficient weight per square foot;
- Glass (1/4-inch-thick), or other transparent material with sufficient weight per square foot capable of providing a minimum transmission loss of 20 dBA;
- Earthen berm;
- Any combination of these construction materials.

INTERIOR NOISE ABATEMENT

The Project will experience future unmitigated noise levels ranging from 52.0 to 70.9 dBA CNEL at the first-floor building façade and from 52.0 to 70.1 dBA CNEL at the second-floor building façade. The interior noise level analysis shows that the County of Riverside 45 dBA CNEL with windows closed interior noise standards can be satisfied at the first-floor location using standard construction and using upgraded windows with a minimum STC rating of 28 for the second-floors adjacent to Eucalyptus Road and windows with a minimum STC rating of 27 for the second floors facing Holland Road, and Holcomb Road. For lots facing Craig Avenue the County of Riverside 45 dBA interior noise standard can be satisfied with an open window condition and standard construction. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." (3) (4)

To satisfy the County of Riverside 45 dBA CNEL interior noise level criteria, second-floor receivers on all lots adjacent to Eucalyptus Road will require windows and glass doors with an STC rating of 28 and a windows-closed condition requiring a means of mechanical ventilation (e.g. air conditioning). Second-floor receivers on all other lots facing Holland Road, Holcomb Road, and Craig Avenue would comply with the County of Riverside 45 dBA CNEL interior noise standards for residential land use Project using standard construction.

Noise-2: The Project shall provide the following or equivalent noise abatement measures:

- Windows & Glass Doors: Second Story facades on all lots require windows and glass doors with well-fitted, well-weather-stripped assemblies with minimum sound

transmission class (STC) ratings of 28 for second-floor lots adjacent to Eucalyptus Road, windows with a minimum STC rating of 27 for second-floor lots facing Holland Road and Holcomb Road.

- Doors (Non-Glass): All exterior doors shall be well weather-stripped. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating. (5)
- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Ceilings shall be per manufacturer's specification or well-sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receives circulated air. A forced air circulation system (e.g. air conditioning) or active ventilation system (e.g. fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.

With the interior noise abatement measures provided in this study, the proposed Project is expected to satisfy the County of Riverside 45 dBA CNEL interior noise level standards for residential development.

EXHIBIT ES-A: SUMMARY OF RECOMMENDATIONS



1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Tentative Tract Map 38483 (“Project”). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures noise analysis, evaluates the potential noise impacts from operation and construction of the Project.

1.1 SITE LOCATION

The Project site located between Eucalyptus Road and Holland Road in the County of Riverside, as shown on Exhibit 1-A. Residential land uses are north and east of the Project site, agricultural land uses are located to the south, and new residential land uses are being developed west of the Project site. The nearest major airport is the French Valley Airport located roughly 6 miles southwest of the Project site.

1.2 PROJECT DESCRIPTION

The Project consists of up to 89 single family dwelling units with common area amenities, as shown on Exhibit 1-B. The Project site is located across three parcels (Assessor’s Parcel Numbers (APN) 466-030-019, 466-310-020, and 466-310-021). Access to the Project site will be accommodated via driveways located on Holcomb Road and Holland Road. Regional access to the Project site is available from the I-215 Freeway and Winchester Road (SR-79) via Scott Road.

EXHIBIT 1-A: LOCATION MAP

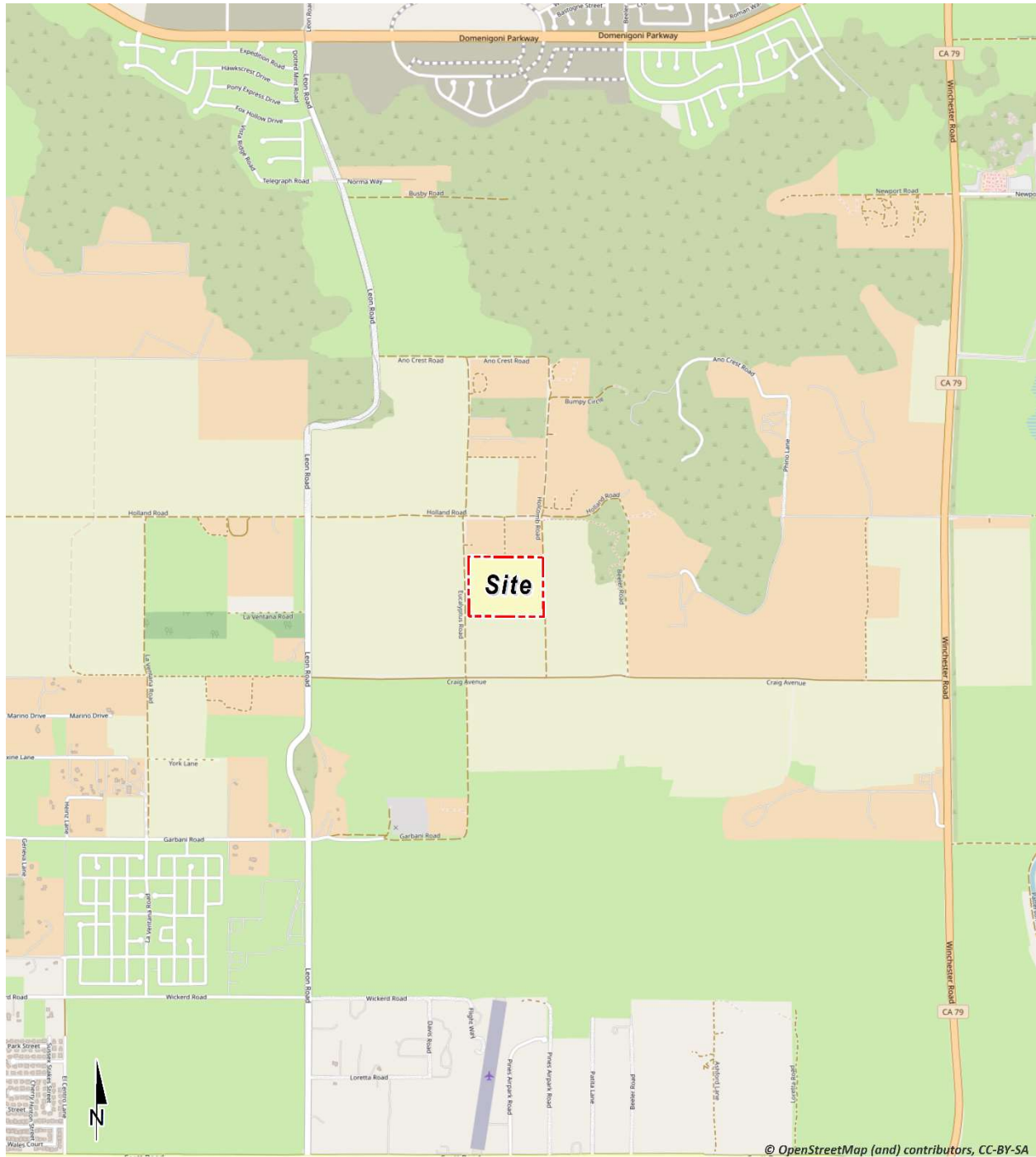
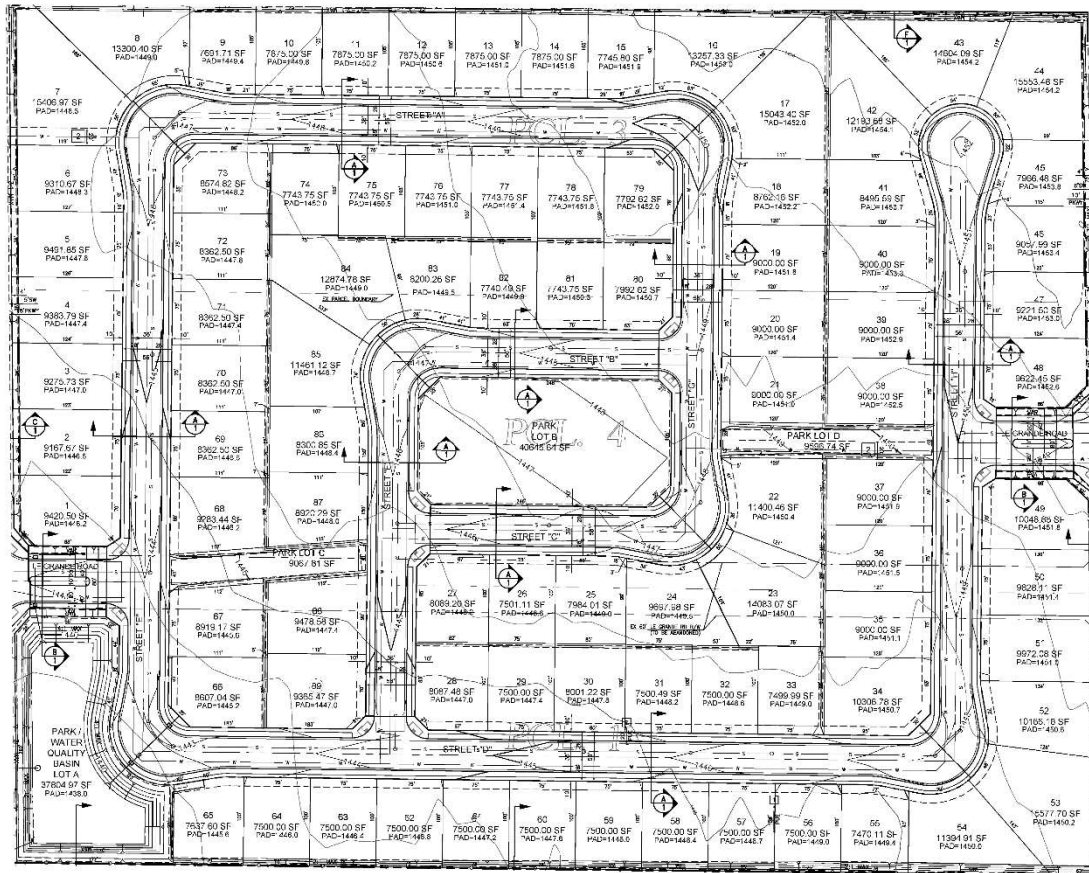


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (6) 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. (7) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

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

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

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

2.3 SOUND PROPAGATION

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

2.3.1 GEOMETRIC SPREADING

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

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (8)

2.3.3 ATMOSPHERIC EFFECTS

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (6)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby resident. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (8)

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (8)

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. (9)

2.8 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

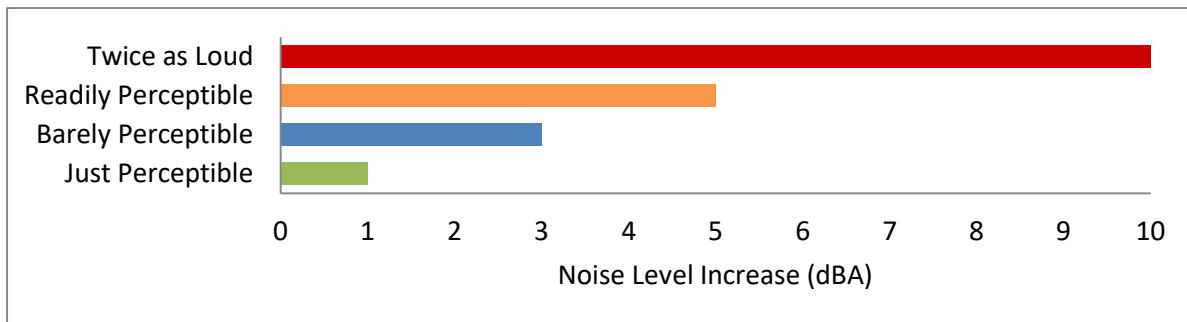
- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

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. Another 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. (10) 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. (10)

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. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA is considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (11)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.9 VIBRATION

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

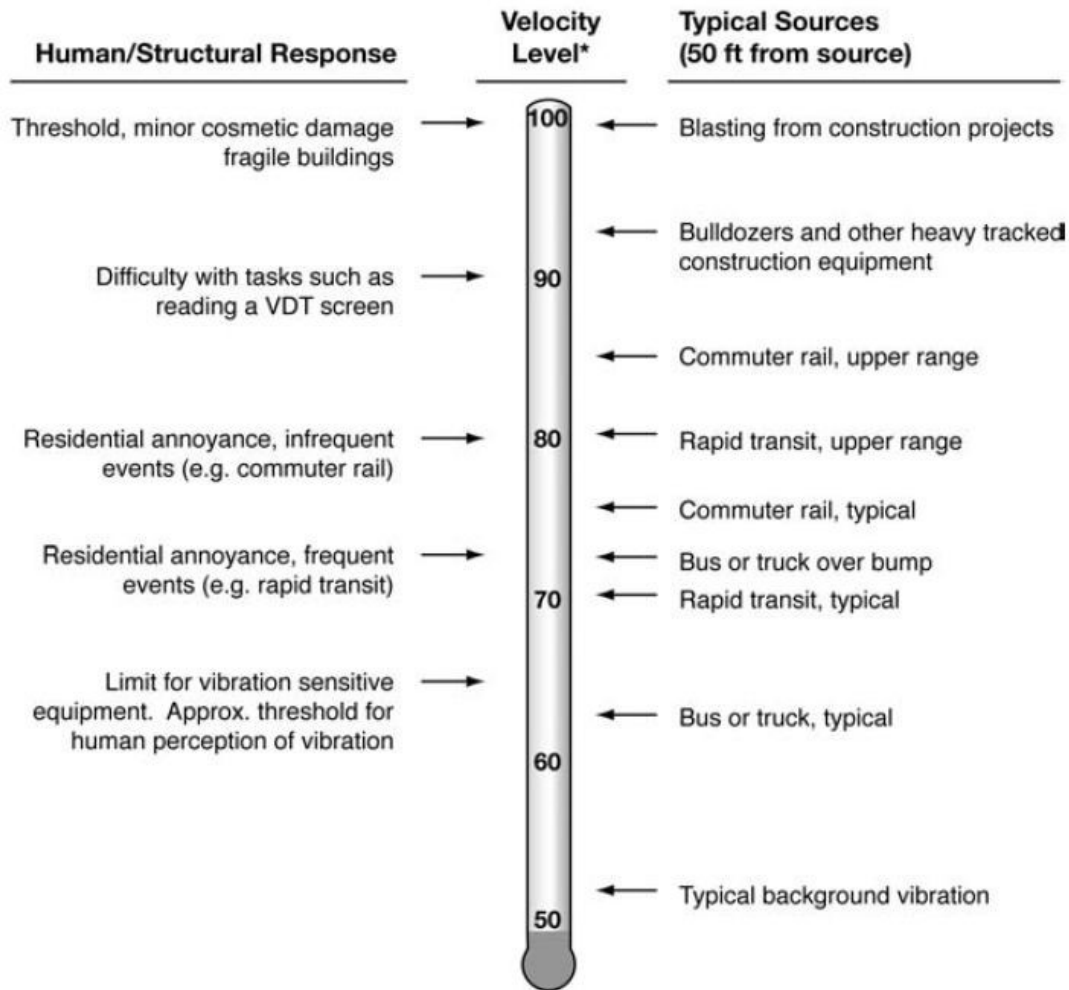
Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (1). Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (1). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structures reduce vibration levels due to the coupling of the building to the soil.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal (1). 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 (1). However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude of equipment is typically calculated from the PPV reference level. The RMS amplitude is approximately 70% of the PPV (12). Thus, either can be used on the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits (13). Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels.

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

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

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

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

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3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (14) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards for all residential units are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Chapter 12, Section 1206. These noise standards are applied to new construction that contains dwelling units or sleeping units, such as residential and hotel or motel uses, in California for controlling interior noise levels resulting from exterior noise sources. For new buildings, the acceptable interior noise limit is 45 dBA CNEL in habitable rooms (15).

3.3 COUNTY OF RIVERSIDE GENERAL PLAN NOISE ELEMENT

The County of Riverside has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of the County of Riverside from excessive exposure to noise. (16) 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 policies to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect County of Riverside residents from excessive noise, the Noise Element contains the following policies related to the Project:

- 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 the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:*
- *Schools*
 - *Hospitals*
 - *Rest Homes*
 - *Long Term Care Facilities*
 - *Mental Care Facilities*
 - *Residential Uses*
 - *Libraries*
 - *Passive Recreation Uses*
 - *Places of Worship*
- 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 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels:*
- a. 45 dBA 10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.;*
 - b. 65 dBA 10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.*
- N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.*
- N 13.2 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 13.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the [County] 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.*
- N 14.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.*
- N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.*

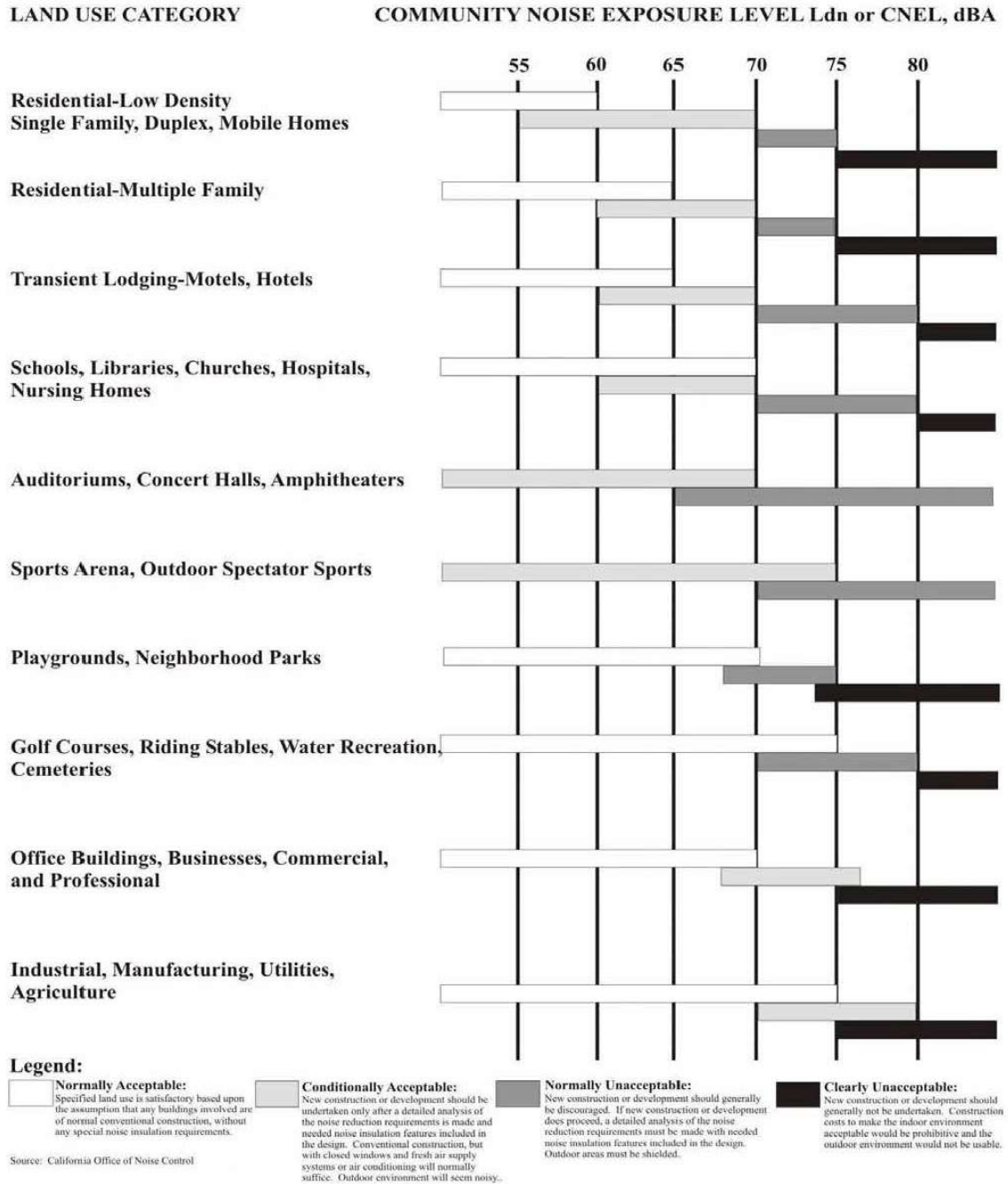
To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as a noise-sensitive land use (N 1.3) and discourages new development in areas with transportation related levels of 65 dBA CNEL or greater existing ambient noise levels. To prevent and mitigate noise impacts for its residents (N 1.5), County of Riverside requires exterior noise attenuation measures

for sensitive land use exposed to transportation related noise levels higher than 65 dBA CNEL. In addition, the County of Riverside had adopted an interior noise level limit of 45 dBA CNEL (N 14.1).

Policy N 4.1 of the Noise Element sets a stationary-source exterior noise limit to 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. To prevent high levels of construction noise from impacting noise-sensitive land uses, policies N 13.1 through 13.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses. Policy 16.3 establishes the vibration perception threshold for rail-related vibration levels, used in this analysis as a threshold for determining potential vibration impacts due to Project construction. (16)

3.2.1 LAND USE COMPATIBILITY GUIDELINES

The noise criteria identified in the County of Riverside Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the County with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. The Tentative Tract Map 38483 land use is considered *normally acceptable* with unmitigated exterior noise levels of less than 60 dBA CNEL. For *conditionally acceptable* exterior noise levels, approaching 70 dBA CNEL for residential land uses, *new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.* (16)

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

Source: County of Riverside General Plan Noise Element, Table N-1.

3.2.2 COUNTY OF RIVERSIDE STATIONARY NOISE STANDARDS

The County of Riverside has set hourly average L_{eq} exterior noise limits to control the stationary-source noise associated with the development of the proposed Tentative Tract Map 38483. The County considers noise generated using motor vehicles to be a stationary noise source when operated on private property such as at a loading dock. These facility-related noises, as projected to any portion of any surrounding property containing a *habitable dwelling, hospital, school, library or nursing home*, must not exceed the following worst-case noise levels. Policy N 4.1 of the County of Riverside 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. (16)

The County of Riverside Municipal Code Section 9.52.040 *General sound level standards* identify lower, more restrictive exterior noise level standards, which for the purpose of this report, are used to evaluate potential Project-related operational noise level limits instead of the higher General Plan exterior noise level standards previously identified. The County of Riverside Municipal Code identifies exterior noise level limits of 55 dBA L_{eq} during the 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. for noise-sensitive uses. (17) The County of Riverside Municipal Code Noise Section is included in Appendix 3.1.

Based on several discussions with the County of Riverside Department of Environmental Health (DEH), Office of Industrial Hygiene (OIH), it is important to recognize that the County of Riverside Municipal Code noise level standards, incorrectly identify maximum noise level (L_{max}) standards that should instead reflect the maximum hourly average noise levels (L_{eq}). Moreover, the County of Riverside DEH OIH's April 15th, 2015 *Requirements for determining and mitigating, non-transportation noise source impacts to residential properties* also identifies operational (stationary-source) noise level limits using the L_{eq} metric, consistent with the direction of the County of Riverside General Plan guidelines and standards provided in the Noise Element. Therefore, this report has been prepared consistent with direction of the County of Riverside DEH OIH guidelines and standards using the average L_{eq} noise level metric for stationary-source (operational) noise level evaluation.

3.3 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the County of Riverside has established limits to the hours of operation. Section 9.52.020 of the County's 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. (17) Neither the County's General Plan nor 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, 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. (1)

3.4 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. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity.

The County of Riverside does not have vibration standards, but the County's General Plan Noise Element does contain the human reaction to typical vibration levels. Typical vibration levels between 10 and 30 Hertz with peak particle velocity of 0.0787 inches per second are considered readily perceptible and above 0.1968 in/sec are considered annoying to people in buildings. Further, County of Riverside General Plan Policy N 16.3 identifies a motion velocity perception threshold for vibration due to passing trains of 0.01 inches per second (in/sec) over the range of one to 100 Hz (16).

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. (18) 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 baseline 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*. (19) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

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) (20) 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 baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and

their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (21 p. 9) and Caltrans (11 p. 2_48).

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.5, the vibration impacts originating from the construction of the Project, vibration-generating activities are appropriately evaluated against the thresholds of significance outlined in the County of Riverside General Plan. (16) These guidelines identify a motion velocity perception threshold for vibration due to passing trains of 0.01 inches per second (in/sec) over the range of one to 100 Hz, which is used in this noise study to assess potential impacts due to Project construction vibration levels. As the policy is based on human perception, the 0.01 in/sec limit is assumed to be a root means squared (RMS) value. An RMS value of 0.01 in/sec is equivalent to a PPV value of 0.04 in/sec. For purposes of clarity and to reduce the number of terms used in the analysis of vibration impacts, the vibration analysis uses PPV for all sources and calculation. Thus, the impact threshold would be 0.04 in/sec PPV.

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 major airport is the French Valley Airport located roughly 3.7 miles southwest of the Project site. The noise level contours of French Valley Airport are shown in Exhibit 4-A. As shown, the Project site would be outside the 60 dBA CNEL noise level contour and thus 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
On-Site Traffic ¹	Exterior Noise Level Criteria	65 dBA CNEL	
	Interior Noise Level Standard	45 dBA CNEL	
Off-Site Traffic ²	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
	If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
	If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
Operational	Exterior Noise Level Standards ³	55 dBA Leq	45 dBA Leq
	If ambient is < 60 dBA Leq ¹	≥ 5 dBA Leq Project increase	
	If ambient is 60 - 65 dBA Leq ¹	≥ 3 dBA Leq Project increase	
	If ambient is > 65 dBA Leq ¹	≥ 1.5 dBA Leq Project increase	
Construction	Noise Level Threshold ⁴	80 dBA Leq	
	Vibration Level Threshold ⁵	0.04 in/sec PPV	

¹ County of Riverside General Plan Noise Element.

² FICON, 1992.

³ County of Riverside General Plan Municipal Code, Section 9.52.040.

⁴ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.

⁵ County of Riverside General Plan Noise Element, Policy N 16.3.

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

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A shows the Project site and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Tuesday, July 2, 2024. 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. (22)

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.* (6) Further, FTA guidance states, *that it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community.* (1)

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. (1) 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.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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

	Description	Energy Average Noise Level (dBA L_{eq}) ²	
		Daytime	Nighttime
L1	Located north of the site near the residence at 31115 Holcomb Rd.	45.0	38.1
L2	Located northeast of the site near the residence at 30876 Epiplaneia Way	44.3	39.5
L3	Located south of the site near the residence at 31925 Eucalyptus Rd.	47.1	45.5
L4	Located southwest of the site near the residence at 31615 Leon Rd.	50.7	42.3
L5	Located west of the site near the residence at 30917 Holland Rd.	58.3	51.5

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. The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with nearby surface streets. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations.

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

6.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the average daily traffic (ADT) volumes used for this study are presented on Table 6-1. Based on the County of Riverside General Plan Circulation Element Map, Holland Road is considered a Major roadway. Eucalyptus, Holcomb and Craig Road are considered Secondary roadways. Future average daily traffic volumes, shown on Table 6-1, were obtained from Winchester Community Plan, Environmental Impact report. Consistent with the County of Riverside Office of Industrial Hygiene noise study requirements, (25) hard site conditions were used to analyze the potential on-site traffic noise impacts for the Project study area. Hard site conditions account for the sound propagation loss over a reflective surface between the source and the receiver.

Tables 6-2 and 6-3 present the time-of-day vehicle splits by vehicle type and roadway classification, and Table 6-4 presents the total traffic flow distributions (vehicle mixes) used for this analysis which were obtained from the County of Riverside Office of Industrial Hygiene noise study requirements. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA Model based on roadway types. The vehicle splits are shown on Tables 6-2 and 6-3 are reported as a percentage of the overall percentage.

TABLE 6-1: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification ¹	Design Capacity (ADT) ²	Speeds (MPH)	Site Conditions
Holland Rd.	2	Major	27,300	40	Hard
Eucalyptus Rd.	2	Secondary	20,700	40	Hard
Holcomb Rd.	2	Local	5,000	40	Hard
Craig Ave.	2	Local	5,000	40	Hard

¹Community of Winchester, Community Plan Environmental Impact Report, Exhibit 4.17.1²County of Riverside Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled**TABLE 6-2: TIME OF DAY VEHICLE SPLITS (SECONDARY, COLLECTOR)**

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	75.5%	48.9%	47.3%
Evening (7:00 p.m. - 10:00 p.m.)	14.0%	2.2%	5.4%
Nighttime (10:00 p.m. - 7:00 a.m.)	10.5%	48.9%	47.3%
Total:	100.0%	100.0%	100.0%

Source: County of Riverside Office of Industrial Hygiene - Secondary, Collector

TABLE 6-3: TIME OF DAY VEHICLE SPLITS (MAJOR, ARTERIAL, URBAN ARTERIAL)

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	75.5%	48.0%	48.0%
Evening (7:00 p.m. - 10:00 p.m.)	14.0%	2.0%	2.0%
Nighttime (10:00 p.m. - 7:00 a.m.)	10.5%	50.0%	50.0%
Total:	100.0%	100.0%	100.0%

Source: County of Riverside Office of Industrial Hygiene - Major, Arterial, Urban Arterial

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

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
Expressway, Arterial, Major ¹	92.00%	3.00%	5.00%	100.00%
Secondary, Collector ¹	97.42%	1.84%	0.74%	100.00%

¹ Source: County of Riverside Office of Industrial Hygiene, 2017.

To predict the future noise environment at each lot within the Project site, coordinate information was collected to identify the noise transmission path between the noise source and receiver. The coordinate information is based on the Project site plan showing the plotting of each lot, as shown in Appendix 6.1. The site plan is used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, and the building façade. The first-floor exterior noise level receivers were placed five feet above the pad elevation, or three feet above the pad elevation when the barrier height exceeds six feet per County of Riverside Office of Industrial Hygiene noise study guidelines. In the case of this report an initial run was done with the first floor receivers were placed five feet above the pad elevation and the six-foot walls were ineffective, per County of Riverside Office of Industrial Hygiene noise study guidelines the observer height was changed to 3 feet above the pad elevation for a second run and the six foot walls were effective as well as making a 7-foot wall along Eucalyptus effective. Second-floor receivers were placed 14 feet above the pad elevation and third floor receivers were placed 23 feet above the pad elevation.

7 ON-SITE TRAFFIC NOISE IMPACTS

This on-site exterior noise impact analysis has been completed as due diligence to determine the traffic noise exposure and to recommend potential noise abatement measures for the Project. The primary source of noise impacts on the Project site will be traffic noise from Holland Road, Holcomb Road, Craig Avenue, and Eucalyptus Road. The Project will also experience some background traffic noise from the Project's internal local streets, however, due to low traffic volume/speed, traffic noise from these roads will not make a significant contribution to the noise environment.

7.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 6-1 to 6-4, the expected future exterior noise levels for individual lots were calculated. Table 7-1 presents a summary of future exterior noise levels in the outdoor living areas (backyards) within the Project site. The on-site traffic noise level impacts indicate that the outdoor living areas (back yards) adjacent to Holland Road will experience unshielded exterior noise levels up to 65.3 CNEL, the outdoor living areas adjacent to Holcomb Road will experience unshielded exterior noise levels up to 67.5 dBA CNEL, and outdoor living areas adjacent to Eucalyptus Road will experience noise levels up to 70.9 dBA CNEL. Therefore, lots along Holland, Holcomb, and Eucalyptus Roads would include noise abatement to reduce on-site noise levels below 65 dBA CNEL. The on-site traffic noise analysis calculations are provided in Appendix 7.1.

TABLE 7-1: EXTERIOR NOISE LEVELS (CNEL)

Lot	Roadway	Type	Unmitigated Noise Level (dBA CNEL) ¹	Mitigated Noise Level (dBA CNEL) ¹	Barrier Height (Feet)
Building 15	Holland Rd.	Two-Story	65.3	59.7	6.0
Building 47	Holcomb Rd.	Two-Story	67.5	63.4	6.0
Building 62	Craig Ave.	Two-Story	52.0	52.0	0.0
Building 2	Eucalyptus Rd.	Two-Story	70.9	64.0	7.0

¹ Exterior noise level calculations are included in Appendix 7.1.

To satisfy the exterior noise compatibility criteria, the sides of the Project adjacent to or facing Holland Road and Holcomb Road will be provided with a 6-foot-high wall, and the lots adjacent to Eucalyptus Road and will be provided with a 7-foot-high wall. With the recommended exterior noise abatement, the proposed lot will experience mitigated noise levels of less than 65 dBA CNEL on all lots, which is consistent with County of Riverside exterior noise standards. It should be noted Holland Road is over 650 feet north of the Project site. It is likely the land between Holland Road and the Project site will be developed prior to the Project being occupied. In the event that the parcel fronting Holland Road is developed prior to the development of the Project, this wall would not be recommended since the development fronting Holland Road would include structures, which would reduce noise levels on the Project from Holland Road to

less than 65 dBA CNEL. Due to the high noise levels at higher elevations, the following interior noise study was conducted to recommend any noise abatement measures necessary to satisfy the 45 dBA CNEL interior noise standards.

7.2 ON-SITE INTERIOR NOISE ANALYSIS

The Project is currently only conceptually designed, and the design of the future residential units is unknown at this time; however, for analysis purposes this analysis assumes the Project would include two-story structures. If the future dwelling units are single story the second-story recommendations would not be applicable. The future noise levels were calculated at the first and second-floor building façades to ensure that the interior noise levels comply with the County of Riverside 45 dBA CNEL interior noise standards.

7.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." (3) (4) However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: [1] weather-stripped solid core exterior doors; [2] upgraded dual glazed windows; [3] mechanical ventilation/air conditioning; and [4] exterior wall/roof assemblies free of cut outs or openings.

7.2.2 INTERIOR NOISE LEVEL ASSESSMENT

Table 7-2 shows that the Project will experience future noise levels ranging from 52.0 to 64.0 dBA CNEL at the first-floor building façade. The interior noise level analysis shows that the County of Riverside 45 dBA CNEL interior noise standard can be satisfied with windows closed condition and a means of mechanical ventilation (i.e., air conditioning).

Table 7-3 shows that the Project will experience future noise levels ranging from 52.0 to 70.1 dBA CNEL at the second-floor building façades. The interior noise level analysis shows that for buildings facing Eucalyptus Road, windows closed condition and a means of mechanical ventilation with upgraded windows, STC ratings of 28, will satisfy the County of Riverside 45 dBA CNEL interior noise standard. For the buildings facing Holland Road, Holcomb Road, and Craig Avenue the 45 dBA interior noise standard can be satisfied with a windows closed condition and standard construction, i.e., windows with a minimum STC rating of 27. For buildings facing the 45 dBA interior noise standard can be satisfied with a windows open condition using standard construction. Therefore, the interior noise analysis shows that with the recommended interior noise abatement measures, the Project will satisfy the County of Riverside 45 dBA CNEL interior noise level standards for residential development.

TABLE 7-2: FIRST FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Noise Level at Façade ¹	Required Interior NR ²	Estimated Interior NR ³	Upgraded Windows ⁴	Recommended STC	Interior Noise Level ⁵	Threshold	Threshold Exceeded?
Building 15	59.7	14.7	25.0	No	27	34.7	45	No
Building 47	63.4	18.4	25.0	No	27	38.4	45	No
Building 62	52.0	7.0	12.0	No	NA	40.0	45	No
Building 2	64.0	19.0	25.0	No	27	39.0	45	No

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

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

³ A minimum 12 dBA of interior noise reduction is assumed with standard building construction and a windows closed condition.

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

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

"NR" = Noise reduction

TABLE 7-3: SECOND FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Noise Level at Façade ¹	Required Interior NR ²	Calculated Interior NR ³	Upgraded Windows ⁴	Recommended STC	Interior Noise Level ⁵	Threshold	Threshold Exceeded?
Building 15	65.2	20.2	25.0	No	27	40.2	45	No
Building 47	65.9	20.9	25.0	No	27	40.9	45	No
Building 62	52.0	7.0	12.0	No	NA	40.0	45	No
Building 2	70.1	25.1	25.0	Yes	28	44.1	45	No

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

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

³ A minimum 25 dBA of interior noise reduction is assumed with standard building construction and a windows closed condition.

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

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

"NR" = Noise reduction

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8 OFF-SITE TRANSPORTATION NOISE IMPACTS

The project is anticipated to generate a maximum of 980 trips per day. This increase in daily traffic volumes is not expected to generate a perceptible noise level increase (i.e., less than 3 dBA CNEL) at sensitive land uses adjacent to study area roadways. Due to the low traffic volumes generated by the Project, the off-site traffic noise levels generated by the Project are considered *less than significant*.

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9 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown in Exhibit 9-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, outpatient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, four 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 31115 Holcomb Road, approximately 188 feet north of the Project site. Receiver R1 is placed at the facade facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.
- R2: Location R2 represents the existing noise-sensitive residence at 30876 Epiplaneia Way, approximately 1,852 feet northeast of the Project site. Receiver R2 is placed at the façade 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 31925 Eucalyptus Road, approximately 3,122 feet south of the Project site. Receiver R3 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.
- R4: Location R4 represents the existing noise-sensitive residence at 31615 Leon Road, approximately 3,074 feet southwest of the Project site. Receiver R4 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

- R5: Location R5 represents the existing noise-sensitive residence at 30917 Holland Road, approximately 3,107 feet east of the Project site. Receiver R5 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

EXHIBIT 9-A: RECEIVER LOCATIONS



10 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 9, resulting from the operation of uses allowed by the Tentative Tract Map 38483. The Tentative Tract Map 38483 is considered a noise-sensitive receiving land use and is not expected to include any meaningful sources of noise activity. Additionally, according to the recently adopted Section 21085 of the CEQA Guidelines, “noise effects” on humans that are associated with “project occupants and guests” within residential Projects are not an impact on the environment. It is expected that operational noise level impacts will be limited to the air conditioning units. Exhibit 10-A identifies the representative noise source locations used to assess stationary noise sources.

10.1 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 primary on-site Project-related noise sources would be air conditioning units.

10.2 REFERENCE NOISE LEVELS

To estimate the 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. 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 reference project operational noise levels are based on the Project-related noise sources shown in Exhibit 10-A. The reference Project operational sound power levels are summarized in Table 10-1.

10.2.1 MEASUREMENT PROCEDURES

Unless noted in the following descriptions, the reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision 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. (22)

EXHIBIT 10-A: STATIONARY SOURCE NOISE LOCATIONS



LEGEND:

 Air Conditioning Unit

TABLE 10-1: REFERENCE NOISE LEVELS

Noise Source	Noise Source Height (Feet)	Min./Hour ²		@ 50 Feet	Sound Power Level (dBA) ⁶
		Day	Night		
Air Conditioning Units ¹	5'	45	30	44.4	76.0

¹ Carrier 25HBC5 air conditioning unit, Appendix 10.1.

² Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site.

"Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.

10.2.2 AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top and ground-mounted air conditioning units, reference noise levels were taken from equipment specifications for a 3- to 5-ton residential packaged air conditioning unit (Carrier 24ABC6). The air conditioning units were modeled as operating 45 minutes per hour during the daytime and 30 minutes at nighttime, which represents the typical maximum operating time for properly sized AC systems. The air conditioning units are located adjacent to single-family detached residential units. The air conditioning units are anticipated to be located 3 feet above the ground. At a uniform reference distance of 50 feet, the units would generate a reference noise level of 44.4 dBA L_{eq} .

10.3 CADNAA NOISE PREDICTION MODEL

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

Using the ISO 9613 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 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 10.2 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

10.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include trash enclosure activity, air conditioning, a loading dock, and parking lot activity, Urban Crossroads, Inc. calculated the unmitigated operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project operational daytime noise levels. The hourly noise levels at the off-site receiver locations are expected to range from 16.3 to 33.3 dBA L_{eq} . Appendix 10.2 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

TABLE 10-2: PROJECT DAYTIME OPERATIONAL NOISE LEVELS

Noise Source ¹	Operational Noise Levels by Receiver Location (dBA L_{max})				
	R1	R2	R3	R4	R5
Air Conditioning Units	33.3	20.5	16.7	16.3	16.5
Total (All Noise Sources)	33.3	20.5	16.7	16.3	16.5

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

Table 10-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 13.6 to 30.5 dBA L_{eq} . Appendix 10.2 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

TABLE 10-3: PROJECT NIGHTTIME OPERATIONAL NOISE LEVELS

Noise Source ¹	Operational Noise Levels by Receiver Location (dBA L_{max})				
	R1	R2	R3	R4	R5
Air Conditioning Units	30.5	17.8	13.9	13.6	13.8
Total (All Noise Sources)	30.5	17.8	13.9	13.6	13.8

10.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

Table 10-4 shows the Project operational noise levels during the daytime and nighttime hours. The daytime hourly noise levels at the off-site receiver locations are expected to range from 16.3 to 33.3 dBA L_{eq} . The nighttime hourly noise levels at the off-site receiver locations are expected to range from 13.6 to 30.5 dBA L_{eq} . Appendix 10.2 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

TABLE 10-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location ¹	Project Operational Noise Levels (dBA L _{max}) ²		Exterior Noise Level Standards (dBA L _{max}) ³		Noise Level Standards Exceeded? ⁴	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	33.3	30.5	55	45	No	No
R2	20.5	17.8	55	45	No	No
R3	16.7	13.9	55	45	No	No
R4	16.3	13.6	55	45	No	No
R5	16.5	13.8	55	45	No	No

¹ See Exhibit 9-A for the receiver locations.

² Proposed Project operational noise levels as shown on Tables 10-2 and 10-3.

³ Exterior noise level standard for residential land use as shown on Table 4-1.

⁴ Do the estimated Project operational noise source activities exceed the noise level standards?

⁵ Non-residential land use with no expected nighttime occupancy.

"Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.

10.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearest 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. (6) Instead, they must be logarithmically added using the following base equation:

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

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 10-2 and 10-3, respectively.

As indicated on Tables 10-5 and 10-6, the Project will generate an unmitigated daytime and nighttime operational noise level increases ranging from less than 0.0 to 0.7 dBA L_{eq} at the nearest receiver locations. In effect, the amount to which a given noise level increase is considered acceptable is reduced based on existing ambient noise conditions. Based on the operational noise level increase significance criteria presented in Section 4.2, the Project-related operational noise level increases will satisfy the operational noise level increase criteria at the nearest sensitive receiver locations and the impact will be *less than significant*.

TABLE 10-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Increase ⁶	Increase Criteria ⁷	Increase Criteria Exceeded?
R1	33.3	L1	45.0	45.3	0.3	5	No
R2	20.5	L2	44.3	44.3	0.0	5	No
R3	16.7	L3	47.1	47.1	0.0	5	No
R4	16.3	L4	50.7	50.7	0.0	5	No
R5	16.5	L4	58.3	58.3	0.0	5	No

¹ See Exhibit 9-A for the receiver locations.² Total Project daytime operational noise levels as shown on Table 10-2.³ Reference noise level measurement locations as shown on Exhibit 10-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 10-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES**

Receiver Location ¹	Total Project Operational Noise Level ²	Measurement Location ³	Reference Ambient Noise Levels ⁴	Combined Project and Ambient ⁵	Project Increase ⁶	Increase Criteria ⁷	Increase Criteria Exceeded?
R1	30.5	L1	38.1	38.8	0.7	5	No
R2	17.8	L2	39.5	39.5	0.0	5	No
R3	13.9	L3	45.5	45.5	0.0	5	No
R4	13.6	L4	42.3	42.3	0.0	5	No
R5	13.8	L5	51.5	51.5	0.0	5	No

¹ See Exhibit 9-A for the receiver locations.² Total Project nighttime operational noise levels as shown on Table 10-3.³ Reference noise level measurement locations as shown on Exhibit 10-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.

11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 9. Section 9.52.020 of the County of Riverside Code, states that construction activities are exempted from the noise ordinance if located $\frac{1}{4}$ mile or greater from inhabited dwelling units or if within a quarter mile, it occurs between the hours of 6:00 a.m. to 6:00 p.m. Monday through Friday from June 1st to September 30th, 7:00 a.m. to 6:00 p.m. Monday through Friday from October 1st to May 30th.

In addition, since the County of Riverside has not established a numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes; a numerical construction threshold based on the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual is used for analysis of daytime construction impacts. The FTA considers a daytime exterior construction noise level of 80 dBA Leq as a reasonable threshold for noise-sensitive residential land use. (1)

11.1 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

11.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (26) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. Table 11-1 provides a summary of the loudest equipment modeled per phase.

EXHIBIT 11-A: CONSTRUCTION SOURCE NOISE LOCATIONS



TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

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

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

11.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 11-2, the construction noise levels are expected to range from 29.0 to 57.4 dBA L_{eq}, and the highest construction levels are expected to range from 41.0 to 57.4 dBA L_{eq} at the nearby receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location ¹	Construction Noise Levels (dBA L _{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels ²
R1	55.4	57.4	50.4	48.4	45.4	57.4
R2	43.0	45.0	38.0	36.0	33.0	45.0
R3	39.3	41.3	34.3	32.3	29.3	41.3
R4	39.3	41.3	34.3	32.3	29.3	41.3
R5	39.0	41.0	34.0	32.0	29.0	41.0

¹ Construction noise source and receiver locations are shown on Exhibit 11-A.

² Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 11.1.

11.4 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 11-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 11-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location ¹	Construction Noise Levels (dBA L _{eq})		
	Highest Construction Noise Levels ²	Threshold ³	Threshold Exceeded? ⁴
R1	57.4	80	No
R2	45.0	80	No
R3	41.3	80	No
R4	41.3	80	No
R4	41.0	80	No

¹ Noise receiver locations are shown on Exhibit 11-A.

² Highest construction noise level operating at the Project site boundary to nearby receiver locations (Table 11-2).

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

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

11.5 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground-borne vibration levels resulting from typical construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). (1) However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 11-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the Caltrans. To calculate the vibration of equipment at distance Caltrans provides the following equation: $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.1}$

TABLE 11-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Using the vibration source level of construction equipment provided on Table 11-4 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 11-5 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 188 to 3,122 feet from Project construction activities, construction vibration velocity levels are estimated to be less than 0.01 in/sec PPV and will not exceed the County of Riverside threshold of 0.04 PPV (in/sec) at off-site receivers, as shown on Table 11-5. Therefore, the Project-related vibration impacts are considered *less than significant*.

TABLE 11-5: PROJECT CONSTRUCTION VIBRATION LEVELS – UNMITIGATED

Receiver Location ¹	Distance to Const. Activity (Feet) ²	Typical Construction Vibration Levels PPV (in/sec) ³					Thresholds PPV (in/sec) ⁴	Thresholds Exceeded? ⁵
		Small bulldozer	Jack- hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R1	188'	0.00	0.00	0.00	0.00	0.00	0.04	No
R2	1,852'	0.00	0.00	0.00	0.00	0.00	0.04	No
R3	3,122'	0.00	0.00	0.00	0.00	0.00	0.04	No
R4	3,074'	0.00	0.00	0.00	0.00	0.00	0.04	No
R4	3,107'	0.00	0.00	0.00	0.00	0.00	0.04	No

¹ Construction receiver locations are shown on Exhibit 11-A.

² Distance from receiver location to Project construction boundary.

³ Based on the Vibration Source Levels of Construction Equipment (Table 11-4).

⁴ County of Riverside General Plan.

⁵ Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

12 REFERENCES

1. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123.* September 2018.
2. **U.S. Department of Transportation Federal Highway Administration.** Acoustical Consideration. *Noise Barrier Design Handbook.* [Online] [Cited: November 28, 2016.] https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/design03.cfm.
3. **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.
4. **California Department of Transportation.** *Traffic Noise Analysis Protocol.* May 2011.
5. **Harris, Cyril M.** *Noise Control in Buildings.* s.l. : McGraw-Hill, Inc., 1994.
6. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
7. **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.
8. **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.* June, 1995.
9. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
10. **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.
11. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
12. —. *Transportation and Construction Vibration Guidance Manual.* April 2020.
13. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual, FTA-VA-90-1003-06.* May 2006.
14. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
15. **State of California.** California Code of Regulations, Title 24, Part 2, Volume 1, Chapter 12, Section 1206.4, Allowable Interior Noise Level. *ICC Digital Coes.* [Online] 2019. <https://codes.iccsafe.org/content/CABCV12019/chapter-12-interior-environment>.
16. **County of Riverside.** *General Plan Noise Element.* December 2015.
17. —. *Municipal Code, Chapter 9.52 Noise Regulation.*
18. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
19. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
20. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.

21. **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.
22. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013*.
23. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model*. December 1978. FHWA-RD-77-108.
24. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calven REMELs) in FHWA Highway Traffic Noise Prediction*. September 1995. TAN 95-03.
25. **County of Riverside Office of Industrial Hygiene.** *Requirements for determining and mitigating traffic noise impacts to residential structures*. July 2, 2012.
26. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model*. January, 2006.

13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the Tentative Tract Map 38483 Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 788-1971.

William Maddux, INCE
Senior Associate
URBAN CROSSROADS, INC.
(619) 788-1971
bmaddux@urbanxroads.com

EDUCATION

Bachelor of Science in Urban and Regional Planning
California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

COUNTY OF RIVERSIDE OFFICE OF INDUSTRIAL HYGIENE NOISE STUDY REQUIREMENTS

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Office of Industrial Hygiene
3880 Lemon Street, Suite 200, Riverside, CA 92501
Office: 951-955-8982 FAX: 951-955-8988

TO: Whom it may concern DATE: July 2, 2012

FROM: Steven Hinde, REHS, CIH, Senior Industrial Hygienist

RE: Requirements for determining and mitigating traffic noise impacts to residential structures

NOISE STANDARDS:

1. The "Noise Element" section of the Riverside County General Plan states "to avoid future noise hazard, the maximum capacity design standard for highways and major roads shall be used for determining the maximum future noise level" or, in the case of freeways and airports, the estimated conditions 20 years in the future may be used.
2. The interior noise levels in residential dwellings shall not exceed 45 Ldn/CNEL.
3. The exterior noise level shall not exceed 65 Ldn/CNEL.
4. Required Noise Prediction Model - Traffic Noise: FHWA RD 77-108 Highway Traffic Prediction Model, Sound 32 or the equivalent.

REQUIRED TRAFFIC NOISE MODELING PARAMETERS:

Roadway Classification: All roadways must be classified into one of the following categories as defined in the County's General Plan: "Secondary", "Major", "Arterial", "Urban Arterial", "Expressway", "Freeway", and "Specific Plan Road". For future reference the Riverside County Integrated Project (RCIP)/ General Plan can be accessed using <http://www.rctlma.org/genplan/content/gp/chapter04.html>. The areas will be listed under AREA PLANS VOLUMES 1 and 2. Click on specific area to be looked at. Under the section title "List of Figures" found near the bottom of the page, click on "Circulation" for the most current roadway classifications.

1. **Roadway Traffic Volume:** All roadways must be modeled using Average Daily Trip (ADT) level "C" design capacities (also known as future build-out daily traffic volumes) as quoted County of Riverside General Plan, Chapter 4, Page C-11 "Link Volume Capacities/ Level of Service for Riverside County Roadways" revised March 2001. Or the page can be found on the Internet at http://www.rcip.org/Documents/general_plan/gen_plan/fig_04_02.pdf, or in the case of freeways, contact CALTRANS for future number of lanes.
2. **Required vehicle mix (MANDATORY)**
 - i) Freeways: Vehicle mix information must be obtained from CALTRANS.
 - ii) Roadways designated as "major", "arterial" highways or "expressways":

VEHICLE	OVERALL %	DAY % (7AM-7PM)	EVENING % (7PM-10PM)	NIGHT % (10PM-7AM)
Auto	92	69.5	12.9	9.6
Medium Truck	3	1.44	0.06	1.5
Heavy Truck	5	2.4	0.1	2.5

3.

iii) Roadways designated as "secondary", "collectors" or smaller.

VEHICLE	OVERALL %	DAY % (7AM-7PM)	EVENING % (7PM-10PM)	NIGHT % (10PM-7AM)
Auto	97.4	73.6	13.6	10.22
Medium Truck	1.84	0.9	0.04	0.9
Heavy Truck	0.74	0.35	0.04	0.35

4. **Traffic Speed:** For County roads assume an average traffic speed of 40 MPH. For freeways, contact CALTRANS and use what speed they recommend.
5. **Terrain conditions for modeling noise propagation:** Assume "hard site" conditions in determining noise propagation (no more than 3 dB of attenuation per doubling of distance between source and receiver).
6. **Noise attenuation attributed to standard residential architecture:** It is assumed that standard residential design (with windows closed) will provide no more than 20 dB (A) of attenuation. Additional mitigation must be demonstrated via modeling.
7. **Receiver placement for modeling exterior noise levels (unmitigated):** Noise levels must be estimated at the exterior face of the nearest residence at an elevation of five feet above the finished pad.
8. **Receiver placement for noise barrier design:**
 - i) *Set back:* Barrier calculations shall be based on a hypothetical outdoor receiver located ten (10) feet behind the intervening noise barrier.
 - ii) *Receiver height:* Initial calculations shall be based on a receiver height of five (5) feet above the ground. If these calculations result in a barrier less than or equal to six (6) feet in height, no further barrier calculations are necessary and this shall be selected as the required wall height. However, if the resulting barrier height is calculated to be greater than six feet, it shall be re-calculated using a receiver height of three (3) feet. The resulting re-calculated wall height shall be then selected as the required wall height.
9. **Receiver placement for architectural-based (indoor) noise mitigation - first floor:** First floor interior noise level predictions are to be calculated assuming a hypothetical receiver is located in the center of the room nearest the noise source and elevated 5 feet above the pad (finished floor).
10. **Receiver placement for architectural-based noise mitigation-second floor:** Second floor interior noise level predictions are to be calculated assuming a hypothetical receiver is located in the center of the room nearest the noise source and elevated 14 feet above the pad (or 5 feet above the second story finished floor).

NOISE REPORT FORMAT AND REQUIRED SUBMITTALS: The noise Consultants findings and recommendations must be submitted for review, and receive approval from, the Office of Industrial Hygiene. The resulting report must incorporate the requirements above and, at a minimum, contain the following information: a) a clear description of the proposed project; b) the identity and characterization of all acoustically significant roadways; c) a discussion of analytical methodology and parameters used for noise modeling; d) information obtained from applying requirements 6-10 (above); e) a discussion of mitigation (if necessary) including a clear diagram illustrating noise barrier placement; f) a printed copy of computer input/output (if available).

In addition to the report, Industrial Hygiene must be provided with the following depending on the design stage of the project. The first item that must be provided is a scaled map (blue-line) of the project. This map must clearly illustrate lot boundaries and the relative location of all acoustically significant roadways. Topographical elevations for lots and roadway centerlines must be included. Second, if architectural-based mitigation is necessary, and if the project has progressed to the point where plans for the homes have been drawn, copies must be provided (floor plans and exterior elevation drawings). Additionally, an updated blue-line showing exact pad location and finished floor elevation must be included.

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APPENDIX 5.1:

STUDY AREA PHOTOS

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15581 - Tentative Tract
Map 15581 residential development

15581_L1_East

33, 40' 7.960000", 117, 6' 24.000000"



15581_L1_North

33, 52' 14.600000", 117, 25' 39.870000"



15581_L1_South

33, 40' 7.960000", 117, 6' 23.940000"



15581_L1_West

33, 40' 7.970000", 117, 6' 23.970000"



15581 - Tentative Tract
Map 15581 residential development

15581_L2_East

33, 40' 14.330000", 117, 6' 7.570000"



15581_L2_North

33, 40' 14.300000", 117, 6' 7.600000"



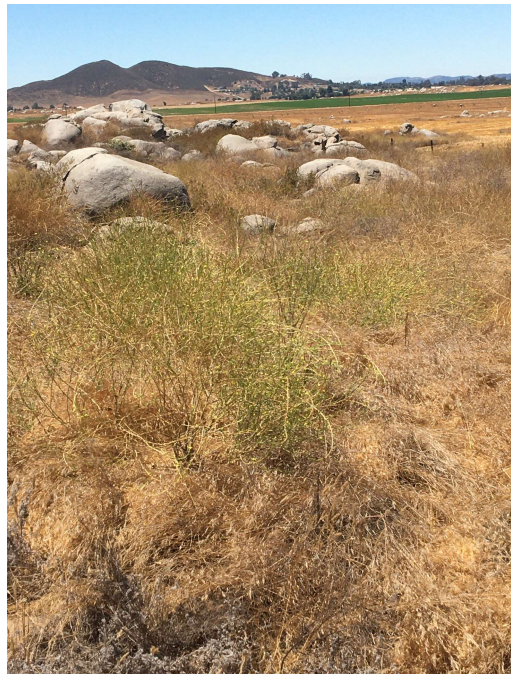
15581_L2_South

33, 40' 14.300000", 117, 6' 7.570000"



15581_L2_West

33, 40' 14.420000", 117, 6' 7.520000"



15581 - Tentative Tract
Map 15581 residential development

15581_L3_East
33, 39' 28.830000", 117, 6' 38.340000"



15581_L3_North
,



15581_L3_South
33, 39' 28.810000", 117, 6' 38.340000"



15581_L3_West
33, 39' 28.780000", 117, 6' 38.340000"



15581 - Tentative Tract
Map 15581 residential development

15581_L4_East

33, 40' 14.010000", 117, 7' 15.000000"



15581_L4_North

33, 40' 14.050000", 117, 7' 15.000000"



15581_L5_East

33, 39' 47.800000", 117, 7' 9.950000"



15581_L5_North

33, 39' 47.800000", 117, 7' 9.980000"



15581 - Tentative Tract
Map 15581 residential development

15581_L5_South

33, 39' 47.780000", 117, 7' 9.950000"



15581_L5_West

33, 39' 47.770000", 117, 7' 9.920000"



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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

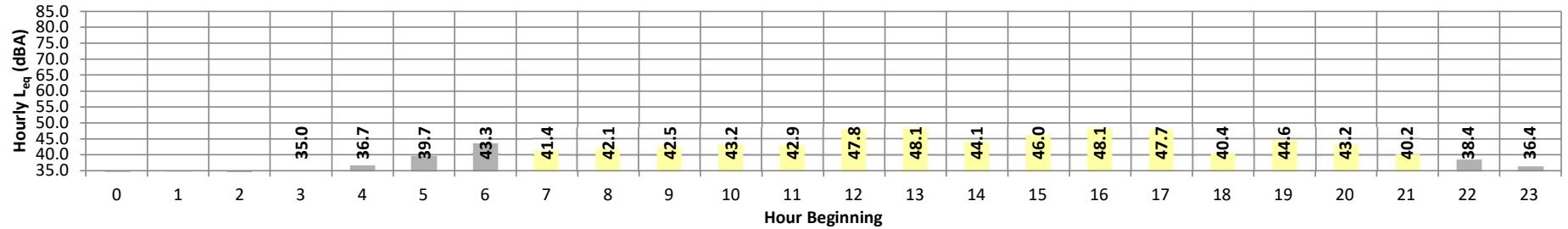
Date: Tuesday, July 2, 2024
Project: Tentative Tract Map 38483

Location: L1 - Located north of the site near the residence at 31115
Source: Holcomb Rd.

Meter: Piccolo II

JN: 15581
Analyst: N. Johnson

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	34.8	37.9	33.0	37.6	37.3	36.8	36.5	35.4	34.3	33.3	33.2	33.1	34.8	10.0	44.8
	1	34.9	39.4	32.6	38.6	38.1	37.3	36.8	35.7	34.4	33.1	32.9	32.7	34.9	10.0	44.9
	2	34.2	36.9	32.7	36.6	36.4	36.0	35.8	34.8	33.8	32.9	32.8	32.7	34.2	10.0	44.2
	3	35.0	38.0	33.5	37.6	37.3	36.8	36.4	35.5	34.7	33.9	33.8	33.6	35.0	10.0	45.0
	4	36.7	38.7	35.5	38.4	38.3	37.8	37.6	37.0	36.5	35.9	35.7	35.6	36.7	10.0	46.7
	5	39.7	45.6	37.8	44.4	43.3	41.8	41.3	39.9	39.2	38.3	38.2	37.9	39.7	10.0	49.7
	6	43.3	47.9	41.0	47.3	46.9	46.0	45.4	43.7	42.7	41.6	41.4	41.1	43.3	10.0	53.3
Day	7	41.4	47.5	38.6	47.0	46.6	45.4	44.3	41.4	40.3	39.1	39.0	38.7	41.4	0.0	41.4
	8	42.1	49.6	36.2	49.3	48.8	47.1	46.0	43.1	39.7	37.0	36.6	36.3	42.1	0.0	42.1
	9	42.5	47.9	38.9	47.6	47.2	46.1	45.4	43.5	41.4	39.3	39.1	38.9	42.5	0.0	42.5
	10	43.2	52.7	34.2	52.1	51.1	49.6	48.4	43.1	39.1	35.1	34.6	34.3	43.2	0.0	43.2
	11	42.9	50.2	35.9	49.6	49.1	47.9	46.9	44.1	41.0	37.0	36.5	36.0	42.9	0.0	42.9
	12	47.8	57.7	36.0	57.2	56.4	54.4	53.3	47.5	42.5	37.6	37.0	36.3	47.8	0.0	47.8
	13	48.1	56.4	34.4	56.1	55.6	54.7	53.7	49.2	40.2	36.2	35.1	34.6	48.1	0.0	48.1
	14	44.1	54.5	35.1	53.9	52.9	49.8	47.9	44.0	41.0	36.9	36.1	35.3	44.1	0.0	44.1
	15	46.0	53.3	36.9	52.6	52.1	51.0	50.1	47.0	44.3	39.2	38.3	37.3	46.0	0.0	46.0
	16	48.1	55.6	39.1	54.8	54.2	52.9	52.0	49.2	46.4	41.8	40.9	39.5	48.1	0.0	48.1
	17	47.7	55.1	38.4	54.5	53.8	52.7	52.0	48.8	45.4	41.0	40.0	38.8	47.7	0.0	47.7
	18	40.4	47.3	35.0	46.5	45.9	44.7	43.7	41.2	39.1	36.1	35.7	35.2	40.4	0.0	40.4
	19	44.6	54.1	36.5	53.1	52.1	49.5	48.3	45.5	42.2	37.9	37.1	36.7	44.6	5.0	49.6
	20	43.2	50.1	37.9	49.8	49.6	48.5	47.5	43.8	40.8	38.6	38.3	38.0	43.2	5.0	48.2
	21	40.2	43.7	38.1	43.3	43.0	42.3	42.0	41.0	39.6	38.5	38.3	38.1	40.2	5.0	45.2
Night	22	38.4	43.2	37.0	42.2	41.4	39.9	39.4	38.6	38.2	37.4	37.2	37.0	38.4	10.0	48.4
	23	36.4	38.5	34.9	38.3	38.1	37.8	37.6	36.7	36.2	35.3	35.2	35.0	36.4	10.0	46.4
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	24-Hour CNEL		
Day	Min	40.2	43.7	34.2	43.3	43.0	42.3	42.0	41.0	39.1	35.1	34.6	34.3	47.0	45.0	38.1
	Max	48.1	57.7	39.1	57.2	56.4	54.7	53.7	49.2	46.4	41.8	40.9	39.5			
Energy Average		45.0	Average:		51.2	50.6	49.1	48.1	44.8	41.5	38.1	37.5	36.9			
Night	Min	34.2	36.9	32.6	36.6	36.4	36.0	35.8	34.8	33.8	32.9	32.8	32.7	47.0	45.0	38.1
	Max	43.3	47.9	41.0	47.3	46.9	46.0	45.4	43.7	42.7	41.6	41.4	41.1			
Energy Average		38.1	Average:		40.1	39.7	38.9	38.5	37.5	36.7	35.7	35.6	35.4			

24-Hour Noise Level Measurement Summary

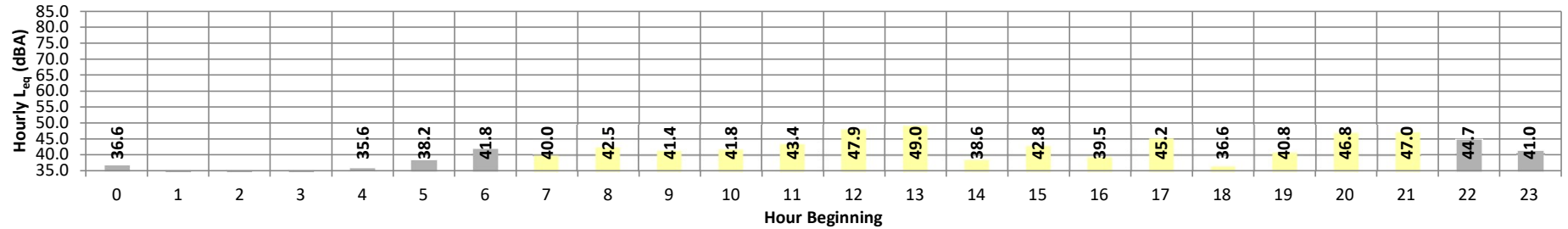
Date: Tuesday, July 2, 2024
Project: Tentative Tract Map 38483

Location: L2 - Located northeast of the site near the residence at 30876
Source: Epiplaneia Way

Meter: Piccolo II

JN: 15581
Analyst: N. Johnson

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	36.6	42.5	34.1	42.1	41.7	40.6	39.4	36.6	35.7	34.5	34.3	34.2	36.6	10.0	46.6
	1	33.8	35.7	33.3	35.3	34.9	34.4	34.3	33.9	33.7	33.4	33.4	33.3	33.8	10.0	43.8
	2	34.6	36.7	33.1	36.6	36.4	36.2	35.9	35.2	34.4	33.4	33.3	33.2	34.6	10.0	44.6
	3	33.6	35.6	32.7	35.4	35.3	34.9	34.6	33.9	33.4	32.9	32.8	32.7	33.6	10.0	43.6
	4	35.6	37.7	34.2	37.5	37.3	36.9	36.7	36.0	35.5	34.7	34.5	34.3	35.6	10.0	45.6
	5	38.2	42.1	36.6	41.5	41.1	40.1	39.6	38.6	37.9	37.0	36.9	36.7	38.2	10.0	48.2
	6	41.8	46.2	39.1	45.7	45.3	44.5	44.1	42.4	41.3	39.8	39.6	39.3	41.8	10.0	51.8
Day	7	40.0	43.1	38.1	42.7	42.3	41.7	41.3	40.5	39.8	38.6	38.4	38.2	40.0	0.0	40.0
	8	42.5	49.5	35.2	48.9	48.3	47.5	47.0	43.8	39.7	36.2	35.7	35.4	42.5	0.0	42.5
	9	41.4	47.6	34.1	47.3	46.9	46.3	45.6	43.0	39.2	34.9	34.5	34.2	41.4	0.0	41.4
	10	41.8	49.3	33.7	48.7	47.9	46.3	45.7	43.4	40.0	34.6	34.2	33.8	41.8	0.0	41.8
	11	43.4	50.7	35.0	50.3	49.7	48.5	47.7	44.6	41.1	36.5	35.8	35.2	43.4	0.0	43.4
	12	47.9	57.7	34.3	57.2	56.5	54.8	53.2	47.9	43.7	35.3	34.9	34.5	47.9	0.0	47.9
	13	49.0	58.3	33.6	57.9	57.0	55.3	54.5	50.8	38.7	34.4	34.0	33.7	49.0	0.0	49.0
	14	38.6	44.5	34.3	44.1	43.7	42.6	42.1	39.7	36.7	34.9	34.7	34.5	38.6	0.0	38.6
	15	42.8	50.4	35.7	50.0	49.8	48.8	47.8	43.2	39.6	36.5	36.2	35.8	42.8	0.0	42.8
	16	39.5	45.8	34.6	45.4	44.9	44.2	43.5	40.0	37.6	35.3	35.0	34.7	39.5	0.0	39.5
	17	45.2	52.1	35.2	51.7	51.4	50.7	50.3	46.7	41.3	36.3	35.9	35.4	45.2	0.0	45.2
	18	36.6	41.7	33.7	40.9	40.3	39.3	38.8	37.2	36.1	34.5	34.2	33.9	36.6	0.0	36.6
	19	40.8	46.1	35.7	45.7	45.2	44.5	44.2	42.1	39.3	36.7	36.3	35.9	40.8	5.0	45.8
	20	46.8	50.7	43.8	50.4	50.2	49.8	49.3	47.4	46.0	44.6	44.3	44.0	46.8	5.0	51.8
21	47.0	48.7	45.1	48.6	48.4	48.3	48.1	47.5	46.8	45.9	45.6	45.2	47.0	5.0	52.0	
Night	22	44.7	46.4	42.3	46.2	46.1	46.0	45.8	45.3	44.7	43.1	42.9	42.4	44.7	10.0	54.7
	23	41.0	43.5	38.2	43.3	43.2	42.9	42.7	41.7	40.8	38.8	38.5	38.3	41.0	10.0	51.0
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	Leq (dBA)		
Day	Min	36.6	41.7	33.6	40.9	40.3	39.3	38.8	37.2	36.1	34.4	34.0	33.7	24-Hour CNEL	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	49.0	58.3	45.1	57.9	57.0	55.3	54.5	50.8	46.8	45.9	45.6	45.2			
Energy Average		44.3	Average:		48.7	48.2	47.2	46.6	43.8	40.4	37.0	36.7	36.3	47.8 44.3 39.5		
Night	Min	33.6	35.6	32.7	35.3	34.9	34.4	34.3	33.9	33.4	32.9	32.8	32.7			
	Max	44.7	46.4	42.3	46.2	46.1	46.0	45.8	45.3	44.7	43.1	42.9	42.4			
Energy Average		39.5	Average:		40.4	40.2	39.6	39.2	38.2	37.5	36.4	36.2	36.0			

24-Hour Noise Level Measurement Summary

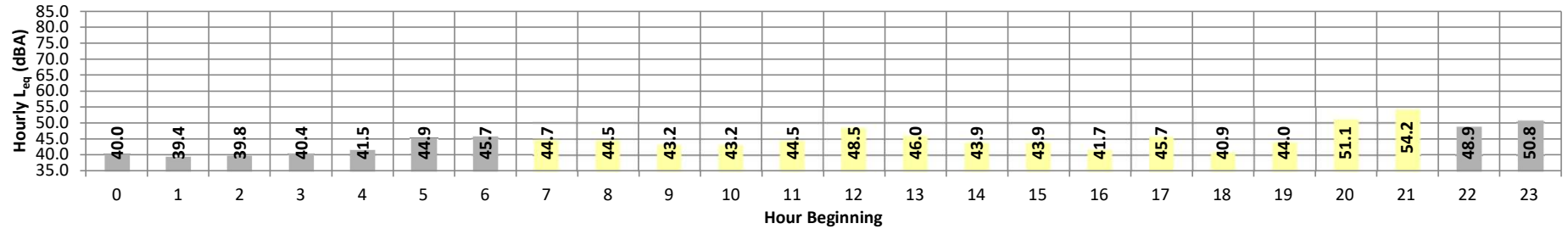
Date: Tuesday, July 2, 2024
Project: Metro Westwood UCLA

Location: L3 - Located south of the site near the residence at 31925
Source: Eucalyptus Rd.

Meter: Piccolo II

JN: 15581
Analyst: N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}			
Night	0	40.0	41.3	39.4	41.1	41.0	40.7	40.5	40.1	39.8	39.4	39.4	39.3	40.0	10.0	50.0			
	1	39.4	40.1	39.1	39.9	39.8	39.7	39.6	39.4	39.3	39.1	39.1	39.1	39.4	10.0	49.4			
	2	39.8	41.2	39.2	41.0	40.8	40.6	40.4	39.9	39.5	39.2	39.2	39.1	39.8	10.0	49.8			
	3	40.4	42.5	39.6	42.3	42.1	41.5	41.2	40.5	40.0	39.6	39.6	39.5	40.4	10.0	50.4			
	4	41.5	44.7	40.6	44.0	43.4	42.4	42.1	41.6	41.2	40.7	40.6	40.5	41.5	10.0	51.5			
	5	44.9	54.5	42.0	53.5	52.8	49.6	47.3	43.9	43.1	42.2	42.1	42.0	44.9	10.0	54.9			
	6	45.7	54.5	43.6	52.9	51.2	48.0	47.0	45.6	44.9	44.0	43.8	43.6	45.7	10.0	55.7			
Day	7	44.7	52.1	42.8	50.5	49.2	47.7	46.8	44.6	43.8	43.1	42.9	42.8	44.7	0.0	44.7			
	8	44.5	50.8	40.9	50.0	49.5	48.5	47.9	45.3	43.1	41.1	41.0	40.8	44.5	0.0	44.5			
	9	43.2	48.9	39.8	48.5	48.3	47.5	46.9	44.1	41.3	40.0	39.9	39.7	43.2	0.0	43.2			
	10	43.2	49.4	39.6	48.8	48.2	47.3	46.5	44.0	41.5	39.8	39.6	39.5	43.2	0.0	43.2			
	11	44.5	50.6	40.2	50.2	49.7	48.7	48.0	45.5	42.9	40.7	40.4	40.2	44.5	0.0	44.5			
	12	48.5	56.4	39.9	55.6	55.2	54.5	53.9	49.6	44.6	40.4	40.0	39.9	48.5	0.0	48.5			
	13	46.0	53.5	39.8	53.0	52.8	52.0	50.7	47.5	41.7	39.8	39.8	39.7	46.0	0.0	46.0			
	14	43.9	55.6	39.9	54.8	53.3	49.2	46.0	42.4	40.7	39.9	39.9	39.8	43.9	0.0	43.9			
	15	43.9	49.7	40.2	49.3	49.0	48.4	47.7	44.4	42.1	40.4	40.3	40.1	43.9	0.0	43.9			
	16	41.7	46.2	40.2	45.7	45.2	44.2	43.4	42.0	41.0	40.3	40.2	40.1	41.7	0.0	41.7			
	17	45.7	52.1	40.3	51.8	51.4	50.5	49.8	47.1	42.9	40.7	40.5	40.3	45.7	0.0	45.7			
	18	40.9	44.8	39.9	44.5	44.1	42.9	42.1	40.9	40.4	40.0	39.9	39.9	40.9	0.0	40.9			
	19	44.0	51.4	40.5	50.8	50.2	48.3	46.7	44.8	42.2	40.8	40.7	40.5	44.0	5.0	49.0			
	20	51.1	54.4	47.1	54.2	54.1	53.9	53.7	52.4	50.4	47.9	47.5	47.2	51.1	5.0	56.1			
	21	54.2	56.2	51.0	56.1	56.0	55.9	55.8	55.0	54.1	52.0	51.5	51.1	54.2	5.0	59.2			
Night	22	48.9	52.3	44.9	52.2	52.1	51.8	51.5	50.2	48.2	45.6	45.3	44.9	48.9	10.0	58.9			
	23	50.8	52.6	46.5	52.5	52.4	52.3	52.0	51.5	50.8	48.6	48.0	46.9	50.8	10.0	60.8			
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	24-Hour CNEL					
Day	Min	40.9	44.8	39.6	44.5	44.1	42.9	42.1	40.9	40.4	39.8	39.6	39.5	53.0	47.1	45.5			
	Max	54.2	56.4	51.0	56.1	56.0	55.9	55.8	55.0	54.1	52.0	51.5	51.1						
Energy Average		47.1	Average:		50.9	50.4	49.3	48.4	46.0	43.5	41.8	41.6	41.4						
Night	Min	39.4	40.1	39.1	39.9	39.8	39.7	39.6	39.4	39.3	39.1	39.1	39.1						
	Max	50.8	54.5	46.5	53.5	52.8	52.3	52.0	51.5	50.8	48.6	48.0	46.9						
Energy Average		45.5	Average:		46.6	46.2	45.2	44.6	43.6	43.0	42.1	41.9	41.7						

24-Hour Noise Level Measurement Summary

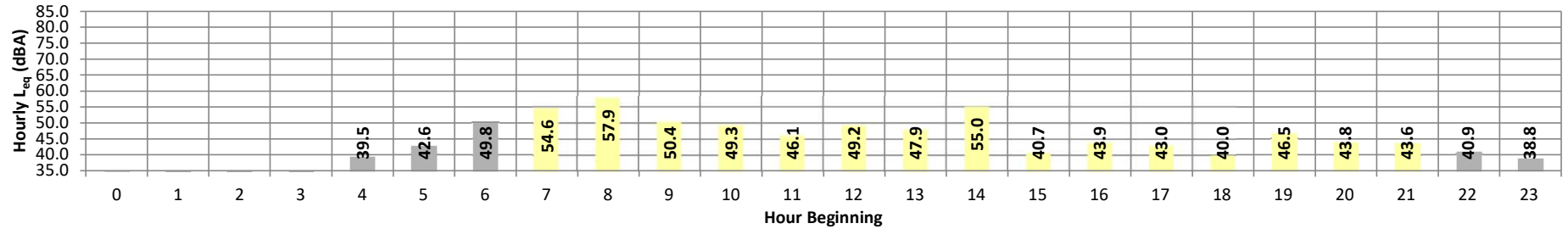
Date: Tuesday, July 2, 2024
Project: Tentative Tract Map 38483

Location: L4 - Located southwest of the site near the residence at 31615
Source: Leon Rd.

Meter: Piccolo II

JN: 15581
Analyst: N. Johnson

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	34.8	38.2	33.0	37.9	37.5	36.9	36.6	35.3	34.4	33.4	33.2	33.0	34.8	10.0	44.8
	1	32.8	35.4	31.9	35.0	34.6	34.0	33.7	33.0	32.6	32.1	32.1	32.0	32.8	10.0	42.8
	2	33.5	35.8	32.0	35.6	35.4	35.1	34.9	34.1	33.2	32.4	32.2	32.1	33.5	10.0	43.5
	3	34.5	37.6	32.8	37.3	37.2	36.7	36.0	34.8	34.1	33.2	33.0	32.8	34.5	10.0	44.5
	4	39.5	47.4	36.3	46.9	46.2	44.2	42.4	39.0	38.1	37.0	36.7	36.4	39.5	10.0	49.5
	5	42.6	47.7	40.4	47.1	46.4	45.0	44.3	42.9	42.2	41.0	40.8	40.5	42.6	10.0	52.6
	6	49.8	59.5	44.0	59.2	58.8	57.0	54.4	48.0	46.3	44.7	44.4	44.1	49.8	10.0	59.8
Day	7	54.6	66.3	42.4	65.4	64.4	62.7	60.6	51.7	47.4	43.1	42.9	42.5	54.6	0.0	54.6
	8	57.9	69.1	47.1	68.9	68.7	66.6	63.1	52.5	49.9	47.5	47.3	47.1	57.9	0.0	57.9
	9	50.4	63.3	38.3	63.1	62.0	58.3	54.9	45.2	41.8	39.3	39.0	38.4	50.4	0.0	50.4
	10	49.3	61.8	36.8	61.0	60.1	57.6	54.3	44.2	41.0	38.1	37.5	37.0	49.3	0.0	49.3
	11	46.1	56.6	36.1	56.1	55.5	53.5	50.9	44.8	41.5	37.3	36.7	36.2	46.1	0.0	46.1
	12	49.2	60.4	35.4	60.0	59.2	56.9	54.5	48.0	43.1	36.5	36.0	35.6	49.2	0.0	49.2
	13	47.9	57.7	34.4	57.1	56.5	55.3	54.1	48.0	41.1	35.5	35.0	34.5	47.9	0.0	47.9
	14	55.0	69.0	34.2	68.6	67.5	62.5	58.3	46.9	40.4	35.0	34.7	34.3	55.0	0.0	55.0
	15	40.7	47.6	34.1	47.2	46.7	45.6	44.6	41.8	38.7	35.2	34.7	34.2	40.7	0.0	40.7
	16	43.9	55.3	35.3	54.8	54.1	51.5	48.7	41.6	38.4	35.9	35.7	35.4	43.9	0.0	43.9
	17	43.0	51.5	35.4	51.0	50.5	49.0	47.8	44.0	39.4	36.3	35.9	35.5	43.0	0.0	43.0
	18	40.0	51.6	34.1	50.5	49.7	47.0	44.4	37.1	35.7	34.7	34.5	34.2	40.0	0.0	40.0
	19	46.5	53.5	41.6	53.1	52.4	51.1	50.2	47.9	44.5	42.1	41.9	41.7	46.5	5.0	51.5
	20	43.8	48.2	41.1	47.6	47.2	46.4	46.1	44.5	43.2	41.7	41.5	41.3	43.8	5.0	48.8
	21	43.6	46.5	42.1	46.2	46.0	45.6	45.1	44.0	43.3	42.4	42.3	42.1	43.6	5.0	48.6
	Night	22	40.9	43.8	39.5	43.4	43.2	42.7	42.3	41.2	40.6	39.9	39.8	39.6	40.9	10.0
23		38.8	40.4	37.5	40.3	40.2	39.9	39.7	39.2	38.7	37.9	37.7	37.5	38.8	10.0	48.8
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	24-Hour CNEL		
Day	Min	40.0	46.5	34.1	46.2	46.0	45.6	44.4	37.1	35.7	34.7	34.5	34.2	51.6	50.7	42.3
	Max	57.9	69.1	47.1	68.9	68.7	66.6	63.1	52.5	49.9	47.5	47.3	47.1			
Energy Average		50.7	Average:		56.7	56.0	54.0	51.8	45.5	42.0	38.7	38.4	38.0			
Night	Min	32.8	35.4	31.9	35.0	34.6	34.0	33.7	33.0	32.6	32.1	32.1	32.0			
	Max	49.8	59.5	44.0	59.2	58.8	57.0	54.4	48.0	46.3	44.7	44.4	44.1			
Energy Average		42.3	Average:		42.5	42.2	41.3	40.5	38.6	37.8	36.8	36.7	36.5			

24-Hour Noise Level Measurement Summary

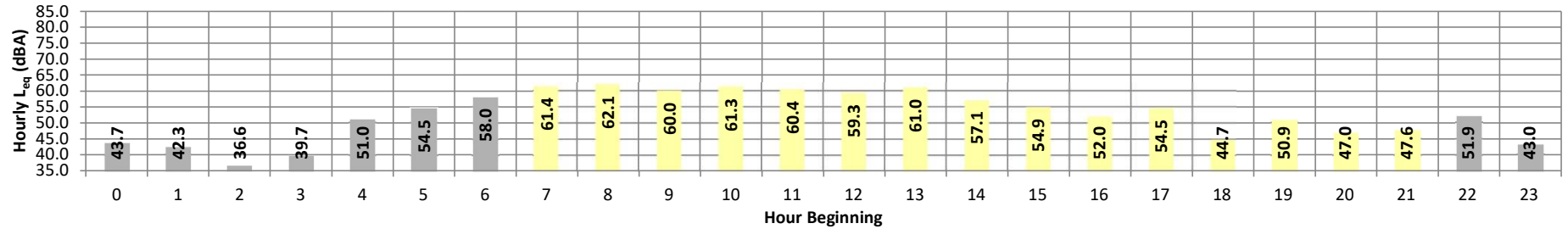
Date: Tuesday, July 2, 2024
Project: Tentative Tract Map 38483

Location: L5 - Located west of the site near the residence at 30917
Source: Holland Rd.

Meter: Piccolo II

JN: 15581
Analyst: N. Johnson

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	43.7	52.8	40.1	52.3	51.6	49.2	46.7	42.8	41.7	40.6	40.4	40.2	43.7	10.0	53.7
	1	42.3	45.4	40.0	44.8	44.4	43.8	43.5	42.9	42.2	40.7	40.4	40.2	42.3	10.0	52.3
	2	36.6	40.5	34.1	39.9	39.5	38.7	38.4	37.3	36.1	34.8	34.5	34.2	36.6	10.0	46.6
	3	39.7	51.5	33.9	51.0	50.1	46.4	43.1	36.7	35.3	34.3	34.1	34.0	39.7	10.0	49.7
	4	51.0	64.7	37.7	64.0	63.0	58.9	55.1	43.0	40.0	38.2	38.0	37.8	51.0	10.0	61.0
	5	54.5	67.5	41.5	67.0	66.0	61.9	58.7	49.9	45.1	42.3	41.9	41.6	54.5	10.0	64.5
	6	58.0	69.5	43.2	69.1	68.4	65.8	63.7	55.4	48.7	44.2	43.7	43.3	58.0	10.0	68.0
Day	7	61.4	72.7	42.7	72.3	71.8	69.5	67.4	58.4	50.1	43.9	43.3	42.8	61.4	0.0	61.4
	8	62.1	73.6	40.7	73.1	72.4	70.4	68.3	59.0	51.2	42.2	41.5	40.8	62.1	0.0	62.1
	9	60.0	72.3	39.1	71.8	70.9	68.1	65.9	55.8	47.4	40.9	40.2	39.5	60.0	0.0	60.0
	10	61.3	72.8	39.2	72.4	71.8	70.1	67.8	56.1	47.2	40.8	40.0	39.4	61.3	0.0	61.3
	11	60.4	72.1	39.8	71.7	71.1	68.7	66.7	56.7	46.8	41.4	40.6	40.0	60.4	0.0	60.4
	12	59.3	71.3	38.6	70.9	70.2	67.6	65.1	55.7	46.5	39.8	39.3	38.7	59.3	0.0	59.3
	13	61.0	72.9	38.7	72.5	71.8	69.0	66.7	58.0	49.4	40.8	40.0	38.9	61.0	0.0	61.0
	14	57.1	69.6	38.2	69.1	68.2	65.3	62.6	52.4	44.8	39.2	38.8	38.4	57.1	0.0	57.1
	15	54.9	68.1	38.4	67.5	66.4	62.8	59.1	50.5	44.4	39.8	39.2	38.6	54.9	0.0	54.9
	16	52.0	63.9	40.3	63.6	63.0	60.4	57.2	47.2	43.8	41.4	40.9	40.5	52.0	0.0	52.0
	17	54.5	66.4	41.5	66.1	65.6	63.0	59.8	49.3	46.1	43.4	42.8	42.0	54.5	0.0	54.5
	18	44.7	55.9	37.3	55.5	54.5	51.1	48.5	43.2	40.5	38.4	38.0	37.6	44.7	0.0	44.7
	19	50.9	62.3	37.6	61.8	61.1	58.2	55.7	50.4	43.3	38.6	38.2	37.8	50.9	5.0	55.9
	20	47.0	57.9	41.6	57.5	56.6	52.9	50.0	45.3	44.0	42.4	42.2	41.7	47.0	5.0	52.0
21	47.6	55.1	44.0	54.5	53.8	51.8	50.6	48.0	46.3	44.6	44.4	44.1	47.6	5.0	52.6	
Night	22	51.9	64.3	42.2	64.1	62.9	59.2	57.0	47.8	44.0	42.8	42.6	42.3	51.9	10.0	61.9
	23	43.0	51.3	40.8	50.9	50.1	46.6	44.4	42.4	42.0	41.2	41.0	40.8	43.0	10.0	53.0
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	Leq (dBA)		
Day	Min	44.7	55.1	37.3	54.5	53.8	51.1	48.5	43.2	40.5	38.4	38.0	37.6	24-Hour CNEL	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	62.1	73.6	44.0	73.1	72.4	70.4	68.3	59.0	51.2	44.6	44.4	44.1			
Energy Average		58.3	Average:		66.7	65.9	63.3	60.8	52.4	46.1	41.2	40.6	40.1	59.9	58.3	51.5
Night	Min	36.6	40.5	33.9	39.9	39.5	38.7	38.4	36.7	35.3	34.3	34.1	34.0			
	Max	58.0	69.5	43.2	69.1	68.4	65.8	63.7	55.4	48.7	44.2	43.7	43.3			
Energy Average		51.5	Average:		55.9	55.1	52.3	50.1	44.3	41.7	39.9	39.6	39.4			

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APPENDIX 7.1:

ON-SITE TRAFFIC NOISE CALCULATIONS

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

Scenario: Backyard No Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 0.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 675.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 669.009				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 668.989				
Road Grade: 1.0%		Heavy Trucks: 668.974				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.33	0.00	-2.07	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.33	0.00	-2.09	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.33	0.00	-2.15	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.7	55.4	49.4	57.8	58.4
Medium Trucks:	52.8	48.8	41.0	50.2	56.4	56.4
Heavy Trucks:	59.9	55.9	48.1	57.3	63.5	63.5
Vehicle Noise:	62.8	59.7	56.3	58.6	65.1	65.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.7	55.4	49.4	57.8	58.4
Medium Trucks:	52.8	48.8	41.0	50.2	56.4	56.4
Heavy Trucks:	59.9	55.9	48.1	57.3	63.5	63.5
Vehicle Noise:	62.8	59.7	56.3	58.6	65.1	65.3

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

Scenario: Backyard No Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet					
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 25.0 feet Centerline Dist. to Observer: 35.0 feet Barrier Distance to Observer: 10.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 1,453.0 feet Road Elevation: 1,450.0 feet Barrier Elevation: 1,450.0 feet Road Grade: 1.0%		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: 1,450.00				
		Medium Trucks: 1,452.30				
		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
		Lane Equivalent Distance (in feet)				
		Autos: 29.479				
		Medium Trucks: 28.940				
Heavy Trucks: 28.373						

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	2.23	0.00	-1.69	0.000	0.000
Medium Trucks:	76.31	-21.69	2.31	0.00	-2.34	0.000	0.000
Heavy Trucks:	81.16	-25.64	2.39	0.00	-4.33	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.1	61.8	55.8	64.2	64.8
Medium Trucks:	56.9	53.0	45.5	54.3	60.5	60.5
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	66.4	64.0	62.2	59.9	67.1	67.4

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.1	63.1	61.8	55.8	64.2	64.8
Medium Trucks:	56.9	53.0	45.5	54.3	60.5	60.5
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	66.4	64.0	62.2	59.9	67.1	67.4

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

Scenario: Backyard No Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet					
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 1,009.0 feet Centerline Dist. to Observer: 1,021.0 feet Barrier Distance to Observer: 12.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 1,446.8 feet Road Elevation: 1,445.0 feet Barrier Elevation: 1,445.0 feet Road Grade: 1.0%		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: 1,445.00				
		Medium Trucks: 1,447.30				
		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
		Lane Equivalent Distance (in feet)				
		Autos: #####				
		Medium Trucks: #####				
Heavy Trucks: #####						

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.14	0.00	-1.73	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.14	0.00	-1.75	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.14	0.00	-1.78	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

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

Scenario: Backyard No Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet						
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 50.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 10.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 1,446.6 feet Road Elevation: 1,444.0 feet Barrier Elevation: 1,444.0 feet Road Grade: 1.0%		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: 1,444.00				
		Medium Trucks: 1,446.30				
		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
		Lane Equivalent Distance (in feet)				
		Autos: 54.201				
		Medium Trucks: 53.927				
		Heavy Trucks: 53.667				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-0.42	0.00	-1.98	0.000	0.000
Medium Trucks:	76.31	-15.52	-0.40	0.00	-2.31	0.000	0.000
Heavy Trucks:	81.16	-19.47	-0.38	0.00	-3.21	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:	68.7	66.7	65.3	59.3	67.7	68.4
Medium Trucks:	60.4	56.5	49.0	57.7	63.9	64.0
Heavy Trucks:	61.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	69.9	67.5	65.7	63.3	70.6	70.9

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.7	65.3	59.3	67.7	68.4
Medium Trucks:	60.4	56.5	49.0	57.7	63.9	64.0
Heavy Trucks:	61.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	69.9	67.5	65.7	63.3	70.6	70.9

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

Scenario: Backyard With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 675.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 669.009				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 668.989				
Road Grade: 1.0%		Heavy Trucks: 668.974				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.33	0.00	-0.03	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.33	0.00	-0.03	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.33	0.00	-0.04	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.7	55.4	49.4	57.8	58.4
Medium Trucks:	52.8	48.8	41.0	50.2	56.4	56.4
Heavy Trucks:	59.9	55.9	48.1	57.3	63.5	63.5
Vehicle Noise:	62.8	59.7	56.3	58.6	65.1	65.3

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.7	55.4	49.4	57.8	58.4
Medium Trucks:	52.8	48.8	41.0	50.2	56.4	56.4
Heavy Trucks:	59.9	55.9	48.1	57.3	63.5	63.5
Vehicle Noise:	62.8	59.7	56.3	58.6	65.1	65.3

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

Scenario: Backyard With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 35.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 29.198				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 28.940				
Road Grade: 1.0%		Heavy Trucks: 28.373				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	2.27	0.00	0.04	-5.400	-8.400
Medium Trucks:	76.31	-21.69	2.31	0.00	0.00	0.000	0.000
Heavy Trucks:	81.16	-25.64	2.39	0.00	-0.30	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.2	61.9	55.8	64.3	64.9
Medium Trucks:	56.9	53.0	45.5	54.3	60.5	60.5
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	66.4	64.0	62.3	59.9	67.1	67.5

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.8	57.8	56.5	50.4	58.9	59.5
Medium Trucks:	56.9	53.0	45.5	54.3	60.5	60.5
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	63.1	60.2	57.7	58.5	65.1	65.3

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

Scenario: Backyard With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,021.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 12.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.14	0.00	-1.73	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.14	0.00	-1.75	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.14	0.00	-1.78	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

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

Scenario: Backyard With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 7.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 50.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 60.0 feet		Autos: 1,444.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 1,446.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.6 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,444.0 feet		Autos: 54.165				
Barrier Elevation: 1,444.0 feet		Medium Trucks: 53.860				
Road Grade: 1.0%		Heavy Trucks: 53.667				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-0.42	0.00	0.04	-5.400	-8.400
Medium Trucks:	76.31	-15.52	-0.39	0.00	0.01	-5.100	-8.100
Heavy Trucks:	81.16	-19.47	-0.38	0.00	-0.03	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.7	65.3	59.3	67.7	68.4
Medium Trucks:	60.4	56.5	49.0	57.8	63.9	64.0
Heavy Trucks:	61.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	69.9	67.5	65.7	63.4	70.6	70.9

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.3	61.3	59.9	53.9	62.3	63.0
Medium Trucks:	55.3	51.4	43.9	52.7	58.8	58.9
Heavy Trucks:	61.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	65.8	63.0	61.0	60.6	67.4	67.6

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

Scenario: First Floor With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet						
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 6.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 665.0 feet Centerline Dist. to Observer: 685.0 feet Barrier Distance to Observer: 20.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 1,451.9 feet Road Elevation: 1,450.0 feet Barrier Elevation: 1,450.0 feet Road Grade: 1.0%		Autos: 75.5%		14.0%	10.5%	92.00%
		Medium Trucks: 48.0%		2.0%	50.0%	3.00%
		Heavy Trucks: 48.0%		2.0%	50.0%	5.00%
		Noise Source Elevations (in feet)				
		Autos: 1,450.00				
		Medium Trucks: 1,452.30				
		Heavy Trucks: 1,458.01		Grade Adjustment: 0.0		
		Lane Equivalent Distance (in feet)				
		Autos: 679.009				
		Medium Trucks: 678.989				
		Heavy Trucks: 678.974				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	-0.01	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.40	0.00	-0.01	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.40	0.00	-0.02	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.4
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.4
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

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

Scenario: First Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 45.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 39.100				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 38.504				
Road Grade: 1.0%		Heavy Trucks: 38.536				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	1.00	0.00	0.21	-6.870	-9.870
Medium Trucks:	76.31	-21.69	1.07	0.00	0.04	-5.400	-8.400
Heavy Trucks:	81.16	-25.64	1.06	0.00	-0.20	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.9	61.9	60.6	54.6	63.0	63.6
Medium Trucks:	55.7	51.8	44.3	53.0	59.2	59.3
Heavy Trucks:	56.6	52.5	49.1	53.8	60.0	60.1
Vehicle Noise:	65.2	62.7	61.0	58.6	65.8	66.2

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	55.0	53.7	47.7	56.1	56.8
Medium Trucks:	50.3	46.4	38.9	47.6	53.8	53.9
Heavy Trucks:	56.6	52.5	49.1	53.8	60.0	60.1
Vehicle Noise:	60.3	57.3	55.1	55.5	62.2	62.4

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

Scenario: First Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,031.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 22.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-0.98	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-1.00	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-1.04	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: First Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 7.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 50.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 70.0 feet		Autos: 1,444.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,446.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.6 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,444.0 feet		Autos: 64.156				
Barrier Elevation: 1,444.0 feet		Medium Trucks: 63.851				
Road Grade: 1.0%		Heavy Trucks: 63.719				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.15	0.00	0.11	-6.080	-9.080
Medium Trucks:	76.31	-15.52	-1.13	0.00	0.04	-5.400	-8.400
Heavy Trucks:	81.16	-19.47	-1.12	0.00	-0.02	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	65.9	64.6	58.6	67.0	67.6
Medium Trucks:	59.7	55.8	48.3	57.0	63.2	63.2
Heavy Trucks:	60.6	56.5	53.1	57.8	64.0	64.1
Vehicle Noise:	69.2	66.8	65.0	62.6	69.8	70.2

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.8	59.8	58.5	52.5	60.9	61.6
Medium Trucks:	54.3	50.4	42.9	51.6	57.8	57.8
Heavy Trucks:	60.6	56.5	53.1	57.8	64.0	64.1
Vehicle Noise:	64.7	61.8	59.7	59.6	66.4	66.6

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

Scenario: Fourth Floor With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 685.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 679.819				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 679.709				
Road Grade: 1.0%		Heavy Trucks: 679.467				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	-13.22	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.40	0.00	-13.31	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.40	0.00	-13.54	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

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

Scenario: Fourth Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 45.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 52.058				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 50.542				
Road Grade: 1.0%		Heavy Trucks: 47.050				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-0.24	0.00	-2.69	0.000	0.000
Medium Trucks:	76.31	-21.69	-0.12	0.00	-3.61	0.000	0.000
Heavy Trucks:	81.16	-25.64	0.20	0.00	-6.75	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.7	59.3	53.3	61.8	62.4
Medium Trucks:	54.5	50.6	43.1	51.9	58.0	58.1
Heavy Trucks:	55.7	51.7	48.3	52.9	59.1	59.2
Vehicle Noise:	64.0	61.5	59.8	57.5	64.7	65.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.7	59.3	53.3	61.8	62.4
Medium Trucks:	54.5	50.6	43.1	51.9	58.0	58.1
Heavy Trucks:	55.7	51.7	48.3	52.9	59.1	59.2
Vehicle Noise:	64.0	61.5	59.8	57.5	64.7	65.1

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

Scenario: Fourth Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,031.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 22.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-17.39	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-17.46	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-17.65	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: Fourth Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph						
Near/Far Lane Distance: 12 feet						
Site Data		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:	1,444.00			
		Medium Trucks:	1,446.30			
		Heavy Trucks:	1,452.01	Grade Adjustment: 0.0		
		Lane Equivalent Distance (in feet)				
		Autos:	72.506			
		Medium Trucks:	71.439			
		Heavy Trucks:	69.045			

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.68	0.00	-5.76	0.000	0.000
Medium Trucks:	76.31	-15.52	-1.62	0.00	-6.50	0.000	0.000
Heavy Trucks:	81.16	-19.47	-1.47	0.00	-8.60	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.4	64.1	58.1	66.5	67.1
Medium Trucks:	59.2	55.3	47.8	56.5	62.7	62.7
Heavy Trucks:	60.2	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	68.7	66.2	64.5	62.2	69.4	69.7

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.4	64.1	58.1	66.5	67.1
Medium Trucks:	59.2	55.3	47.8	56.5	62.7	62.7
Heavy Trucks:	60.2	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	68.7	66.2	64.5	62.2	69.4	69.7

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

Scenario: Second Floor With Wall
 Road Name: Holland Rd.
 Lot No: Building 15

Project Name: Tentative Tract Map 38483
 Job Number: 15581
 Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 685.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 679.160				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 679.110				
Road Grade: 1.0%		Heavy Trucks: 679.019				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	-2.11	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.40	0.00	-2.14	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.40	0.00	-2.22	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

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

Scenario: Second Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 45.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 42.119				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 41.245				
Road Grade: 1.0%		Heavy Trucks: 39.571				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	0.68	0.00	-0.20	0.000	0.000
Medium Trucks:	76.31	-21.69	0.77	0.00	-0.49	0.000	0.000
Heavy Trucks:	81.16	-25.64	0.95	0.00	-1.87	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.6	61.6	60.3	54.3	62.7	63.3
Medium Trucks:	55.4	51.5	44.0	52.7	58.9	59.0
Heavy Trucks:	56.5	52.4	49.0	53.7	59.9	60.0
Vehicle Noise:	64.9	62.4	60.7	58.4	65.6	65.9

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.6	61.6	60.3	54.3	62.7	63.3
Medium Trucks:	55.4	51.5	44.0	52.7	58.9	59.0
Heavy Trucks:	56.5	52.4	49.0	53.7	59.9	60.0
Vehicle Noise:	64.9	62.4	60.7	58.4	65.6	65.9

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

Scenario: Second Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height:	0.0 feet	Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm):	0.0	Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier:	1,009.0 feet	Noise Source Elevations (in feet)				
Centerline Dist. to Observer:	1,031.0 feet	Autos: 1,445.00				
Barrier Distance to Observer:	22.0 feet	Medium Trucks: 1,447.30				
Observer Height (Above Pad):	14.0 feet	Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation:	1,446.8 feet	Lane Equivalent Distance (in feet)				
Road Elevation:	1,445.0 feet	Autos: #####				
Barrier Elevation:	1,445.0 feet	Medium Trucks: #####				
Road Grade:	1.0%	Heavy Trucks: #####				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-4.86	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-4.89	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-4.98	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: Second Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 7.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 50.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 70.0 feet		Autos: 1,444.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,446.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.6 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,444.0 feet		Autos: 65.845				
Barrier Elevation: 1,444.0 feet		Medium Trucks: 65.304				
Road Grade: 1.0%		Heavy Trucks: 64.295				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.26	0.00	-0.61	0.000	0.000
Medium Trucks:	76.31	-15.52	-1.23	0.00	-0.84	0.000	0.000
Heavy Trucks:	81.16	-19.47	-1.16	0.00	-1.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.8	64.5	58.5	66.9	67.5
Medium Trucks:	59.6	55.7	48.2	56.9	63.1	63.1
Heavy Trucks:	60.5	56.5	53.1	57.7	63.9	64.0
Vehicle Noise:	69.1	66.6	64.9	62.5	69.7	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.8	64.5	58.5	66.9	67.5
Medium Trucks:	59.6	55.7	48.2	56.9	63.1	63.1
Heavy Trucks:	60.5	56.5	53.1	57.7	63.9	64.0
Vehicle Noise:	69.1	66.6	64.9	62.5	69.7	70.1

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

Scenario: Third Floor With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 685.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 679.430				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 679.350				
Road Grade: 1.0%		Heavy Trucks: 679.184				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	-6.94	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.40	0.00	-7.00	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.40	0.00	-7.15	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

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

Scenario: Third Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height:	6.0 feet	Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm):	0.0	Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier:	25.0 feet	Noise Source Elevations (in feet)				
Centerline Dist. to Observer:	45.0 feet	Autos: 1,450.00				
Barrier Distance to Observer:	20.0 feet	Medium Trucks: 1,452.30				
Observer Height (Above Pad):	23.0 feet	Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation:	1,453.0 feet	Lane Equivalent Distance (in feet)				
Road Elevation:	1,450.0 feet	Autos: 46.487				
Barrier Elevation:	1,450.0 feet	Medium Trucks: 45.242				
Road Grade:	1.0%	Heavy Trucks: 42.530				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	0.25	0.00	-1.31	0.000	0.000
Medium Trucks:	76.31	-21.69	0.37	0.00	-1.96	0.000	0.000
Heavy Trucks:	81.16	-25.64	0.63	0.00	-4.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.2	61.1	59.8	53.8	62.2	62.9
Medium Trucks:	55.0	51.1	43.6	52.3	58.5	58.6
Heavy Trucks:	56.1	52.1	48.7	53.4	59.6	59.7
Vehicle Noise:	64.5	62.0	60.3	58.0	65.2	65.5

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.2	61.1	59.8	53.8	62.2	62.9
Medium Trucks:	55.0	51.1	43.6	52.3	58.5	58.6
Heavy Trucks:	56.1	52.1	48.7	53.4	59.6	59.7
Vehicle Noise:	64.5	62.0	60.3	58.0	65.2	65.5

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

Scenario: Third Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,031.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 22.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-10.62	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-10.67	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-10.81	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: Third Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 7.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 50.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 70.0 feet		Autos: 1,444.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,446.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.6 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,444.0 feet		Autos: 68.668				
Barrier Elevation: 1,444.0 feet		Medium Trucks: 67.846				
Road Grade: 1.0%		Heavy Trucks: 66.103				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.45	0.00	-2.87	0.000	0.000
Medium Trucks:	76.31	-15.52	-1.39	0.00	-3.38	0.000	0.000
Heavy Trucks:	81.16	-19.47	-1.28	0.00	-4.84	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	65.6	64.3	58.3	66.7	67.3
Medium Trucks:	59.4	55.5	48.0	56.8	62.9	63.0
Heavy Trucks:	60.4	56.4	53.0	57.6	63.8	63.9
Vehicle Noise:	68.9	66.5	64.7	62.4	69.6	69.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.6	64.3	58.3	66.7	67.3
Medium Trucks:	59.4	55.5	48.0	56.8	62.9	63.0
Heavy Trucks:	60.4	56.4	53.0	57.6	63.8	63.9
Vehicle Noise:	68.9	66.5	64.7	62.4	69.6	69.9

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

Scenario: Backyard No Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 0.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 675.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 3.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 668.991				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 668.978				
Road Grade: 1.0%		Heavy Trucks: 668.980				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.33	0.00	-1.09	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.33	0.00	-1.11	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.33	0.00	-1.15	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.7	55.4	49.4	57.8	58.4
Medium Trucks:	52.8	48.8	41.0	50.2	56.4	56.4
Heavy Trucks:	59.9	55.9	48.1	57.3	63.5	63.5
Vehicle Noise:	62.8	59.7	56.3	58.6	65.1	65.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.7	55.4	49.4	57.8	58.4
Medium Trucks:	52.8	48.8	41.0	50.2	56.4	56.4
Heavy Trucks:	59.9	55.9	48.1	57.3	63.5	63.5
Vehicle Noise:	62.8	59.7	56.3	58.6	65.1	65.3

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

Scenario: Backyard No Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet					
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 25.0 feet Centerline Dist. to Observer: 35.0 feet Barrier Distance to Observer: 10.0 feet Observer Height (Above Pad): 3.0 feet Pad Elevation: 1,453.0 feet Road Elevation: 1,450.0 feet Barrier Elevation: 1,450.0 feet Road Grade: 1.0%		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: 1,450.00				
		Medium Trucks: 1,452.30				
		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
		Lane Equivalent Distance (in feet)				
		Autos: 29.000				
		Medium Trucks: 28.613				
Heavy Trucks: 28.443						

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	2.30	0.00	-1.03	0.000	0.000
Medium Trucks:	76.31	-21.69	2.36	0.00	-1.53	0.000	0.000
Heavy Trucks:	81.16	-25.64	2.38	0.00	-3.14	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:	65.2	63.2	61.9	55.9	64.3	64.9
Medium Trucks:	57.0	53.1	45.6	54.3	60.5	60.5
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	66.5	64.0	62.3	59.9	67.1	67.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.2	61.9	55.9	64.3	64.9
Medium Trucks:	57.0	53.1	45.6	54.3	60.5	60.5
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	66.5	64.0	62.3	59.9	67.1	67.5

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

Scenario: Backyard No Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,021.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 12.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 3.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.14	0.00	-0.89	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.14	0.00	-0.90	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.14	0.00	-0.93	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

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

Scenario: Backyard No Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph						
Near/Far Lane Distance: 12 feet						
Site Data		Vehicle Mix				
		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet		Autos:	75.5%	14.0%	10.5%	97.42%
Barrier Type (0-Wall, 1-Berm): 0.0		Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Centerline Dist. to Barrier: 50.0 feet		Heavy Trucks:	47.3%	5.4%	47.3%	0.74%
Centerline Dist. to Observer: 60.0 feet						
Barrier Distance to Observer: 10.0 feet		Noise Source Elevations (in feet)				
Observer Height (Above Pad): 3.0 feet		Autos: 1,444.00				
Pad Elevation: 1,446.6 feet		Medium Trucks: 1,446.30				
Road Elevation: 1,444.0 feet		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
Barrier Elevation: 1,444.0 feet						
Road Grade: 1.0%		Lane Equivalent Distance (in feet)				
		Autos: 53.957				
		Medium Trucks: 53.767				
		Heavy Trucks: 53.720				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-0.40	0.00	-1.15	0.000	0.000
Medium Trucks:	76.31	-15.52	-0.38	0.00	-1.39	0.000	0.000
Heavy Trucks:	81.16	-19.47	-0.38	0.00	-2.08	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:	68.7	66.7	65.4	59.3	67.8	68.4
Medium Trucks:	60.4	56.5	49.0	57.8	63.9	64.0
Heavy Trucks:	61.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	69.9	67.5	65.7	63.4	70.6	70.9

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.7	65.4	59.3	67.8	68.4
Medium Trucks:	60.4	56.5	49.0	57.8	63.9	64.0
Heavy Trucks:	61.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	69.9	67.5	65.7	63.4	70.6	70.9

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

Scenario: Backyard With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 675.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 3.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 669.060				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 669.043				
Road Grade: 1.0%		Heavy Trucks: 669.036				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.33	0.00	0.07	-5.700	-8.700
Medium Trucks:	76.31	-12.19	-11.33	0.00	0.06	-5.600	-8.600
Heavy Trucks:	81.16	-9.97	-11.33	0.00	0.05	-5.500	-8.500

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.7	55.4	49.4	57.8	58.4
Medium Trucks:	52.8	48.8	41.0	50.2	56.4	56.4
Heavy Trucks:	59.9	55.9	48.1	57.3	63.5	63.5
Vehicle Noise:	62.8	59.7	56.3	58.6	65.1	65.3

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.0	51.0	49.7	43.7	52.1	52.7
Medium Trucks:	47.2	43.2	35.4	44.6	50.8	50.8
Heavy Trucks:	54.4	50.4	42.6	51.8	58.0	58.0
Vehicle Noise:	57.2	54.1	50.6	53.1	59.6	59.7

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

Scenario: Backyard With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 35.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 10.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 3.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 29.000				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 28.404				
Road Grade: 1.0%		Heavy Trucks: 28.443				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	2.30	0.00	0.30	-7.500	-10.500
Medium Trucks:	76.31	-21.69	2.39	0.00	0.12	-6.160	-9.160
Heavy Trucks:	81.16	-25.64	2.38	0.00	-0.04	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.2	61.9	55.9	64.3	64.9
Medium Trucks:	57.0	53.1	45.6	54.4	60.5	60.6
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	66.5	64.0	62.3	59.9	67.1	67.5

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.7	55.7	54.4	48.4	56.8	57.4
Medium Trucks:	50.9	47.0	39.5	48.2	54.4	54.4
Heavy Trucks:	57.9	53.9	50.5	55.1	61.3	61.4
Vehicle Noise:	61.2	58.2	56.0	56.6	63.2	63.4

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

Scenario: Backyard With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,021.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 12.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 3.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.14	0.00	-0.89	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.14	0.00	-0.90	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.14	0.00	-0.93	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	47.8	46.4	40.4	48.9	49.5
Medium Trucks:	41.5	37.6	30.1	38.8	45.0	45.0
Heavy Trucks:	42.4	38.3	34.9	39.6	45.8	45.9
Vehicle Noise:	51.0	48.6	46.8	44.4	51.7	52.0

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

Scenario: Backyard With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet						
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 7.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 50.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 10.0 feet Observer Height (Above Pad): 3.0 feet Pad Elevation: 1,446.6 feet Road Elevation: 1,444.0 feet Barrier Elevation: 1,444.0 feet Road Grade: 1.0%		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: 1,444.00				
		Medium Trucks: 1,446.30				
		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
		Lane Equivalent Distance (in feet)				
		Autos: 54.245				
		Medium Trucks: 53.939				
Heavy Trucks: 53.698						

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-0.42	0.00	0.35	-7.750	-10.750
Medium Trucks:	76.31	-15.52	-0.40	0.00	0.24	-7.080	-10.080
Heavy Trucks:	81.16	-19.47	-0.38	0.00	0.05	-5.500	-8.500

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.7	66.6	65.3	59.3	67.7	68.4
Medium Trucks:	60.4	56.5	49.0	57.7	63.9	64.0
Heavy Trucks:	61.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	69.9	67.5	65.7	63.3	70.6	70.9

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.9	58.9	57.6	51.6	60.0	60.6
Medium Trucks:	53.3	49.4	41.9	50.7	56.8	56.9
Heavy Trucks:	55.8	51.8	48.4	53.0	59.2	59.3
Vehicle Noise:	62.6	60.1	58.2	56.6	63.6	64.0

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

Scenario: First Floor With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 685.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 3.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 679.030				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 679.013				
Road Grade: 1.0%		Heavy Trucks: 679.006				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	0.04	-5.400	-8.400
Medium Trucks:	76.31	-12.19	-11.40	0.00	0.03	-5.300	-8.300
Heavy Trucks:	81.16	-9.97	-11.40	0.00	0.03	-5.300	-8.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.4
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.2	51.2	49.9	43.9	52.3	53.0
Medium Trucks:	47.4	43.4	35.7	44.9	51.0	51.1
Heavy Trucks:	54.5	50.5	42.7	51.9	58.1	58.1
Vehicle Noise:	57.4	54.3	50.8	53.3	59.7	59.9

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

Scenario: First Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet					
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 6.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 25.0 feet Centerline Dist. to Observer: 45.0 feet Barrier Distance to Observer: 20.0 feet Observer Height (Above Pad): 3.0 feet Pad Elevation: 1,453.0 feet Road Elevation: 1,450.0 feet Barrier Elevation: 1,450.0 feet Road Grade: 1.0%		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: 1,450.00				
		Medium Trucks: 1,452.30				
		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
		Lane Equivalent Distance (in feet)				
		Autos: 39.000				
		Medium Trucks: 38.404				
Heavy Trucks: 38.588						

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	1.01	0.00	0.46	-8.300	-11.300
Medium Trucks:	76.31	-21.69	1.08	0.00	0.18	-6.640	-9.640
Heavy Trucks:	81.16	-25.64	1.06	0.00	-0.05	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.9	61.9	60.6	54.6	63.0	63.6
Medium Trucks:	55.7	51.8	44.3	53.1	59.2	59.3
Heavy Trucks:	56.6	52.5	49.1	53.8	60.0	60.1
Vehicle Noise:	65.2	62.7	61.0	58.6	65.8	66.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.6	53.6	52.3	46.3	54.7	55.3
Medium Trucks:	49.1	45.2	37.7	46.4	52.6	52.6
Heavy Trucks:	56.6	52.5	49.1	53.8	60.0	60.1
Vehicle Noise:	59.5	56.4	54.1	55.1	61.7	61.9

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

Scenario: First Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,031.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 22.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 3.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-0.50	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-0.51	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-0.53	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: First Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet						
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 7.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 50.0 feet Centerline Dist. to Observer: 70.0 feet Barrier Distance to Observer: 20.0 feet Observer Height (Above Pad): 3.0 feet Pad Elevation: 1,446.6 feet Road Elevation: 1,444.0 feet Barrier Elevation: 1,444.0 feet Road Grade: 1.0%		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: 1,444.00				
		Medium Trucks: 1,446.30				
		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
		Lane Equivalent Distance (in feet)				
		Autos: 64.196				
		Medium Trucks: 63.891				
Heavy Trucks: 63.650						

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.15	0.00	0.35	-7.750	-10.750
Medium Trucks:	76.31	-15.52	-1.13	0.00	0.21	-6.870	-9.870
Heavy Trucks:	81.16	-19.47	-1.12	0.00	0.01	-5.100	-8.100

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	65.9	64.6	58.6	67.0	67.6
Medium Trucks:	59.7	55.8	48.3	57.0	63.2	63.2
Heavy Trucks:	60.6	56.5	53.1	57.8	64.0	64.1
Vehicle Noise:	69.2	66.7	65.0	62.6	69.8	70.2

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.2	58.2	56.9	50.8	59.3	59.9
Medium Trucks:	52.8	48.9	41.4	50.1	56.3	56.4
Heavy Trucks:	55.5	51.4	48.0	52.7	58.9	59.0
Vehicle Noise:	62.0	59.4	57.5	56.1	63.1	63.4

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

Scenario: Fourth Floor With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 685.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 679.819				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 679.709				
Road Grade: 1.0%		Heavy Trucks: 679.467				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	-13.22	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.40	0.00	-13.31	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.40	0.00	-13.54	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

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

Scenario: Fourth Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 45.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 52.058				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 50.542				
Road Grade: 1.0%		Heavy Trucks: 47.050				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-0.24	0.00	-2.69	0.000	0.000
Medium Trucks:	76.31	-21.69	-0.12	0.00	-3.61	0.000	0.000
Heavy Trucks:	81.16	-25.64	0.20	0.00	-6.75	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.7	59.3	53.3	61.8	62.4
Medium Trucks:	54.5	50.6	43.1	51.9	58.0	58.1
Heavy Trucks:	55.7	51.7	48.3	52.9	59.1	59.2
Vehicle Noise:	64.0	61.5	59.8	57.5	64.7	65.1

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.7	60.7	59.3	53.3	61.8	62.4
Medium Trucks:	54.5	50.6	43.1	51.9	58.0	58.1
Heavy Trucks:	55.7	51.7	48.3	52.9	59.1	59.2
Vehicle Noise:	64.0	61.5	59.8	57.5	64.7	65.1

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

Scenario: Fourth Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,031.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 22.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-17.39	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-17.46	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-17.65	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: Fourth Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 7.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 50.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 70.0 feet		Autos: 1,444.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,446.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 1,452.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.6 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,444.0 feet		Autos: 72.506				
Barrier Elevation: 1,444.0 feet		Medium Trucks: 71.439				
Road Grade: 1.0%		Heavy Trucks: 69.045				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.68	0.00	-5.76	0.000	0.000
Medium Trucks:	76.31	-15.52	-1.62	0.00	-6.50	0.000	0.000
Heavy Trucks:	81.16	-19.47	-1.47	0.00	-8.60	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.4	64.1	58.1	66.5	67.1
Medium Trucks:	59.2	55.3	47.8	56.5	62.7	62.7
Heavy Trucks:	60.2	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	68.7	66.2	64.5	62.2	69.4	69.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	65.4	64.1	58.1	66.5	67.1
Medium Trucks:	59.2	55.3	47.8	56.5	62.7	62.7
Heavy Trucks:	60.2	56.2	52.8	57.4	63.6	63.7
Vehicle Noise:	68.7	66.2	64.5	62.2	69.4	69.7

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

Scenario: Second Floor With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 685.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 679.160				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 679.110				
Road Grade: 1.0%		Heavy Trucks: 679.019				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	-2.11	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.40	0.00	-2.14	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.40	0.00	-2.22	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

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

Scenario: Second Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 45.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 42.119				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 41.245				
Road Grade: 1.0%		Heavy Trucks: 39.571				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	0.68	0.00	-0.20	0.000	0.000
Medium Trucks:	76.31	-21.69	0.77	0.00	-0.49	0.000	0.000
Heavy Trucks:	81.16	-25.64	0.95	0.00	-1.87	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.6	61.6	60.3	54.3	62.7	63.3
Medium Trucks:	55.4	51.5	44.0	52.7	58.9	59.0
Heavy Trucks:	56.5	52.4	49.0	53.7	59.9	60.0
Vehicle Noise:	64.9	62.4	60.7	58.4	65.6	65.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.6	61.6	60.3	54.3	62.7	63.3
Medium Trucks:	55.4	51.5	44.0	52.7	58.9	59.0
Heavy Trucks:	56.5	52.4	49.0	53.7	59.9	60.0
Vehicle Noise:	64.9	62.4	60.7	58.4	65.6	65.9

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

Scenario: Second Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height:	0.0 feet	Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm):	0.0	Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier:	1,009.0 feet	Noise Source Elevations (in feet)				
Centerline Dist. to Observer:	1,031.0 feet	Autos: 1,445.00				
Barrier Distance to Observer:	22.0 feet	Medium Trucks: 1,447.30				
Observer Height (Above Pad):	14.0 feet	Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation:	1,446.8 feet	Lane Equivalent Distance (in feet)				
Road Elevation:	1,445.0 feet	Autos: #####				
Barrier Elevation:	1,445.0 feet	Medium Trucks: #####				
Road Grade:	1.0%	Heavy Trucks: #####				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-4.86	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-4.89	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-4.98	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: Second Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph						
Near/Far Lane Distance: 12 feet						
Site Data		Vehicle Mix				
		VehicleType	Day	Evening	Night	Daily
Barrier Height: 7.0 feet		Autos:	75.5%	14.0%	10.5%	97.42%
Barrier Type (0-Wall, 1-Berm): 0.0		Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Centerline Dist. to Barrier: 50.0 feet		Heavy Trucks:	47.3%	5.4%	47.3%	0.74%
Centerline Dist. to Observer: 70.0 feet		Noise Source Elevations (in feet)				
Barrier Distance to Observer: 20.0 feet		Autos:	1,444.00			
Observer Height (Above Pad): 14.0 feet		Medium Trucks:	1,446.30			
Pad Elevation: 1,446.6 feet		Heavy Trucks:	1,452.01	Grade Adjustment: 0.0		
Road Elevation: 1,444.0 feet		Lane Equivalent Distance (in feet)				
Barrier Elevation: 1,444.0 feet		Autos:	65.845			
Road Grade: 1.0%		Medium Trucks:	65.304			
		Heavy Trucks:	64.295			

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.26	0.00	-0.61	0.000	0.000
Medium Trucks:	76.31	-15.52	-1.23	0.00	-0.84	0.000	0.000
Heavy Trucks:	81.16	-19.47	-1.16	0.00	-1.59	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.8	64.5	58.5	66.9	67.5
Medium Trucks:	59.6	55.7	48.2	56.9	63.1	63.1
Heavy Trucks:	60.5	56.5	53.1	57.7	63.9	64.0
Vehicle Noise:	69.1	66.6	64.9	62.5	69.7	70.1

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.8	64.5	58.5	66.9	67.5
Medium Trucks:	59.6	55.7	48.2	56.9	63.1	63.1
Heavy Trucks:	60.5	56.5	53.1	57.7	63.9	64.0
Vehicle Noise:	69.1	66.6	64.9	62.5	69.7	70.1

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

Scenario: Third Floor With Wall
Road Name: Holland Rd.
Lot No: Building 15

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 27,300 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,730 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 92.00%				
Barrier Height: 6.0 feet		Medium Trucks: 48.0% 2.0% 50.0% 3.00%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 48.0% 2.0% 50.0% 5.00%				
Centerline Dist. to Barrier: 665.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 685.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,451.9 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 679.430				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 679.350				
Road Grade: 1.0%		Heavy Trucks: 679.184				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	2.67	-11.40	0.00	-6.94	0.000	0.000
Medium Trucks:	76.31	-12.19	-11.40	0.00	-7.00	0.000	0.000
Heavy Trucks:	81.16	-9.97	-11.40	0.00	-7.15	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	56.6	55.3	49.3	57.7	58.3
Medium Trucks:	52.7	48.7	41.0	50.2	56.3	56.4
Heavy Trucks:	59.8	55.8	48.0	57.2	63.4	63.4
Vehicle Noise:	62.7	59.6	56.2	58.6	65.1	65.2

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

Scenario: Third Floor With Wall
Road Name: Holcomb Rd.
Lot No: Building 47

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 6.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 25.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 45.0 feet		Autos: 1,450.00				
Barrier Distance to Observer: 20.0 feet		Medium Trucks: 1,452.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 1,458.01 Grade Adjustment: 0.0				
Pad Elevation: 1,453.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,450.0 feet		Autos: 46.487				
Barrier Elevation: 1,450.0 feet		Medium Trucks: 45.242				
Road Grade: 1.0%		Heavy Trucks: 42.530				

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	0.25	0.00	-1.31	0.000	0.000
Medium Trucks:	76.31	-21.69	0.37	0.00	-1.96	0.000	0.000
Heavy Trucks:	81.16	-25.64	0.63	0.00	-4.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.2	61.1	59.8	53.8	62.2	62.9
Medium Trucks:	55.0	51.1	43.6	52.3	58.5	58.6
Heavy Trucks:	56.1	52.1	48.7	53.4	59.6	59.7
Vehicle Noise:	64.5	62.0	60.3	58.0	65.2	65.5

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.2	61.1	59.8	53.8	62.2	62.9
Medium Trucks:	55.0	51.1	43.6	52.3	58.5	58.6
Heavy Trucks:	56.1	52.1	48.7	53.4	59.6	59.7
Vehicle Noise:	64.5	62.0	60.3	58.0	65.2	65.5

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

Scenario: Third Floor With Wall
Road Name: Craig Ave.
Lot No: Building 62

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt):	5,000 vehicles	Autos: 10				
Peak Hour Percentage:	10%	Medium Trucks (2 Axles): 10				
Peak Hour Volume:	500 vehicles	Heavy Trucks (3+ Axles): 10				
Vehicle Speed:	40 mph	Vehicle Mix				
Near/Far Lane Distance:	12 feet	VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 75.5% 14.0% 10.5% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 48.9% 2.2% 48.9% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 47.3% 5.4% 47.3% 0.74%				
Centerline Dist. to Barrier: 1,009.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 1,031.0 feet		Autos: 1,445.00				
Barrier Distance to Observer: 22.0 feet		Medium Trucks: 1,447.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 1,453.01 Grade Adjustment: 0.0				
Pad Elevation: 1,446.8 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 1,445.0 feet		Autos: #####				
Barrier Elevation: 1,445.0 feet		Medium Trucks: #####				
Road Grade: 1.0%		Heavy Trucks: #####				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	-4.45	-13.19	0.00	-10.62	0.000	0.000
Medium Trucks:	76.31	-21.69	-13.19	0.00	-10.67	0.000	0.000
Heavy Trucks:	81.16	-25.64	-13.19	0.00	-10.81	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.7	47.7	46.4	40.4	48.8	49.4
Medium Trucks:	41.4	37.5	30.0	38.8	45.0	45.0
Heavy Trucks:	42.3	38.3	34.9	39.5	45.7	45.8
Vehicle Noise:	51.0	48.5	46.8	44.4	51.6	52.0

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

Scenario: Third Floor With Wall
Road Name: Eucalyptus Rd.
Lot No: Building 2

Project Name: Tentative Tract Map 38483
Job Number: 15581
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 20,700 vehicles		Autos: 10				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 10				
Peak Hour Volume: 2,070 vehicles		Heavy Trucks (3+ Axles): 10				
Vehicle Speed: 40 mph						
Near/Far Lane Distance: 12 feet						
Site Data		Vehicle Mix				
		VehicleType	Day	Evening	Night	Daily
Barrier Height: 7.0 feet		Autos:	75.5%	14.0%	10.5%	97.42%
Barrier Type (0-Wall, 1-Berm): 0.0		Medium Trucks:	48.9%	2.2%	48.9%	1.84%
Centerline Dist. to Barrier: 50.0 feet		Heavy Trucks:	47.3%	5.4%	47.3%	0.74%
Centerline Dist. to Observer: 70.0 feet						
Barrier Distance to Observer: 20.0 feet						
Observer Height (Above Pad): 23.0 feet						
Pad Elevation: 1,446.6 feet						
Road Elevation: 1,444.0 feet						
Barrier Elevation: 1,444.0 feet						
Road Grade: 1.0%						
		Noise Source Elevations (in feet)				
		Autos:	1,444.00			
		Medium Trucks:	1,446.30			
		Heavy Trucks:	1,452.01	Grade Adjustment:	0.0	
		Lane Equivalent Distance (in feet)				
		Autos:	68.668			
		Medium Trucks:	67.846			
		Heavy Trucks:	66.103			

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	67.36	1.72	-1.45	0.00	-2.87	0.000	0.000
Medium Trucks:	76.31	-15.52	-1.39	0.00	-3.38	0.000	0.000
Heavy Trucks:	81.16	-19.47	-1.28	0.00	-4.84	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	65.6	64.3	58.3	66.7	67.3
Medium Trucks:	59.4	55.5	48.0	56.8	62.9	63.0
Heavy Trucks:	60.4	56.4	53.0	57.6	63.8	63.9
Vehicle Noise:	68.9	66.5	64.7	62.4	69.6	69.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	65.6	64.3	58.3	66.7	67.3
Medium Trucks:	59.4	55.5	48.0	56.8	62.9	63.0
Heavy Trucks:	60.4	56.4	53.0	57.6	63.8	63.9
Vehicle Noise:	68.9	66.5	64.7	62.4	69.6	69.9

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APPENDIX 10.1:

OPERATIONAL NOISE CALCULATIONS

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15581 - Tentative Tract Map 38483

CadnaA Noise Prediction Model: 15581-02_Operation.cna

Date: 16.07.24

Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	Value
General	
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	
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height	Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type		X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)	(ft)	(ft)	(ft)
R1		R1	33.3	30.5	37.3	0.0	0.0	0.0	x	Total		5.00 r	6300863.13	2188269.77	5.00
R2		R2	20.5	17.8	24.5	0.0	0.0	0.0	x	Total		5.00 r	6302483.60	2189218.85	5.00
R3		R3	16.7	13.9	20.6	0.0	0.0	0.0	x	Total		5.00 r	6299360.79	2184022.89	5.00
R4		R4	16.3	13.6	20.3	0.0	0.0	0.0	x	Total		5.00 r	6297069.50	2185710.41	5.00
R5		R5	16.5	13.8	20.5	0.0	0.0	0.0	x	Total		5.00 r	6296738.89	2188556.30	5.00

Point Source(s)

Name	IV.	ID	Result. PWL			Lw / Li			Operating Time			Height	Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night		X	Y	Z
			(dBA)	(dBA)	(dBA)		dB(A)		(min)	(min)	(min)	(ft)	(ft)	(ft)	(ft)
AC001		AC001	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300023.37	2187159.96	3.00
AC002		AC002	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300102.54	2187158.39	3.00
AC003		AC003	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300176.49	2187157.35	3.00
AC004		AC004	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300252.54	2187155.79	3.00
AC005		AC005	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300327.01	2187156.31	3.00
AC006		AC006	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300402.54	2187154.75	3.00
AC007		AC007	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300478.06	2187155.27	3.00
AC008		AC008	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300552.54	2187155.79	3.00
AC009		AC009	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300033.79	2187310.48	3.00
AC010		AC010	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300146.81	2187307.87	3.00
AC011		AC011	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300628.58	2187155.79	3.00
AC012		AC012	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300705.14	2187153.71	3.00
AC013		AC013	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300780.14	2187153.19	3.00
AC014		AC014	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300880.66	2187147.46	3.00
AC015		AC015	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00 r	6300985.35	2187175.58	3.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	(ft)	X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)			(ft)	(ft)	(ft)
AC016		AC016	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300973.37	2187279.75	3.00
AC017		AC017	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300967.12	2187356.31	3.00
AC018		AC018	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300967.64	2187431.31	3.00
AC019		AC019	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300968.68	2187509.96	3.00
AC020		AC020	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300965.56	2187671.42	3.00
AC021		AC021	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300966.60	2187746.42	3.00
AC022		AC022	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300966.08	2187819.85	3.00
AC023		AC023	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300967.12	2187895.37	3.00
AC024		AC024	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300967.12	2188005.79	3.00
AC025		AC025	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300875.97	2188037.56	3.00
AC026		AC026	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300777.54	2187960.48	3.00
AC027		AC027	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300788.47	2187872.46	3.00
AC028		AC028	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300787.43	2187797.98	3.00
AC029		AC029	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300787.95	2187723.50	3.00
AC030		AC030	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300787.95	2187648.50	3.00
AC031		AC031	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300785.35	2187533.92	3.00
AC032		AC032	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300784.31	2187458.92	3.00
AC033		AC033	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300784.31	2187383.92	3.00
AC034		AC034	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300783.79	2187301.62	3.00
AC035		AC035	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300686.39	2187308.92	3.00
AC036		AC036	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300610.87	2187309.44	3.00
AC037		AC037	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300535.35	2187311.00	3.00
AC038		AC038	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300454.10	2187311.52	3.00
AC039		AC039	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300379.10	2187312.56	3.00
AC040		AC040	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300299.93	2187312.04	3.00
AC041		AC041	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299862.95	2187514.12	3.00
AC042		AC042	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299864.51	2187590.69	3.00
AC043		AC043	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299865.04	2187666.21	3.00
AC044		AC044	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299865.56	2187741.21	3.00
AC045		AC045	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299865.04	2187815.17	3.00
AC046		AC046	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299865.56	2187890.17	3.00
AC047		AC047	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299853.06	2187981.83	3.00
AC048		AC048	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6299944.72	2188042.77	3.00
AC049		AC049	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300041.08	2188037.56	3.00
AC050		AC050	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300117.12	2188037.56	3.00
AC051		AC051	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300191.60	2188036.52	3.00
AC052		AC052	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300267.12	2188033.39	3.00
AC053		AC053	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300343.16	2188033.92	3.00
AC054		AC054	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300418.16	2188031.83	3.00
AC055		AC055	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300493.16	2188030.79	3.00
AC056		AC056	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300596.81	2188031.31	3.00
AC057		AC057	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300679.10	2187966.73	3.00
AC058		AC058	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300668.16	2187871.94	3.00
AC059		AC059	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300668.16	2187798.50	3.00
AC060		AC060	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300667.12	2187724.02	3.00
AC061		AC061	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300667.64	2187648.50	3.00
AC062		AC062	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300665.56	2187522.98	3.00
AC063		AC063	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300666.08	2187412.56	3.00
AC064		AC064	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300550.45	2187409.44	3.00
AC065		AC065	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300458.79	2187411.52	3.00
AC066		AC066	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300380.14	2187411.52	3.00
AC067		AC067	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300300.97	2187412.04	3.00
AC068		AC068	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300148.89	2187392.25	3.00
AC069		AC069	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300034.83	2187386.52	3.00
AC070		AC070	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300035.87	2187508.92	3.00
AC071		AC071	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300148.89	2187515.17	3.00
AC072		AC072	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300036.91	2187589.64	3.00
AC073		AC073	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300150.45	2187591.73	3.00
AC074		AC074	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300147.33	2187685.48	3.00
AC075		AC075	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300038.99	2187664.64	3.00
AC076		AC076	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300040.04	2187738.08	3.00
AC077		AC077	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300040.04	2187813.08	3.00
AC078		AC078	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300041.08	2187890.17	3.00
AC079		AC079	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300135.35	2187877.67	3.00
AC080		AC080	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300181.70	218782.35	3.00
AC081		AC081	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300210.35	2187877.14	3.00
AC082		AC082	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300280.14	2187781.83	3.00
AC083		AC083	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300286.39	2187875.06	3.00
AC084		AC084	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300359.31	2187873.50	3.00
AC085		AC085	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300360.35	2187769.85	3.00
AC086		AC086	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300434.83	2187768.29	3.00
AC087		AC087	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300436.39	2187874.54	3.00
AC088		AC088	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300512.95	2187871.94	3.00
AC089		AC089	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	r	6300511.39	2187767.77	3.00

Line Source(s)

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

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

Area Source(s)

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

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

Barrier(s)

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

Building(s)

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

Ground Absorption(s)

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

Contour(s)

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

Vertical Area Source(s)

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

Rail

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

Sound Level Spectra

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

Roads

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

RoadsGeo

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

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APPENDIX 11.1:

CONSTRUCTION NOISE CALCULATIONS

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15581 - Tentative Tract Map 38483

CadnaA Noise Prediction Model: 15581-02_Construction.cna

Date: 16.07.24

Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	Value
General	
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	
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height	Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type		X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)	(ft)	(ft)	(ft)
R1		R1	57.4	-42.6	54.4	0.0	0.0	0.0		x	Total	5.00	r 6300863.13	2188269.77	5.00
R2		R2	45.0	-55.0	42.0	0.0	0.0	0.0		x	Total	5.00	r 6302483.60	2189218.85	5.00
R3		R3	41.3	-58.7	38.3	0.0	0.0	0.0		x	Total	5.00	r 6299360.79	2184022.89	5.00
R4		R4	41.0	-59.0	37.9	0.0	0.0	0.0		x	Total	5.00	r 6297069.50	2185710.41	5.00
R5		R5	41.1	-58.8	38.1	0.0	0.0	0.0		x	Total	5.00	r 6296738.89	2188556.30	5.00

Point Source(s)

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

Line Source(s)

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

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

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Operating Time			Height (ft)
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm.	Day (min)	Special (min)	Night (min)	
Construction1		Construction1	115.6	15.6	15.6	65.1	-34.9	-34.9	PWL-Pt	115.6					8 a

Name	ID	Height		Coordinates			
		Begin (ft)	End (ft)	x (ft)	y (ft)	z (ft)	Ground (ft)
Construction1	Construction1	8.00	a	6301022.22	2188080.82	8.00	0.00
				6301038.19	2187101.77	8.00	0.00
				6299805.22	2187113.21	8.00	0.00
				6299795.60	2188088.81	8.00	0.00

Barrier(s)

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

Building(s)

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

Ground Absorption(s)

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

Contour(s)

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

Vertical Area Source(s)

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

Rail

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

Sound Level Spectra

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

Roads

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

RoadsGeo

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