



Maple Apartments

NOISE ANALYSIS

CITY OF FONTANA

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
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
OPR	Office of Planning and Research
Project	Maple Apartments
REMEL	Reference Energy Mean Emission Level

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise analysis to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the Maple Apartments ("Project"). The Project is located at 8066 North Maple Avenue on the southwest corner of the intersection of Barbee Street and Maple Avenue in the City of Fontana. It is our understanding that the Project consists of a 265-unit apartment complex on approximately 8.1 acres.

The results of this Maple Apartments Noise 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.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
On-Site Noise ¹	7	NA	NA
Off-Site 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.

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the Maple Apartments (“Project”). This noise analysis briefly describes the Project, provides information regarding noise fundamentals, describes the local regulatory setting, and provides the study methods and procedures for noise analysis.

1.1 SITE LOCATION

The Project is located at 8066 North Maple Avenue on the southwest corner of the intersection of Barbee Street and Maple Avenue in the City of Fontana, as shown in Exhibit 1-A. The Project site is generally bordered to the north, east, and south by residential land uses. Commercial uses border the site to the west. The nearest airport is the San Bernardino International Airport, which is approximately 9 miles southeast of the Project site.

1.2 PROJECT DESCRIPTION

It is our understanding that the Project is to consist of a 265-unit apartment complex on 8.1 acres. The preliminary site plan for the Project is shown in Exhibit 1-B. The Project will be developed as a single phase with an opening year of 2026.

EXHIBIT 1-A: LOCATION MAP

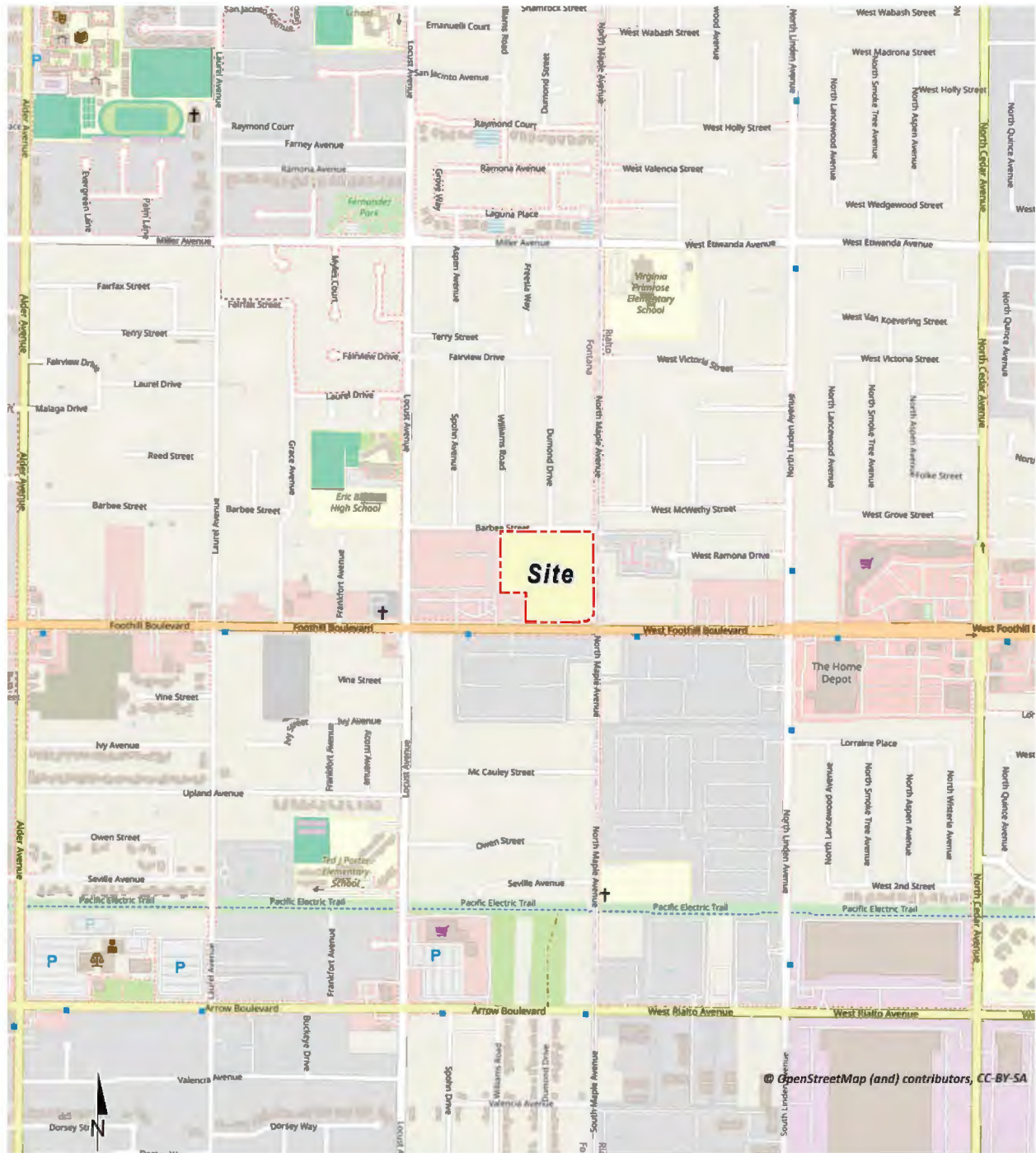


EXHIBIT 1-B: PROJECT SITE PLAN



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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		
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	SLEEP DISTURBANCE
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	NO EFFECT
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30		
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20	FAINT	NO EFFECT
	BROADCAST/RECORDING STUDIO	10		
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0	VERY FAINT	NO EFFECT

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is at roughly 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on average, 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 (typically one hour) and is commonly used to describe the “average” noise levels within the environment.

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

2.3 SOUND PROPAGATION

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

2.3.1 GEOMETRIC SPREADING

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

2.3.2 GROUND ABSORPTION

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

2.3.3 ATMOSPHERIC EFFECTS

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

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residences. 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. (4)

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

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

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area’s desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (5)

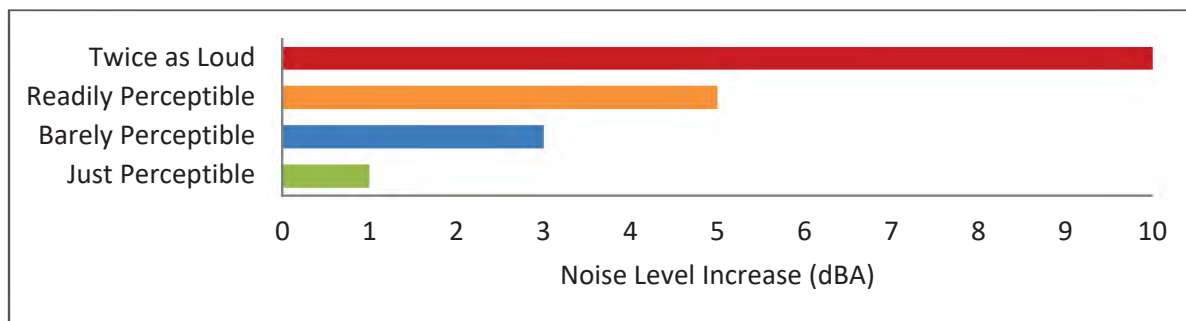
2.7 COMMUNITY RESPONSE TO NOISE

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

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

Per the(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.

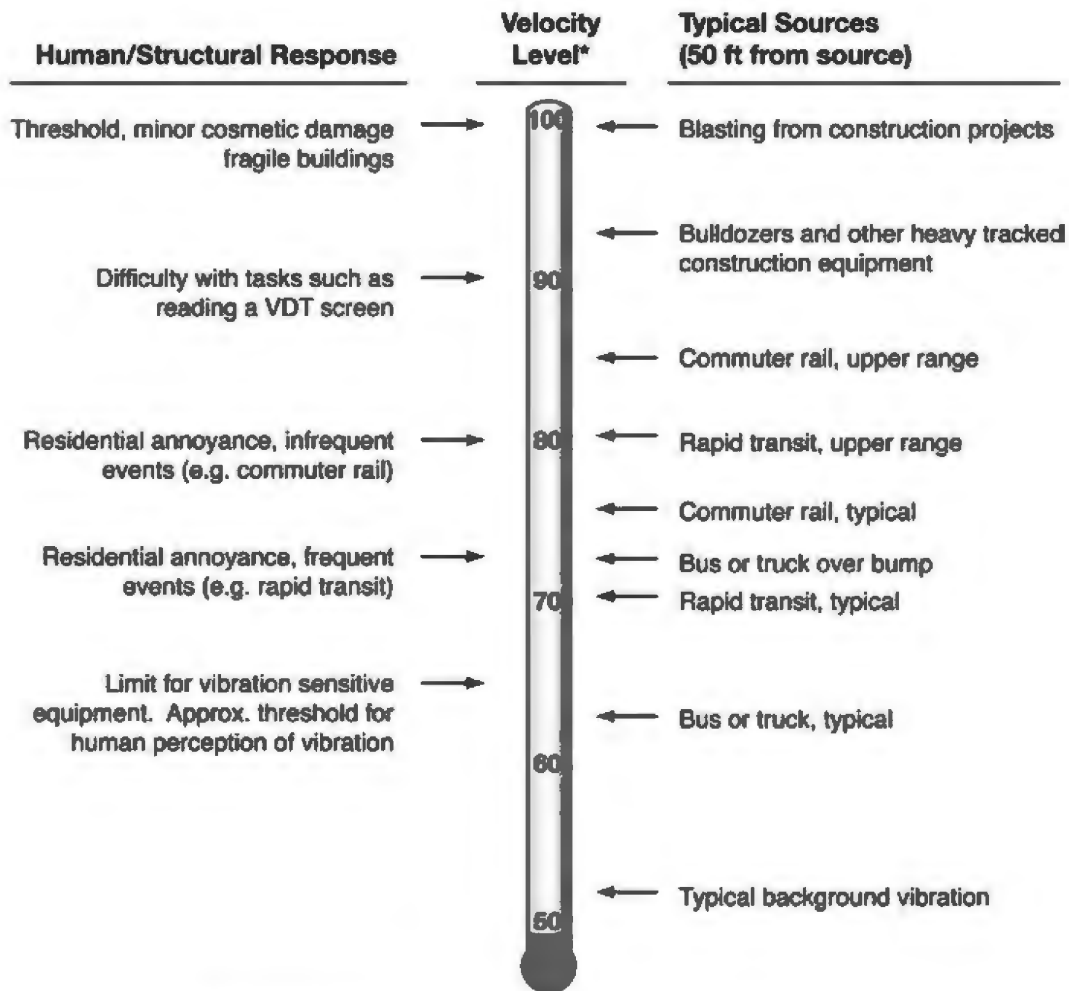
Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (7). Therefore, the effects of vibrations should only be evaluated at a structure and the effects of 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 (7). 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 (7). 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 (7). 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 (8). 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 (9). Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels.

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

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). (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL. (11).

3.3 CITY OF FONTANA GENERAL PLAN NOISE ELEMENT

To protect residents from the negative effects of noise, the City of Fontana has identified the following goals, policies, and actions in the General Plan Noise Element. (12)

Goal 8:

The City of Fontana protects sensitive land uses from excessive noise by diligent planning through 2035.

Policies:

- *New sensitive land uses shall be prohibited in incompatible areas.*
- *Noise-tolerant land uses shall be guided into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors.*
- *Where sensitive uses are to be placed along transportation routes, mitigation shall be provided to ensure compliance with state-mandated noise levels.*
- *Noise spillover or encroachment from commercial, industrial and educational land uses shall be minimized into adjoining residential neighborhoods or noise-sensitive uses.*

Actions:

- A. *The following uses shall be considered noise-sensitive and discouraged in areas in excess of 65 dBA CNEL (Community Noise Equivalent Level): Residential Uses; Hospitals; Rest Homes; Long Term Care Facilities; and Mental Care Facilities.*
- B. *The following uses shall be considered noise-sensitive and discouraged in areas in excess of 65 Leq(12) (Equivalent Continuous Sound Level): Schools; Libraries; Places of Worship; and Passive Recreation Uses.*
- C. *The State of California Office of Planning and Research General Plan Guidelines shall be followed with respect to acoustical study requirements.*

Goal 9:

The City of Fontana provides a diverse and efficiently operated ground transportation system that generates the minimum feasible noise on its residents through 2035.

Policies

- *All noise sections of the State Motor Vehicle Code shall be enforced.*
- *Roads shall be maintained such that the paving is in good condition and free of cracks, bumps, and potholes.*
- *Noise mitigation measures shall be included in the design of new roadway projects in the city.*

Actions

- D. *On-road trucking activities shall continue to be regulated in the City to ensure noise impacts are minimized, including, including the implementation of truck-routes based on traffic studies.*
- E. *Development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses shall provide appropriate mitigation measures.*
- F. *Noise mitigation practices shall be employed when designing all future streets and highways, and when improvements occur along existing highway segments.*
- G. *Explore the use of “quiet pavement” materials for street improvements.*

Goal 10:

Fontana’s residents are protected from the negative effects of “spillover” noise.

Policy

- *Residential land uses and areas identified as noise-sensitive shall be protected from excessive noise from non-transportation sources including industrial, commercial, and residential activities and equipment.*

Actions

- A. *Projects located in commercial areas shall not exceed stationary- source noise standards at the property line of proximate residential or commercial uses.*
- B. *Industrial uses shall not exceed commercial or residential stationary source noise standards at the most proximate land uses.*
- C. *Non-transportation noise shall be considered in land use planning decisions.*
- D. *Construction shall be performed as quietly as feasible when performed in proximity to residential or other noise sensitive land uses.*

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Maple Apartments Project, stationary-source (operational) noise such as the expected roof top air conditioning units, trash enclosure activity, and parking lot activities are typically evaluated against

standards established under a jurisdiction's Municipal Code. The City of Fontana noise control guidelines for determining and mitigating non-transportation or stationary noise source impacts from operations in neighboring residential areas are found in the Zoning and Development Code (Section 30-469), provided in Appendix 3.1. For residential zoning districts, Section 30-469 indicates that *no person shall create or cause to be created any sound which exceeds the noise levels in this section as measured at the property line of any residentially zoned property*. The performance standards found in Section 30-469 limit the exterior noise level to 65 dBA L_{eq} during the daytime and nighttime hours at sensitive receiver locations as shown in Table 3-1. (13)

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Jurisdiction	Land Use	Noise Level Standards (dBA Leq) ¹	
		Daytime	Nighttime
City of Fontana ¹	Residential	65	65

¹ Source: Section 30-469 of the City of Fontana Development Code (Appendix 3.1).

² Leq represents a steady state sound level containing the same total energy as a time-varying signal over a given sample period.

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

3.5 CONSTRUCTION NOISE STANDARDS

The City of Fontana has set restrictions to control noise impacts associated with the construction of the Project. According to Section 18-63(b)(7), *Construction or repairing of buildings or structures*, construction activity is limited: *between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays except in the case of urgent necessity*. (14) Project construction noise levels are, therefore, considered exempt from municipal regulation if activities occur within the hours of 7:00 a.m. to 6:00 p.m. on weekdays and between the hours of 8:00 a.m. to 5:00 p.m. on Saturdays, as specified in the City of Fontana Municipal Code, Section 18-63(7). However, if activity occurs outside of these hours, the City of Fontana stationary-source (operational) noise level standards of 65 dBA L_{eq} during the daytime and nighttime hours shall apply as previously discussed in Section 3.4. Neither the City of Fontana General Plan and Municipal Codes establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use. (15 p. 179)

TABLE 3-2: CONSTRUCTION NOISE LEVEL STANDARDS

Jurisdiction	Permitted Hours of Construction Activity ¹	Acceptable Construction Noise Level Threshold ²
City of Fontana	7:00 a.m. to 6:00 p.m. on Weekdays 8:00 a.m. to 5:00 p.m. on Saturdays	80 dBA Lmax

¹ Source: City of Fontana Municipal Code, Section 18-83 (b)(7).

² Threshold based on the FTA Transit Noise and Vibration Impact Assessment Manual.

3.6 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. (16) To analyze vibration impacts originating from the operation and construction of the Project vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code if such standards exist. However, the City of Fontana does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual* standards are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. (8 p. 38) The existing buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (17) 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*. (18) 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) (19) 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 increases in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increase and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (7) and Caltrans (20 p. 2_48).

4.2 VIBRATION (THRESHOLD B)

The City of Fontana Municipal Code does not establish the maximum acceptable vibration levels that can be generated by stationary/area vibration sources at residential land uses; therefore, a vibration threshold

from Caltrans is used. Project construction-source and/or stationary/area-source vibration that would cause or result in vibration levels exceeding 0.30 PPV (in/sec) would potentially expose persons to vibration levels in excess of the quantified standards established. They would, therefore, be potentially significant.

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

The Project site is not located within two miles of an airport or airstrip. The nearest airport is the San Bernardino International Airport which is approximately 9 miles southeast of the Project. Thus, the Project 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 Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

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

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	Nighttime
On-Site Traffic ¹	Exterior Noise Compatibility Criteria	65 dBA CNEL	
	Interior Noise Level Standard	45 dBA CNEL	
Off Site Traffic	If ambient is < 60 dBA Leq ³	≥ 5 dBA Leq Project increase	
	If ambient is 60 - 65 dBA Leq ³	≥ 3 dBA Leq Project increase	
	If ambient is > 65 dBA Leq ³	≥ 1.5 dBA Leq Project increase	
Operational	Exterior Noise Level Standards ²	65 dBA Leq	
	If ambient is < 60 dBA Leq ³	≥ 5 dBA Leq Project increase	
	If ambient is 60 - 65 dBA Leq ³	≥ 3 dBA Leq Project increase	
	If ambient is > 65 dBA Leq ³	≥ 1.5 dBA Leq Project increase	
Construction	Noise Level Threshold ³	80 dBA Leq	65 dBA Leq
	Vibration Level Threshold ⁴	0.30 PPV (in/sec)	

¹ Based on Section 30-469 of the City of Fontana Development Code.

² Based on Sections 18-63(7) and 30-469 of the City of Fontana Municipal Code.

³ FICON, 1992, Transit Noise and Vibration Impact Assessment Manual.

⁴ Federal Transit Authority, Noise and Vibration Manual, 2018.

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

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were collected by Urban Crossroads, Inc. on Tuesday, May 14th, 2024, at six 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. 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 data loggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in “slow” mode to record noise levels in “A” weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (21)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines, which indicate that *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources.* (2) Further, FTA guidance states, 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.* (16)

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. (16) 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

Location ¹	Description	Energy Average Noise Level (dBA L_{eq}) ²	
		Daytime	Nighttime
L1	Located north of the site near the residence at 18242 Barbee St.	56.9	48.3
L2	Located north of the site near the residence at 18270 Barbee St.	56.5	49.2
L3	Located east of the site near the residence at 495 N. Maple Ave.	60.2	55.5
L4	Located southeast of the site near the residence at 347 S. Maple Ave.	66.9	62.8
L5	Located southeast of the site near the residence at 367 N. Maple Ave.	67.8	64.0
L6	Located south of the site near the residence at 18215 Foothill Blvd	63.7	59.0

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.

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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with the City of Fontana General Plan Policies for land use, all transportation-related noise levels are presented in terms of the 24-hour CNELs.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model - FHWA-RD-77-108. (22) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California, the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (23) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

6.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Based on the City of Fontana General Plan Update, Chapter 9 Community Mobility Circulation, the on-site roadway parameters including the ADT volumes used for this analysis are presented in Table 6-1.

TABLE 6-1: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification ¹	Average Daily Traffic Volume ²	Speed Limits (mph) ³	Site Conditions
Foothill Blvd.	4	Major Highway	34,000	45	Soft
Maple Ave.	2	Collector	10,400	35	Soft

¹ Road classifications based upon the City of Fontana General Plan Update, Chapter 9 Community Mobility Circulation.

² City of Fontana General Plan Update, Chapter 9 Community Mobility Circulation.

³ Posted speed limits

The traffic volumes shown in Table 6-1 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify potential mitigation measures (if any) that address the worst-case future conditions. For the purposes of this analysis, soft site conditions were used to analyze the on-site traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (24) Table 6-2 presents the time-of-day vehicle splits by vehicle type used to develop the 24-hour CNEL and Table 6-3 presents the total traffic flow distributions (vehicle mixes) used for this analysis. The information in Tables 6-2 and 6-3 provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA Model based on roadway types.

TABLE 6-2: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits ¹			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

¹ Typical Southern California time of day vehicle splits.

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

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

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
Foothill Blvd.	97.00%	2.40%	0.60%	100.00%
Maple Ave.	97.42%	1.84%	0.74%	100.00%

Source: Caltrans Truck Traffic Counts, Traffic Census; Typical Southern California vehicle mix

The site plan is used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to any intervening noise barriers, and the building façade. The exterior noise level impacts were placed five feet above the pad elevation at the proposed building façade for first-floor level analysis. Second- through third-floor receivers were placed 9 feet above each floor level (i.e., 14 feet and 23 feet).

6.3 OFF-SITE TRAFFIC NOISE PREDICTION MODEL

Due to the small increase in ADT caused by the Project, the ADT volume was compared with the preexisting volume directly to determine the noise level increase.

7 ON-SITE TRAFFIC NOISE IMPACTS

An on-site noise impact analysis has been completed to determine the traffic noise exposure and to identify potential necessary noise abatement measures for the Maple Apartments Project. It is expected that the primary source of noise impacts to the Project site will be traffic noise from Foothill Boulevard and Maple Avenue in the Project study area.

7.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 6-1 to 6-3, the expected future exterior noise levels were calculated. Table 7-1 presents a summary of future exterior noise level impacts at the building facades of the proposed residential dwelling units consistent with the standards of the City of Fontana General Plan Noise Element. The on-site traffic noise level analysis indicates that the Project will experience exterior noise levels ranging from 62.9 to 72.7 dBA CNEL at the first-floor units. This noise analysis shows that the buildings fronting Maple Avenue will satisfy the City of Fontana noise standards for residential land uses with typical construction, with a windows-closed condition with a means of mechanical ventilation (i.e., air conditioning). The analysis also shows that the buildings fronting Foothill Boulevard will require an interior noise analysis, which may identify measures such as upgraded windows and doors with a windows-closed condition and a means of mechanical ventilation (i.e., air conditioning) in order to satisfy the City of Fontana's exterior noise standards. All calculations are provided in Appendix 7.1.

TABLE 7-1: EXTERIOR NOISE LEVELS (CNEL)

Lot	Roadway	Type	Noise Level (dBA CNEL) ¹
East Building #3	Maple Ave.	Three-Story	63.0
East Building #4	Maple Ave.	Three-Story	62.9
South Building #5	Foothill Blvd.	Three-Story	72.7
South Building #6	Foothill Blvd.	Three-Story	72.4

¹ Exterior noise level calculations are included in Appendix 7.1.

7.2 ON-SITE INTERIOR NOISE ANALYSIS

The future noise levels were calculated at the first, second, and third-floor building façades to ensure that the interior noise levels comply with the City of Fontana 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." 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 future unmitigated noise levels at the first-floor building façades are expected to range from 62.9 to 72.7 dBA CNEL. The first-floor analysis shows that the buildings along Foothill Boulevard can satisfy interior noise standards with a windows-closed condition and upgraded construction using windows and doors with a minimum STC rating of 30. The first-floor analysis also shows that the buildings along Maple Avenue will satisfy interior noise standards with a windows-closed condition using typical construction and a means of mechanical ventilation (i.e., air conditioning).

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	Interior Noise Level ⁵	Threshold	Threshold Exceeded?
East Building #3	63.0	18.0	25.0	No	38.0	45	No
East Building #4	62.9	17.9	25.0	No	37.9	45	No
South Building #5	72.7	27.7	25.0	Yes	47.7	45	Yes
South Building #6	72.4	27.4	25.0	Yes	47.4	45	Yes

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 shows that the future unmitigated noise levels at the second-floor building façades will range from 62.8 to 72.4 dBA CNEL. The second-floor analysis also shows that the buildings along Foothill Boulevard can satisfy interior noise level standards with a windows-closed condition and upgraded construction using windows with a minimum STC rating of 30. The second-floor analysis also shows that the buildings along Maple Avenue will satisfy interior noise standards with a windows-closed condition using typical construction and a means of mechanical ventilation (i.e., air conditioning).

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	Interior Noise Level ⁵	Threshold	Threshold Exceeded?
East Building #3	62.9	17.9	25.0	No	37.9	45	No
East Building #4	62.8	17.8	25.0	No	37.8	45	No
South Building #5	72.4	27.4	25.0	Yes	47.4	45	Yes
South Building #6	72.1	27.1	25.0	Yes	47.1	45	Yes

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

Table 7-4 shows that the future unmitigated noise levels at the third-floor building façades will range from 62.5 to 71.9 dBA CNEL. The third-floor analysis also shows that the buildings along Foothill Boulevard will satisfy interior noise standards with a windows-closed condition and upgraded construction using

windows with a minimum STC rating of 29. The third-floor analysis also shows that the buildings along Maple Avenue will satisfy interior noise standards with a windows-closed condition using typical construction and a means of mechanical ventilation (i.e., air conditioning).

TABLE 7-4: THIRD FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot	Noise Level at Façade ¹	Required Interior NR ²	Calculated Interior NR ³	Upgraded Windows ⁴	Interior Noise Level ⁵	Threshold	Threshold Exceeded?
East Building #3	62.6	17.6	25.0	No	37.6	45	No
East Building #4	62.5	17.5	25.0	No	37.5	45	No
South Building #5	71.9	26.9	25.0	Yes	46.9	45	Yes
South Building #6	71.6	26.6	25.0	Yes	46.6	45	Yes

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 expected Project is anticipated to generate a maximum of 1,786 daily trips as found by the *Project Trips Report* conducted by Translutions, Inc. (25) Comparatively, based on City published traffic counts, existing traffic volumes on Foothill Boulevard averaged 21,200 vehicles a day (26). This traffic volume would represent an incremental increase to the existing roadway volumes. Therefore, the Project would generate a less than 1 CNEL increase in off-site traffic noise. This would not be a perceptible noise level increase (i.e., less than 3 dBA CNEL) at nearby 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*, and no further analysis is required.

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9 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 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, six 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 18242 Barbee Street, approximately 103 feet north of the Project site. Receiver R1 is placed in the private outdoor living areas (backyards) 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 18270 Barbee Street, approximately 107 feet north of the Project site. Receiver R2 is placed in the private outdoor living areas (backyards) 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 495 North Maple Avenue, approximately 84 feet east of the Project site. Receiver R3 is placed at the façade of the apartment complex facing the 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 347 South Maple Avenue, approximately 328 feet southeast of the Project site. Receiver R4 is placed at the façade of the apartment complex 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 367 North Maple Avenue, approximately 343 feet southeast of the Project site. Receiver R5 is placed in the private outdoor living areas (backyards) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.
- R6: Location R6 represents the existing noise-sensitive residence at 18215 Foothill Boulevard, 127 feet south of the Project site. Receiver R6 is placed at the façade of the apartment

complex facing the Project site. A 24-hour noise measurement was taken near this location, L6, to describe the existing ambient noise environment.

EXHIBIT 9-A: RECEIVER LOCATIONS



10 OPERATIONAL NOISE ANALYSIS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 9, resulting from the operation of the Project. Exhibit 10-A identifies the noise source locations used to assess the Project-related operational noise levels.

10.1 OPERATIONAL NOISE SOURCES

The proposed residential land uses are considered noise-sensitive receiving land uses and are not expected to include any specific type of operational noise sources beyond the typical noise sources associated with existing residential land uses in the Project study area. The on-site Project-related noise sources are expected to include: roof top air conditioning units, trash enclosure activity, and parking lot activities.

ROOF TOP AIR CONDITIONING UNIT

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 50VR-A). The manufacturer's specifications are included in Appendix 10.1. At a uniform reference distance of 50 feet, the units would generate a reference noise level of 44.4 dBA L_{eq} . The air conditioning units were modeled 3 feet above the roof level, operating 45 minutes per hour during the daytime and 30 minutes at nighttime, which represents the typical maximum operating time for properly-sized AC systems.

TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for each of the Project buildings. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

PARKING LOT ACTIVITIES

Parking lot activities are based on the area of the parking spaces. The Project includes approximately 373 new parking spaces, which are assumed to have up to 2 movements per hour for a total of 746 events in an hour. Based on studies conducted in Europe and Australia, the average parking procedure, which included movement associated with either entering or exiting the parking area, parking the vehicles, and opening and closing doors, resulted in a sound power level of approximately 63 dBA L_w /square meter per event (27) (28)

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS



LEGEND:

- Roof-Top Air Conditioning Unit
- ◆ Trash Enclosure Activity
- Parking Lot Vehicle Movements

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 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 and summarized in Table 10-1.

TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Noise Source Height (Feet)	Min./Hour ²		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA) ³
		Day	Night		
Roof-top Air Conditioning Unit ¹	3'	45	30	44.4	76.0
Trash Enclosure Activity ¹	8'	10	10	57.3	88.9
Parking Lot Activities	3'	60	30	41.8	73.4

¹ As measured by Urban Crossroads, Inc.

² Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

³ Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

10.3 CADNAA NOISE PREDICTION MODEL

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

Using the ISO 9613 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of the noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613 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 semi-hard ground surfaces.

10.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the Project operations that include roof top air conditioning units, trash enclosure activity, and parking lot activities, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 37.0 to 50.1 dBA L_{eq} .

TABLE 10-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source ¹	Operational Noise Levels by Receiver Location (dBA L_{eq})					
	R1	R2	R3	R4	R5	R6
Roof-top Air Conditioning Unit	41.0	41.2	39.2	36.9	36.7	40.6
Trash Enclosure Activity	37.4	44.8	41.8	18.7	16.0	17.7
Parking Lot Activities	48.8	47.7	40.4	24.5	24.5	41.1
Total (All Noise Sources)	49.7	50.1	45.4	37.2	37.0	43.9

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 34.5 to 49.5 dBA L_{eq} . Appendix 10.2 includes the detailed noise model inputs used to estimate the Project operational noise levels.

TABLE 10-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source	Operational Noise Levels by Receiver Location (dBA L_{eq})					
	R1	R2	R3	R4	R5	R6
Roof-top Air Conditioning Unit	38.2	38.5	36.5	34.2	34.0	37.9
Trash Enclosure Activity	36.5	43.8	40.9	17.7	15.0	16.7
Parking Lot Activities	48.8	47.7	40.4	24.5	24.5	41.1
Total (All Noise Sources)	49.4	49.5	44.4	34.7	34.5	42.8

¹ See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

10.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Fontana exterior noise level standards at nearby noise-sensitive receiver locations. Table 10-4 shows the Project operational noise levels associated with the Project will satisfy the City of Fontana 65 dBA L_{eq} daytime and 65 dBA L_{eq}

nighttime exterior noise level standards at the nearest receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 10-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location ¹	Project Operational Noise Levels (dBA Leq) ²		Noise Level Standards (dBA Leq) ³		Noise Level Standards Exceeded? ⁴	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	49.7	49.4	65	65	No	No
R2	50.1	49.5	65	65	No	No
R3	45.4	44.4	65	65	No	No
R4	37.2	34.7	65	65	No	No
R5	37.0	34.5	65	65	No	No
R6	43.9	42.8	65	65	No	No

¹ See Exhibit 9-A for the receiver locations.

² Proposed Project operational noise levels as shown in Table 10-1 and 10-2.

³ City of Fontana Development Code, 30-469 (Appendix 3.1)

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

"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 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 nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

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

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.

As indicated in Table 10-5, the Project will generate an unmitigated daytime operational noise level increase up to 0.9 dBA L_{eq} at the nearest receiver locations. Table 10-6 shows that the Project will generate an unmitigated nighttime operational noise level increase up to 3.6 dBA L_{eq} at the nearest receiver locations. As indicated in Tables 10-5 and 10-6, the Project-related operational noise level increases will satisfy the noise level increase significance criteria presented in Table 4-1. Therefore, the incremental Project operational noise level increases are considered *less than significant* at all receiver locations.

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	Increase Criteria Exceeded?
R1	49.7	L1	56.9	57.7	0.8	5.0	No
R2	50.1	L2	56.5	57.4	0.9	5.0	No
R3	45.4	L3	60.2	60.3	0.1	3.0	No
R4	37.2	L4	66.9	66.9	0.0	1.5	No
R5	37.0	L5	67.8	67.8	0.0	1.5	No
R6	43.9	L6	63.7	63.7	0.0	3.0	No

¹ See Exhibit 9-A for the receiver locations.

² Total Project daytime operational noise levels as shown in Table 10-1.

³ Reference noise level measurement locations as shown on Exhibit 5-A.

⁴ Observed daytime ambient noise levels as shown in Table 5-1.

⁵ Represents the combined ambient conditions plus the Project activities.

⁶ The noise level increase expected with the addition of the proposed Project activities.

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	Increase Criteria Exceeded?
R1	49.4	L1	48.3	51.9	3.6	5.0	No
R2	49.5	L2	49.2	52.4	3.2	5.0	No
R3	44.4	L3	55.5	55.8	0.3	5.0	No
R4	34.7	L4	62.8	62.8	0.0	3.0	No
R5	34.5	L5	64.0	64.0	0.0	3.0	No
R6	42.8	L6	59.0	59.1	0.1	5.0	No

¹ See Exhibit 9-A for the receiver locations.

² Total Project nighttime operational noise levels as shown in Table 10-2.

³ Reference noise level measurement locations as shown on Exhibit 5-A.

⁴ Observed nighttime ambient noise levels as shown in Table 5-1.

⁵ Represents the combined ambient conditions plus the Project activities.

⁶ The noise level increase expected with the addition of the proposed Project activities.

11 CONSTRUCTION ANALYSIS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A, shows the boundary for typical construction in relation to the nearby sensitive receiver locations previously described in Section 6. City of Fontana Municipal Code Section 18-63(7), states that project construction noise levels are considered exempt between 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays.

If Project construction activity occurs outside of the hours specified in the Municipal Code, noise levels shall satisfy the City of Fontana construction noise level thresholds of 65 dBA L_{eq} during the daytime and nighttime hours.

11.1 TYPICAL CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will typically 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 TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Road Construction Noise Model* (RCNM) by the Federal Highway Administration (FHWA) (29). The FHWA model provides a comprehensive source of reference construction noise levels. Table 11-1 provides a summary of the RCNM construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated RCNM usage factors (29) to describe the construction activities for each stage of Project construction.

EXHIBIT 11-A: CONSTRUCTION ACTIVITIES AND RECEIVER LOCATIONS



TABLE 11-1: TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Equipment ¹	Reference Noise Level @ 50 Feet (dBA L _{eq})	Composite Reference Noise Level (dBA L _{eq})	Reference Power Level (dBA L _w)
Site Preparation	Dozer	78.0	83.4	115.1
	Front End Loader	75.0		
	Grader	81.0		
Grading	Excavator	77.0	84.0	115.6
	Tractor	80.0		
	Scraper	80.0		
Building Construction	Crane	73.0	77.4	109.1
	Backhoe	74.0		
	Generator (<25kVA)	70.0		
Paving	Paver	74.0	77.8	109.5
	Dump Truck	72.0		
	Roller	73.0		
Architectural Coating	Man Lift	68.0	76.2	107.8
	Compressor (air)	74.0		
	Generator (<25kVA)	70.0		

¹ FHWA Road Construction Noise Model.

11.3 TYPICAL CONSTRUCTION NOISE ANALYSIS

Table 11-1 shows the Project construction equipment reference noise levels used in this analysis and the resulting Project-related construction noise levels at each receiver location when the highest reference noise level is operating at a single point nearest each sensitive receiver location. Table 11-2 shows that the Project-related construction noise levels will range from 58.0 to 64.3 dBA L_{eq} at the sensitive receiver locations in the study area.

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	63.8	64.3	57.7	58.2	56.5	64.3
R2	63.7	64.2	57.6	58.1	56.4	64.2
R3	63.6	64.1	57.5	58.0	56.3	64.1
R4	57.7	58.2	51.6	52.1	50.4	58.2
R5	57.5	58.0	51.4	51.9	50.2	58.0
R6	62.7	63.2	56.6	57.1	55.4	63.2

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 TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest residential 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 residential receiver locations will satisfy the daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown in Table 11-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant*.

TABLE 11-3: TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location ¹	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels ²	Threshold ³	Threshold Exceeded? ⁴
R1	64.3	80	No
R2	64.2	80	No
R3	64.1	80	No
R4	58.2	80	No
R5	58.0	80	No
R6	63.2	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 ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. The operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized in Table 11-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for building damage using the following vibration assessment methods defined by Caltrans. To describe the vibration impacts, Caltrans provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$.

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

Table 11-5 presents the expected Project-related vibration levels at the nearest receiver locations. At distances ranging from 84 to 343 feet from Project construction activities, construction vibration velocity levels are estimated to range up to 0.01 PPV (in/sec). Based on the maximum acceptable continuous vibration threshold of 0.30 PPV (in/sec) for older residential buildings, the typical Project construction vibration levels will satisfy the building damage thresholds at all receiver locations

TABLE 11-5: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location ¹	Distance to Const. Activity (Feet) ²	Typical Construction Vibration Levels PPV (in/sec) ³					Thresholds PPV (in/sec) ⁴	Thresholds Exceeded? ⁵
		Small bulldozer	Jack- hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R1	103'	0.00	0.00	0.01	0.01	0.01	0.30	No
R2	107'	0.00	0.00	0.01	0.01	0.01	0.30	No
R3	84'	0.00	0.01	0.01	0.01	0.01	0.30	No
R4	328'	0.00	0.00	0.00	0.00	0.00	0.30	No
R5	343'	0.00	0.00	0.00	0.00	0.00	0.30	No
R6	127'	0.00	0.00	0.01	0.01	0.01	0.30	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 City of Redlands Municipal Code Section 8.06.020

⁵ Does the peak vibration exceed the acceptable vibration thresholds?

"PPV" = Peak Particle Velocity

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12 REFERENCES

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13 CERTIFICATION

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

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EDUCATION

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California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
APA – American Planning Association
AWMA – Air and Waste Management Association

PROFESSIONAL CERTIFICATIONS

Approved Acoustical Consultant • County of San Diego
FHWA Traffic Noise Model of Training • November 2004
CadnaA Basic and Advanced Training Certificate • January 2024

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APPENDIX 3.1:

CITY OF FONTANA MUNICIPAL CODE

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ARTICLE II. - NOISE

Footnotes:

— (2) —

Cross reference— *Raceways, racetracks and drag strips, § 17-391 et seq.*

Sec. 18-61. - Definitions.

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

Aircraft means any contrivance invented, used or designated for navigation or for flight in the air. The word "aircraft" shall include helicopters and lighter-than-air dirigibles and balloons.

Sound amplifying equipment means any machine or device for the amplification of the human voice, music or any other sound. The term "sound amplifying equipment" shall not be construed as including standard automobile radios when used and heard only by occupants of the vehicle in which installed, or warning devices on authorized emergency vehicles, or horns or other warning devices on other vehicles used only for traffic safety purposes.

Sound truck means any motor vehicle or horse-drawn vehicle having mounted thereon or attached thereto any sound amplifying equipment.

(Code 1968, § 17-1)

Cross reference— Definitions and rules of construction generally, § 1-2.

Sec. 18-62. - Prohibited noise generally, penalties, remedies.

- (a) It shall be unlawful for any person within the city to make, cause, or to continue to make or cause, loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities.
- (b) All violations of any portion of this article shall be punished as either an infraction or misdemeanor, pursuant to Fontana Municipal Code section 1-7, and may be punished as provided therein.
- (c) Any person who negligently or knowingly violates any provision of this article may also be subject to administrative fine(s) pursuant to section 2-442 of this Code. The city council may establish, through resolution, the maximum amounts for all administrative fines issued pursuant to this section. In the absence of any resolution, where the violation would otherwise be an infraction or misdemeanor, the administrative fine shall not exceed the maximum fine amounts for infractions and misdemeanors set forth in Government Code §§ 36900 and 36901. The manner of issuing administrative citations shall comply with all the procedures specified in article XI of chapter 2 of this Code. The remedies set forth in this article are nonexclusive and the city may seek any and all legal and equitable relief permitted by law in addition to those remedies set forth in this article.

(Code 1968, § 17-2; Ord. No. 1560, § 1, 9-11-07)

Sec. 18-63. - Scope, enumeration of prohibited noises.

- (a) This article shall apply to loud, excessive, impulsive or intrusive interior and exterior sound or noise that annoys or disturbs persons of ordinary sensibilities emanating from any type of property or source within the city.

- (b) The following acts, which create loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities from a distance of 50 feet or more from the edge of the property, structure or unit in which the source is located, are declared to be in violation of this article, but such enumeration shall not be deemed to be exclusive, namely:
- (1) *Horns, signaling devices, etc.* The sounding of any horn or signaling device on any automobile, motorcycle, streetcar or other vehicle on any street or public place of the city, except as a danger warning; the creation by means of any such signaling device of any unreasonably loud, excessive, impulsive or intrusive noise; and the sounding of any such device for an unnecessary and unreasonable period of time; the use of any signaling device except one operated by hand or electricity; the use of any horn, whistle or other device operated by engine exhaust; and the use of any such signaling device when traffic is for any reason held up.
 - (2) *Sound amplifying equipment.* The use or operation of any radio receiving set, musical instrument, phonograph, loudspeaker, sound amplifier or any other machine or device in a manner that creates loud, excessive, impulsive or intrusive noise that annoys or disturbs a person of ordinary sensibilities. Such sound amplifying equipment shall not be construed to include electronic devices, including, but not limited to, radios, tape players, tape recorders, compact disc players, MP3 players, electric keyboards, music synthesizers, record players or televisions, which are designed and operated for personal use, or used entirely within a building and are not designed or used to convey the human voice, music or any other sound to an audience outside such building, or which are used in vehicles and heard only by occupants of the vehicle in which installed.
 - (3) *Animals, birds, etc.* Keeping any animal or allowing any animal to be kept or suffering, or permitting any animal to remain upon the premises under the control of a person, when such animal habitually barks, whines or makes loud, excessive, impulsive or intrusive noises in such a manner as to disturb the peace and quiet of the neighbors surrounding or in the vicinity of such premises, or whose barking or howling or other sound or cry interferes with any person of ordinary sensitiveness in the reasonable and comfortable enjoyment of life and property.
 - (4) *Exhausts.* The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine, motorboat or motor vehicle, except through a muffler or other device which will effectively prevent loud, excessive, impulsive or intrusive noises therefrom; provided, however, that the provisions of this section and article do not apply to any raceway, racetrack or drag strip which is being operated in accordance with the provisions of chapter 17, article IX.
 - (5) *Defect in vehicle or load.* The use of any automobile, motorcycle or vehicle so out of repair or loaded or used in such manner as to create loud, excessive, impulsive or intrusive and unnecessary grating, grinding, rattling or other noise.
 - (6) *Loading, unloading or opening boxes.* The creation of a loud, excessive, impulsive or intrusive and excessive noise in connection with loading or unloading of any vehicle or the opening and destruction of bales, boxes, crates and containers.
 - (7) *Construction or repairing of buildings or structures.* The erection (including excavating), demolition, alteration or repair of any building or structure other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or structure or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he shall further determine that loss or inconvenience would

result to any party in interest, he may grant permission for such work to be done on weekdays within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work.

- (8) *Noise near schools, courts, place of worship or hospitals.* The creation of any loud, excessive, impulsive or intrusive noise on any street adjacent to any school, institution of learning, places of worship or court while the premises are in use, or adjacent to any hospital which unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital; provided conspicuous signs are displayed in such streets indicating that the street is a school, hospital or court street.
- (9) *Transportation of metal rails, pillars and columns.* The transportation of rails, pillars or columns of iron, steel or other material over and along streets and other public places upon carts, drays, cars or trucks, or in any other manner so loaded as to cause loud, excessive, impulsive or intrusive noise or as to disturb the peace and quiet of such streets or other public places.
- (10) *Piledrivers, hammers, etc.* The operation between the hours of 6:00 p.m. and 7:00 a.m. of any piledriver, steamshovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud, excessive, impulsive or intrusive noise.
- (11) *Blowers.* The operation of any noise-creating blower or power fan or any internal combustion engine other than from the hours of 7:00 a.m. and 6:00 p.m. on a weekday and the hours of 8:00 a.m. and 5:00 p.m. on a Saturday, the operation of which causes noise due to the explosion of operating gases or fluids, unless the noise from such blower or fan is muffled and such engine is equipped with a muffler device sufficient to deaden such noise.

(Code 1968, § 17-3; Ord. No. 1460, § 2, 10-5-04; Ord. No. 1560, § 2, 9-11-07)

Sec. 18-64. - Noncommercial use of sound trucks.

- (a) *Registration required.* No person shall use or cause to be used a sound truck with its sound amplifying equipment in operation for noncommercial purposes in the city before filing a registration statement with the license collector in writing. This registration statement shall be filed in duplicate and shall state the following:
 - (1) The name and home address of the applicant.
 - (2) The address of the place of business of the applicant.
 - (3) The license number and motor number of the sound truck to be used by the applicant.
 - (4) The name and address of the person who owns the sound truck.
 - (5) The name and address of the person having direct charge of the sound truck.
 - (6) The names and addresses of all persons who will use or operate the sound truck.
 - (7) The purpose for which the sound truck will be used.
 - (8) A general statement as to the section of the city in which the sound truck will be used.
 - (9) The proposed hours of operation of the sound truck.
 - (10) The number of days of proposed operation of the sound truck.
 - (11) A general description of the sound amplifying equipment which is to be used.
 - (12) The maximum sound producing power of the sound amplifying equipment to be used in or on the sound truck, stating the following:
 - a. The wattage to be used.

- b. The volume, in decibels, of the sound which will be produced.
 - c. The approximate maximum distance for which sound will be thrown from the sound truck.
- (b) *Changes to registration statement.* All persons using or causing to be used sound trucks for noncommercial purposes shall amend any registration statement filed pursuant to subsection (a) of this section within 48 hours after any change in the information therein furnished.
- (c) *Certification of registration; display.* The city clerk shall return to each applicant under subsection (a) of this section one copy of such registration duly certified by the city clerk as a correct copy of the application. The certified copy of the application shall be in the possession of any person operating the sound truck at all times while the sound truck's sound amplifying equipment is in operation, and such copy shall be promptly displayed and shown to any police officer of the city upon request.
- (d) *Regulations for use.* Noncommercial use of sound trucks in the city with sound amplifying equipment in operation shall be subject to the following regulations:
- (1) The only sounds permitted are music or human speech.
 - (2) Operations are permitted for four hours each day, except on Sundays and legal holidays, when no operations shall be authorized. The permitted four hours of operation shall be between the hours of 11:30 a.m. and 1:30 p.m. and between the hours of 4:30 p.m. and 6:30 p.m.
 - (3) Sound amplifying equipment shall not be operated unless the sound truck upon which such equipment is mounted is operated at a speed of at least ten miles per hour except when the truck is stopped or impeded by traffic. Where stopped by traffic the sound amplifying equipment shall not be operated for longer than one minute at each such stop.
 - (4) Sound shall not be issued within 100 yards of hospitals, schools, churches or courthouses.
 - (5) No sound truck with its amplifying device in operation shall be operated on any streets between the points designated as follows: bounded on the south by Randall Avenue, on the west by Juniper Avenue, on the north by Foothill Boulevard and on the east by Mango Avenue.
 - (6) The human speech and music amplified shall not be profane, lewd, indecent or slanderous.
 - (7) The volume of sound shall be controlled so that it will not be audible for a distance in excess of 100 feet from the sound truck and so that such volume is not unreasonably loud, raucous, jarring, disturbing or a nuisance to persons within the area of audibility.
 - (8) No sound amplifying equipment shall be operated with an excess of 15 watts of power in the last stage of amplification.

(Code 1968, § 17-4)

Cross reference— Motor vehicles and traffic, ch. 17.

Sec. 18-65. - Commercial advertising by sound trucks.

- (a) *License required.* No person shall operate or cause to be operated any sound truck in the city for commercial advertising purposes with sound amplifying equipment in operation unless a license has been obtained from the license collector. There shall be no charge for the license.
- (b) *Application for license.* Persons applying for the license required under subsection (a) of this section shall file with the license collector an application in writing, giving in such application the information required in the registration statement required under subsection 18-64(a).
- (c) *Issuance of license.* The license collector shall issue a license under subsection (a) of this section unless the application

required reveals that the applicant would violate the regulations prescribed in subsection 18-64(d) or the provisions of this Code or any ordinance of the city.

- (d) *Possession and display of license.* A licensee shall keep such license in his possession in the sound truck during the time the sound truck's sound amplifying equipment is in operation. The license shall be promptly displayed and shown to any police officer of the city upon request.
- (e) *Regulations for use.* No person shall operate or cause to be operated any sound truck for commercial sound advertising purposes in violation of the regulations set forth in subsection 18-64(d).

(Code 1968, § 17-5)

Cross reference— Advertising and signs, ch. 3; licenses, permits and business regulations, ch. 15; motor vehicles and traffic, ch. 17.

Sec. 18-66. - Noncommercial use of aircraft for sound amplifying purposes.

- (a) *Registration required.* No person shall operate or cause to be operated any aircraft for noncommercial purposes in or over the city with sound amplifying equipment in operation before filing a registration statement with the license collector in writing. This registration statement shall be filed in duplicate and shall state the following:
 - (1) The name and home address of the applicant.
 - (2) The address of the place of business of the applicant.
 - (3) The federal N.C. registration number and aircraft motor number of the aircraft to be used by the applicant.
 - (4) The name and address of the person who owns the aircraft.
 - (5) The name and address of the person having direct charge of the aircraft.
 - (6) The name and address of all persons who will use or operate the aircraft.
 - (7) The purpose for which the aircraft will be used.
 - (8) A general statement as to the sections of the city over which the aircraft will be used.
 - (9) The proposed hours of operation of the aircraft.
 - (10) The number of days of proposed operation of the aircraft.
 - (11) A general description of the sound equipment which is to be used.
 - (12) The maximum sound producing power of the sound amplifying equipment to be used in or on the aircraft, stating:
 - a. The wattage to be used.
 - b. The volume in decibels of the sound which will be produced.
 - c. The approximate maximum distance for which sound will be thrown from the aircraft.
- (b) *Changes to registration statement.* All persons using or causing to be used aircraft for noncommercial purposes shall amend any registration statement filed pursuant to subsection (a) of this section within 48 hours after any change in the information therein furnished.
- (c) *Certification of registration; display.* The city shall return to each applicant under subsection (a) of this section one copy of the registration statement duly certified by the city clerk as a correct copy of the application. The certified copy of the application shall be in the possession of any person operating the aircraft at all times while the aircraft's sound amplifying equipment is in operation, and such copy shall be promptly displayed and shown to any police officer of the city upon request.

(Code 1968, § 17-6)

Sec. 18-67. - Commercial advertising by aircraft.

- (a) *License required.* No person shall operate or cause to be operated any aircraft in or over the city for commercial advertising purposes with sound amplifying equipment in operation unless a license has been obtained from the license collector. There shall be no charge for the license.
- (b) *Application for license.* Persons applying for the license required under subsection (a) of this section shall file with the license collector an application in writing, giving in the application the information required in the registration statement under section 18-66(a).
- (c) *Issuance of license.* The license collector shall issue a license under subsection (a) of this section unless the application required in subsection (b) of this section reveals that the applicant would violate the regulations prescribed in subsection (d) of this section or some other provision of this Code or an ordinance of the city.
- (d) *Possession and display of license.* A licensee shall keep his license in his possession in the aircraft during the time the aircraft's sound amplifying equipment is in operation. The license shall be promptly displayed and shown to any police officer of the city upon request.
- (e) *Regulations for use.* Commercial advertising with sound amplifying equipment from aircraft shall be subject to the following regulations:
- (1) The only sounds permitted are music or human speech.
 - (2) Sound advertising is permitted only between the hours of 11:30 a.m. and 1:30 p.m. and between the hours of 4:30 p.m. and 6:30 p.m.
 - (3) Sound amplifying equipment shall not be operated while an aircraft is flying at an altitude of less than 1,500 feet.
 - (4) Sound shall be issued from one loudspeaker only on each aircraft.
 - (5) The cone of sound from the loudspeaker shall be directed so as to cover at one time an area on the ground of less than 700 square yards and so as to avoid hospitals, schools, churches and courthouses.
 - (6) Human speech and music amplified shall not be lewd, indecent or slanderous.
 - (7) The volume of sound shall be controlled so that it is not audible on the ground over an area in excess of 700 square yards and so that such volume is not unreasonably loud, raucous, jarring, disturbing or a nuisance to persons within the area of audibility.

(Code 1968, § 17-7)

Cross reference— Advertising and signs, ch. 3; licenses, permits and business regulations, ch. 15.

Secs. 18-68—18-89. - Reserved.

Sec. 30-469. - Noise.

No use shall create or cause to be created any sound that exceeds the ambient noise standards outlined in Table 30-469.

No use shall create or cause creation of noise from a portable electronic device such as a car stereo, portable radio and/or cassette/compact disc player or similar device which exceeds the ambient noise standards outlined in Table 30-469.

Table 30-469 Noise Standards		
Location of Measurement	Maximum Allowable	
All zoning districts	7:00 a.m. until 10:00 p.m.	10:00 p.m. until 7:00 a.m.
Interior	45 db	45 db
Exterior	65 db	65 db

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APPENDIX 5.1:

NOISE MEASUREMENT PHOTOS

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15975 - Maple Apartments

15975_L1_B 1.North
34, 6' 31.040000"117, 24' 24.010000"



15975_L1_B 2.South
34, 6' 31.040000"117, 24' 23.980000"



15975_L1_B 3.East
34, 6' 31.030000"117, 24' 23.980000"



15975_L1_B 4.West
34, 6' 31.030000"117, 24' 23.980000"



15975 - Maple Apartments

15975_L2_C 1.North
34, 6' 31.000000"117, 24' 22.280000"



15975_L2_C 2.South
34, 6' 30.950000"117, 24' 22.140000"



15975_L2_C 3.East
34, 6' 30.950000"117, 24' 22.170000"



15975_L2_C 4.West
34, 6' 30.920000"117, 24' 22.200000"



15975 - Maple Apartments

15975_L3_D 1.North
34, 6' 30.410000"117, 24' 18.870000"



15975_L3_D 2.South
34, 6' 30.400000"117, 24' 18.790000"



15975_L3_D 3.East
34, 6' 30.390000"117, 24' 18.790000"



15975_L3_D 4.West
34, 6' 30.370000"117, 24' 18.850000"



15975 - Maple Apartments

15975_L4_E 1.North
34, 6' 23.200000"117, 24' 16.730000"



15975_L4_E 2.South
34, 6' 22.830000"117, 24' 16.700000"



15975_L4_E 3.East
34, 6' 22.850000"117, 24' 16.700000"



15975_L4_E 4.West
34, 6' 22.820000"117, 24' 16.680000"



15975 - Maple Apartments

15975_L6_H 1.North
34, 6' 24.750000"117, 24' 24.830000"



15975_L6_H 2.South
34, 6' 24.670000"117, 24' 24.890000"



15975_L6_H 3.East
34, 6' 24.630000"117, 24' 24.890000"



15975_L6_H 4.West
34, 6' 24.670000"117, 24' 25.440000"



15975 - Maple Apartments

15975_L5_G 1.North
34, 6' 21.240000"117, 24' 16.680000"



15975_L5_G 2.South
34, 6' 21.140000"117, 24' 16.650000"



15975_L5_G 3.East
34, 6' 21.090000"117, 24' 16.680000"



15975_L5_G 4.West
34, 6' 21.100000"117, 24' 16.700000"



APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

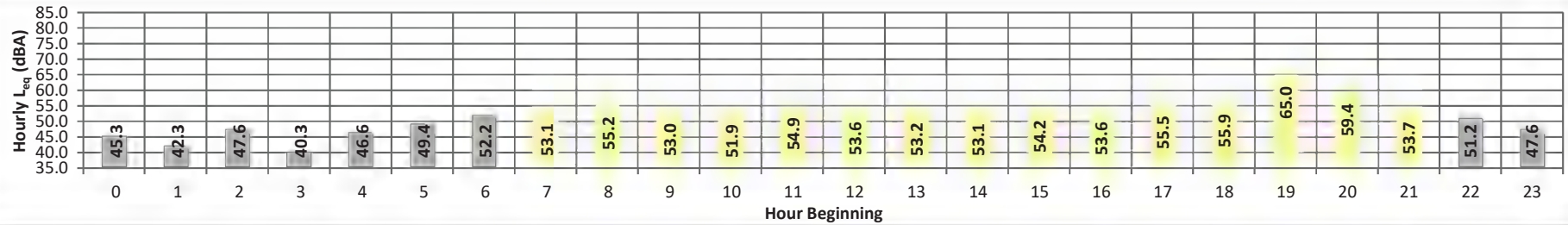
Date: Tuesday, May 14, 2024
Project: Maple Apartments

Location: L1 - Located north of the site near the residence at 18242
Source: Barbee St.

Meter: Piccolo II

JN: 15975
Analyst: Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
Night	0	45.3	55.1	38.9	54.6	54.0	51.7	49.7	44.7	42.0	39.6	39.3	39.0	45.3	10.0	55.3
	1	42.3	48.3	38.2	48.0	47.6	46.7	46.0	43.0	40.4	38.8	38.6	38.3	42.3	10.0	52.3
	2	47.6	58.0	37.3	57.7	57.3	55.9	53.9	44.3	40.8	38.0	37.7	37.4	47.6	10.0	57.6
	3	40.3	46.6	34.9	46.2	45.8	44.9	44.2	40.8	38.7	36.0	35.6	35.1	40.3	10.0	50.3
	4	46.6	58.3	36.6	57.8	56.8	53.1	50.6	45.0	42.2	38.3	37.7	36.9	46.6	10.0	56.6
	5	49.4	57.9	41.1	57.5	57.1	55.1	53.4	49.5	47.2	43.3	42.5	41.5	49.4	10.0	59.4
	6	52.2	63.1	41.4	62.8	62.3	59.8	57.4	50.1	46.4	42.6	42.1	41.6	52.2	10.0	62.2
Day	7	53.1	63.0	43.2	62.6	62.0	59.9	58.0	52.5	48.1	44.9	44.2	43.5	53.1	0.0	53.1
	8	55.2	67.4	42.6	67.0	66.2	62.7	59.8	51.7	47.8	44.1	43.4	42.8	55.2	0.0	55.2
	9	53.0	64.9	43.8	64.2	63.3	60.1	57.4	51.0	47.6	45.1	44.6	44.1	53.0	0.0	53.0
	10	51.9	62.7	42.6	62.3	61.7	59.5	56.9	49.2	46.6	43.7	43.3	42.8	51.9	0.0	51.9
	11	54.9	64.0	47.6	63.2	62.5	60.2	58.9	55.9	51.9	48.4	48.0	47.7	54.9	0.0	54.9
	12	53.6	63.5	47.8	63.1	62.5	59.6	57.3	52.4	50.9	48.9	48.4	48.0	53.6	0.0	53.6
	13	53.2	63.7	46.2	63.2	62.5	59.6	57.4	51.8	49.6	47.3	46.9	46.4	53.2	0.0	53.2
	14	53.1	63.2	45.9	62.8	62.0	59.2	56.9	52.3	50.1	47.1	46.6	46.1	53.1	0.0	53.1
	15	54.2	64.2	47.1	63.9	63.2	60.6	58.4	53.3	50.8	48.2	47.8	47.3	54.2	0.0	54.2
	16	53.6	63.6	45.8	63.3	62.7	60.1	58.0	52.3	50.0	47.1	46.6	46.0	53.6	0.0	53.6
	17	55.5	64.1	49.2	63.6	62.9	60.7	58.9	55.6	53.5	50.6	50.1	49.4	55.5	0.0	55.5
18	55.9	63.1	49.7	62.7	62.2	60.6	59.5	56.4	54.5	51.4	50.7	50.0	55.9	0.0	55.9	
	19	65.0	75.0	52.2	74.0	73.2	71.2	69.7	65.2	61.3	55.2	53.9	52.6	65.0	5.0	70.0
	20	59.4	69.4	48.5	68.7	68.2	66.3	64.0	58.9	55.2	50.5	49.8	48.8	59.4	5.0	64.4
	21	53.7	63.2	46.4	62.7	62.0	59.5	57.4	53.4	51.2	47.8	47.3	46.6	53.7	5.0	58.7
Night	22	51.2	61.3	43.3	60.9	60.4	57.8	55.4	50.0	47.9	44.6	44.1	43.5	51.2	10.0	61.2
	23	47.6	55.5	41.2	55.1	54.5	52.7	51.4	48.0	45.5	42.5	41.9	41.3	47.6	10.0	57.6
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	Leq (dBA)		
Day	Min	51.9	62.7	42.6	62.3	61.7	59.2	56.9	49.2	46.6	43.7	43.3	42.8	24-Hour CNEL	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	65.0	75.0	52.2	74.0	73.2	71.2	69.7	65.2	61.3	55.2	53.9	52.6			
Energy Average		56.9	Average:		64.5	63.8	61.3	59.2	54.1	51.3	48.0	47.4	46.8			
Night	Min	40.3	46.6	34.9	46.2	45.8	44.9	44.2	40.8	38.7	36.0	35.6	35.1	59.7	56.9	48.3
	Max	52.2	63.1	43.3	62.8	62.3	59.8	57.4	50.1	47.9	44.6	44.1	43.5			
Energy Average		48.3	Average:		55.6	55.1	53.1	51.3	46.2	43.5	40.4	39.9	39.4			

24-Hour Noise Level Measurement Summary

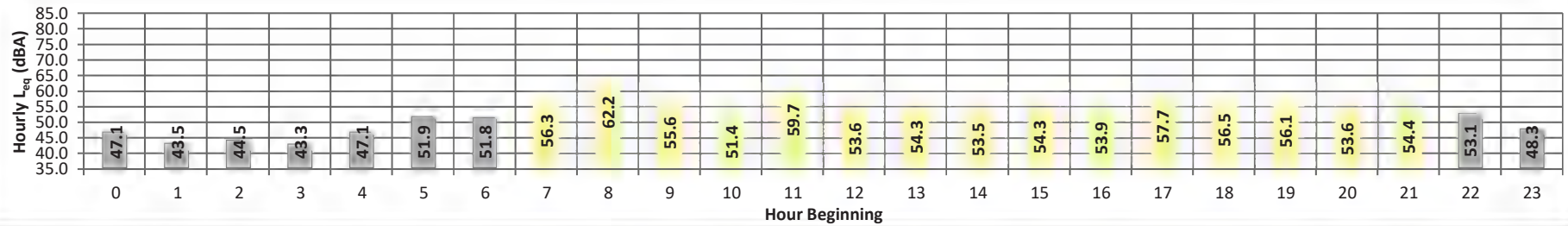
Date: Tuesday, May 14, 2024
Project: Maple Apartments

Location: L2 - Located north of the site near the residence at 18270
Source: Barbee St.

Meter: Piccolo II

JN: 15975
Analyst: Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
Night	0	47.1	57.7	40.0	57.3	56.6	53.3	50.9	46.1	43.5	40.7	40.4	40.1	47.1	10.0	57.1
	1	43.5	49.8	39.2	49.3	48.8	47.6	46.9	44.4	41.9	39.8	39.6	39.3	43.5	10.0	53.5
	2	44.5	54.2	38.1	54.0	53.5	51.1	48.6	43.6	41.1	38.8	38.5	38.2	44.5	10.0	54.5
	3	43.3	51.5	37.0	51.0	50.5	48.8	47.7	43.5	40.8	37.7	37.4	37.1	43.3	10.0	53.3
	4	47.1	57.1	36.9	56.7	56.2	54.0	52.0	46.3	42.8	38.2	37.6	37.0	47.1	10.0	57.1
	5	51.9	60.6	41.7	59.9	59.3	57.6	56.3	52.4	49.3	44.8	43.8	42.1	51.9	10.0	61.9
	6	51.8	62.2	41.5	61.8	61.2	58.8	56.5	50.4	47.8	43.6	42.6	41.8	51.8	10.0	61.8
Day	7	56.3	69.9	45.3	69.0	67.7	63.0	58.8	52.3	49.9	46.7	46.1	45.5	56.3	0.0	56.3
	8	62.2	72.0	44.8	71.3	70.8	69.0	67.6	64.0	53.0	46.7	46.0	45.2	62.2	0.0	62.2
	9	55.6	64.9	43.7	64.3	63.6	61.5	60.2	56.8	52.0	44.9	44.5	43.9	55.6	0.0	55.6
	10	51.4	63.0	42.9	62.5	61.8	58.9	55.8	48.8	46.4	43.9	43.5	43.1	51.4	0.0	51.4
	11	59.7	64.7	57.9	64.2	63.6	62.2	61.4	59.8	59.1	58.3	58.2	57.9	59.7	0.0	59.7
	12	53.6	63.8	47.3	63.4	62.8	60.0	57.5	52.2	50.4	48.4	48.0	47.4	53.6	0.0	53.6
	13	54.3	65.3	45.9	65.0	64.4	61.7	58.4	52.0	49.6	47.1	46.7	46.1	54.3	0.0	54.3
	14	53.5	63.2	46.3	62.4	61.7	59.6	58.0	53.0	50.5	47.6	47.2	46.5	53.5	0.0	53.5
	15	54.3	64.1	46.9	63.7	63.1	60.4	58.5	53.8	51.1	48.0	47.5	47.0	54.3	0.0	54.3
	16	53.9	63.5	46.3	63.2	62.6	60.1	58.3	53.3	50.7	47.6	47.1	46.5	53.9	0.0	53.9
	17	57.7	69.6	48.7	68.9	68.2	64.0	61.3	55.7	53.4	50.1	49.6	48.9	57.7	0.0	57.7
	18	56.5	65.2	49.9	64.2	63.2	61.4	60.4	56.9	54.6	51.5	50.9	50.2	56.5	0.0	56.5
	19	56.1	63.2	49.4	62.7	62.3	60.8	59.8	56.9	54.6	51.1	50.4	49.7	56.1	5.0	61.1
	20	53.6	61.7	47.4	61.2	60.7	58.8	57.5	53.8	51.7	48.7	48.2	47.6	53.6	5.0	58.6
	21	54.4	66.2	45.7	65.7	64.7	61.9	58.3	51.7	49.6	46.8	46.3	45.9	54.4	5.0	59.4
Night	22	53.1	64.7	43.8	64.4	63.8	60.4	57.7	50.1	47.9	44.8	44.4	43.9	53.1	10.0	63.1
	23	48.3	56.2	41.8	55.8	55.3	53.8	52.2	48.6	46.2	43.0	42.4	41.9	48.3	10.0	58.3
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	Leq (dBA)		
Day	Min	51.4	61.7	42.9	61.2	60.7	58.8	55.8	48.8	46.4	43.9	43.5	43.1	24-Hour CNEL	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	62.2	72.0	57.9	71.3	70.8	69.0	67.6	64.0	59.1	58.3	58.2	57.9			
Energy Average		56.5	Average:		64.8	64.1	61.6	59.5	54.7	51.8	48.5	48.0	47.4			
Night	Min	43.3	49.8	36.9	49.3	48.8	47.6	46.9	43.5	40.8	37.7	37.4	37.0	58.3	56.5	49.2
	Max	53.1	64.7	43.8	64.4	63.8	60.4	57.7	52.4	49.3	44.8	44.4	43.9			
Energy Average		49.2	Average:		56.7	56.1	53.9	52.1	47.3	44.6	41.3	40.7	40.2			

24-Hour Noise Level Measurement Summary

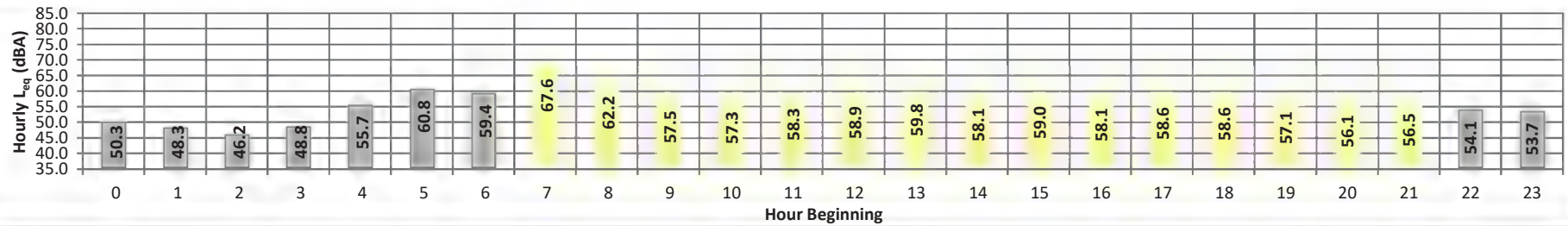
Date: Tuesday, May 14, 2024
Project: Maple Apartments

Location: L3 - Located east of the site near the residence at 495 N Maple
Source: Ave.

Meter: Piccolo II

JN: 15975
Analyst: Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}	
Night	0	50.3	61.7	37.0	61.2	60.6	58.4	56.2	47.2	41.7	38.2	37.6	37.2	50.3	10.0	60.3	
	1	48.3	60.0	37.0	59.4	58.8	56.4	53.9	44.7	40.5	37.7	37.4	37.1	48.3	10.0	58.3	
	2	46.2	56.7	35.3	56.3	55.7	54.4	52.6	43.0	39.3	36.0	35.7	35.4	46.2	10.0	56.2	
	3	48.8	60.0	35.7	59.5	58.9	56.9	54.8	45.9	41.2	36.6	36.3	35.8	48.8	10.0	58.8	
	4	55.7	68.3	36.0	67.7	66.7	63.7	60.9	51.6	45.4	37.5	36.7	36.1	55.7	10.0	65.7	
	5	60.8	69.3	50.6	68.3	67.7	66.1	64.8	61.3	58.7	55.6	54.6	52.4	60.8	10.0	70.8	
Day	6	59.4	69.4	42.5	68.8	68.2	66.2	64.6	59.6	54.2	46.2	44.6	43.0	59.4	10.0	69.4	
	7	67.6	81.9	45.8	81.1	79.6	75.3	71.1	61.9	56.6	48.4	47.1	46.1	67.6	0.0	67.6	
	8	62.2	71.7	47.1	71.4	70.8	69.0	67.4	62.3	57.1	50.0	48.4	47.4	62.2	0.0	62.2	
	9	57.5	67.7	42.4	67.3	66.9	65.2	63.3	56.4	50.4	44.4	43.5	42.7	57.5	0.0	57.5	
	10	57.3	67.5	42.0	67.0	66.5	65.2	63.3	56.6	49.4	43.8	42.9	42.2	57.3	0.0	57.3	
	11	58.3	68.4	45.3	68.1	67.5	65.7	64.1	57.4	51.5	46.4	45.9	45.5	58.3	0.0	58.3	
	12	58.9	68.7	47.6	68.2	67.6	65.8	64.0	58.6	54.5	49.2	48.5	47.8	58.9	0.0	58.9	
	13	59.8	72.4	45.9	72.0	70.9	67.2	64.2	57.1	51.9	47.3	46.8	46.1	59.8	0.0	59.8	
	14	58.1	68.0	45.3	67.6	67.1	65.2	63.5	57.9	52.5	46.9	46.1	45.5	58.1	0.0	58.1	
	15	59.0	67.3	48.9	66.9	66.4	65.3	63.9	59.7	55.3	50.1	49.6	49.1	59.0	0.0	59.0	
	16	58.1	67.0	46.9	66.7	66.3	64.9	63.4	58.3	53.6	48.8	47.9	47.1	58.1	0.0	58.1	
17	58.6	67.5	48.6	66.9	66.4	65.0	63.9	59.0	54.6	50.0	49.4	48.8	58.6	0.0	58.6		
18	58.6	67.2	48.6	66.7	66.2	65.1	63.8	59.0	54.3	50.0	49.4	48.7	58.6	0.0	58.6		
19	57.1	65.5	48.7	65.0	64.4	63.4	62.1	57.4	53.7	50.0	49.5	48.8	57.1	5.0	62.1		
20	56.1	65.3	46.7	64.8	64.2	62.9	61.6	55.9	51.8	47.9	47.4	46.9	56.1	5.0	61.1		
21	56.5	66.6	44.4	66.1	65.7	64.1	62.1	55.7	50.4	45.9	45.2	44.6	56.5	5.0	61.5		
Night	22	54.1	64.5	41.4	64.1	63.7	61.9	59.9	52.5	47.5	42.7	42.0	41.5	54.1	10.0	64.1	
	23	53.7	65.2	40.5	64.8	64.3	62.1	58.9	50.1	46.4	42.0	41.3	40.7	53.7	10.0	63.7	
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	24-Hour CNEL	Leq (dBA)		
Day	Min	56.1	65.3	42.0	64.8	64.2	62.9	61.6	55.7	49.4	43.8	42.9	42.2		Daytime (7am-10pm)	Nighttime (10pm-7am)	
	Max	67.6	81.9	48.9	81.1	79.6	75.3	71.1	62.3	57.1	50.1	49.6	49.1				
Energy Average		60.2	Average:		68.4	67.8	65.9	64.1	58.2	53.2	47.9	47.2	46.5		63.3	60.2	55.5
Night	Min	46.2	56.7	35.3	56.3	55.7	54.4	52.6	43.0	39.3	36.0	35.7	35.4				
	Max	60.8	69.4	50.6	68.8	68.2	66.2	64.8	61.3	58.7	55.6	54.6	52.4				
Energy Average		55.5	Average:		63.4	62.7	60.7	58.5	50.7	46.1	41.4	40.7	39.9				

24-Hour Noise Level Measurement Summary

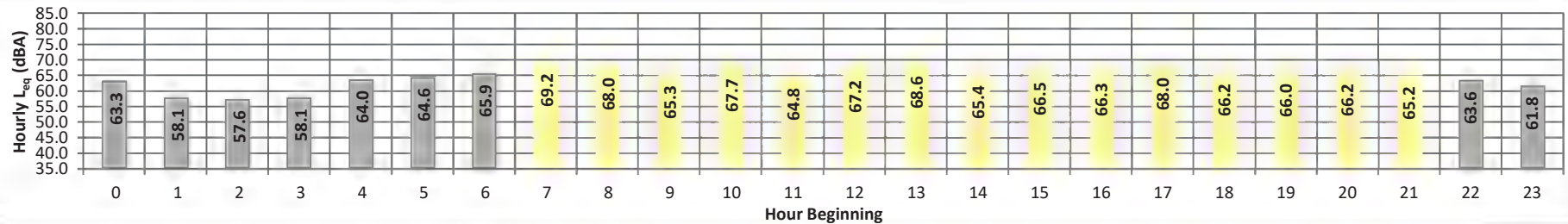
Date: Tuesday, May 14, 2024
Project: Maple Apartments

Location: L4 - Located southeast of the site near the residence at 367 N
Source: Maple Ave.

Meter: Piccolo II

JN: 15975
Analyst: Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
Night	0	63.3	75.8	45.9	75.4	74.6	71.9	68.4	58.5	52.5	47.1	46.5	46.0	63.3	10.0	73.3
	1	58.1	68.9	45.9	68.5	68.1	65.8	63.6	56.2	50.0	46.5	46.2	46.0	58.1	10.0	68.1
	2	57.6	68.8	45.6	68.4	67.9	65.4	62.9	55.5	49.1	46.1	45.9	45.7	57.6	10.0	67.6
	3	58.1	68.9	43.8	68.5	68.0	65.5	63.5	56.9	50.8	44.7	44.3	43.9	58.1	10.0	68.1
	4	64.0	75.2	46.9	75.0	74.4	71.8	69.3	62.4	56.0	48.7	47.9	47.1	64.0	10.0	74.0
	5	64.6	74.6	48.7	74.2	73.5	71.5	70.1	64.5	58.7	51.1	50.0	49.0	64.6	10.0	74.6
	6	65.9	75.7	50.3	75.3	74.6	72.4	70.9	66.4	61.3	52.4	51.3	50.4	65.9	10.0	75.9
Day	7	69.2	78.4	55.1	78.0	77.6	75.8	74.5	69.4	65.5	58.3	56.6	55.3	69.2	0.0	69.2
	8	68.0	77.0	54.7	76.6	76.1	74.1	72.7	68.5	65.0	57.7	56.3	54.9	68.0	0.0	68.0
	9	65.3	73.1	52.4	72.8	72.4	71.0	70.1	66.6	62.5	54.6	53.5	52.7	65.3	0.0	65.3
	10	67.7	78.4	52.2	78.0	77.3	75.6	73.5	66.2	61.8	54.9	53.5	52.4	67.7	0.0	67.7
	11	64.8	74.1	51.3	73.5	72.8	70.5	69.2	65.4	61.8	54.4	52.8	51.5	64.8	0.0	64.8
	12	67.2	77.3	56.2	76.7	76.2	74.0	71.4	67.0	63.7	58.0	57.3	56.4	67.2	0.0	67.2
	13	68.6	81.7	52.4	80.9	79.7	75.4	71.7	66.3	62.7	55.6	54.2	52.6	68.6	0.0	68.6
	14	65.4	73.8	53.1	73.5	72.9	71.3	70.0	66.2	62.7	55.6	54.5	53.4	65.4	0.0	65.4
	15	66.5	76.0	53.9	75.7	75.2	73.2	71.0	66.7	63.3	56.5	55.5	54.2	66.5	0.0	66.5
	16	66.3	74.7	53.9	74.3	73.7	72.2	70.9	66.9	63.5	56.4	55.0	54.1	66.3	0.0	66.3
	17	68.0	79.1	55.4	78.7	77.8	74.0	72.3	67.4	63.7	57.7	56.6	55.6	68.0	0.0	68.0
	18	66.2	74.4	55.6	74.1	73.6	71.9	70.5	67.0	63.7	57.9	56.8	55.8	66.2	0.0	66.2
	19	66.0	75.3	55.2	74.8	74.2	71.9	70.1	66.4	63.3	57.7	56.5	55.4	66.0	5.0	71.0
	20	66.2	75.6	54.1	75.2	74.7	72.9	71.2	66.1	62.3	56.4	55.3	54.3	66.2	5.0	71.2
	21	65.2	74.6	52.1	74.3	73.7	71.5	69.9	65.6	61.3	54.2	53.2	52.3	65.2	5.0	70.2
Night	22	63.6	73.0	49.3	72.7	72.2	70.3	68.6	64.0	58.8	51.0	50.2	49.5	63.6	10.0	73.6
	23	61.8	71.2	48.0	70.8	70.3	68.3	67.0	62.4	56.7	49.6	48.8	48.1	61.8	10.0	71.8
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	Leq (dBA)		
Day	Min	64.8	73.1	51.3	72.8	72.4	70.5	69.2	65.4	61.3	54.2	52.8	51.5	24-Hour CNEL	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	69.2	81.7	56.2	80.9	79.7	75.8	74.5	69.4	65.5	58.3	57.3	56.4			
Energy Average		66.9	Average:		75.8	75.2	73.0	71.3	66.8	63.1	56.4	55.2	54.1			
Night	Min	57.6	68.8	43.8	68.4	67.9	65.4	62.9	55.5	49.1	44.7	44.3	43.9	70.5	66.9	62.8
	Max	65.9	75.8	50.3	75.4	74.6	72.4	70.9	66.4	61.3	52.4	51.3	50.4			
Energy Average		62.8	Average:		72.1	71.5	69.2	67.1	60.8	54.9	48.6	47.9	47.3			

24-Hour Noise Level Measurement Summary

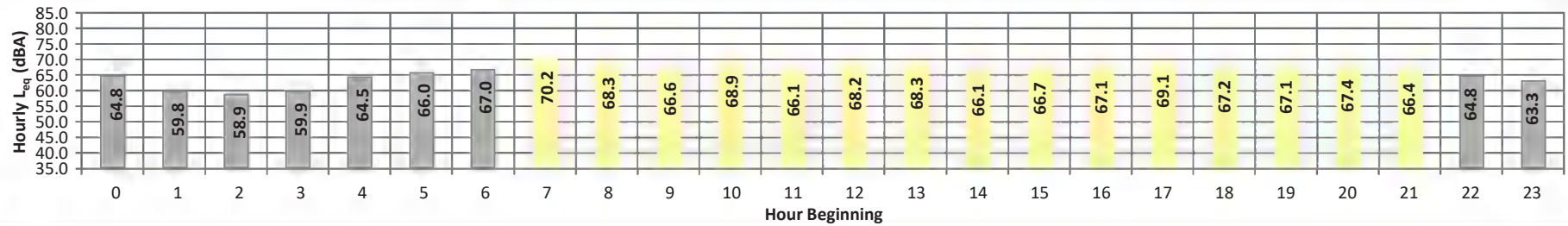
Date: Tuesday, May 14, 2024
Project: Maple Apartments

Location: L5 - Located southeast of the site near the residence at 357 N
Source: Maple Ave.

Meter: Piccolo II

JN: 15975
Analyst: Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
Night	0	64.8	77.3	44.5	77.1	76.4	73.0	69.5	60.4	52.9	45.9	45.1	44.7	64.8	10.0	74.8
	1	59.8	70.9	43.9	70.5	69.8	67.8	65.8	57.7	49.9	44.8	44.4	44.0	59.8	10.0	69.8
	2	58.9	70.2	42.6	69.8	69.2	67.0	64.6	57.0	48.2	43.2	42.9	42.7	58.9	10.0	68.9
	3	59.9	70.9	41.6	70.5	70.0	67.6	65.3	58.6	51.5	43.0	42.3	41.7	59.9	10.0	69.9
	4	64.5	74.8	46.5	74.5	74.0	72.0	70.2	64.1	57.1	49.0	47.8	46.8	64.5	10.0	74.5
	5	66.0	75.4	49.4	75.1	74.7	73.2	71.7	66.0	60.3	51.9	50.6	49.6	66.0	10.0	76.0
	6	67.0	75.8	50.7	75.5	75.1	73.5	72.2	67.7	62.4	53.4	51.9	50.9	67.0	10.0	77.0
Day	7	70.2	79.3	56.2	78.9	78.4	76.9	75.4	70.4	66.0	59.1	57.7	56.4	70.2	0.0	70.2
	8	68.3	76.1	55.5	75.8	75.3	74.0	73.0	69.4	65.7	58.5	57.2	55.8	68.3	0.0	68.3
	9	66.6	74.1	53.2	73.8	73.4	72.3	71.4	68.0	63.7	55.8	54.5	53.4	66.6	0.0	66.6
	10	68.9	80.5	53.8	79.8	78.9	76.1	74.2	67.3	63.0	56.4	55.1	54.1	68.9	0.0	68.9
	11	66.1	74.8	52.1	74.4	73.9	72.2	70.8	66.8	62.8	55.2	53.7	52.3	66.1	0.0	66.1
	12	68.2	78.0	56.5	77.7	77.3	75.3	72.8	68.1	64.5	58.4	57.6	56.8	68.2	0.0	68.2
	13	68.3	79.7	52.6	79.1	78.2	75.3	73.1	67.5	63.4	55.9	54.5	52.8	68.3	0.0	68.3
	14	66.1	74.1	53.4	73.8	73.4	72.3	71.1	67.1	63.2	55.9	54.8	53.6	66.1	0.0	66.1
	15	66.7	75.6	54.1	75.2	74.7	72.9	71.5	67.6	63.5	56.6	55.4	54.3	66.7	0.0	66.7
	16	67.1	75.6	53.7	75.3	74.8	73.0	71.7	68.0	64.0	56.2	55.1	53.9	67.1	0.0	67.1
	17	69.1	80.3	54.8	79.8	78.9	76.6	73.3	68.4	63.9	57.4	56.2	55.1	69.1	0.0	69.1
18	67.2	75.9	54.6	75.6	75.0	73.3	72.0	67.8	64.0	57.5	56.2	54.9	67.2	0.0	67.2	
	19	67.1	76.3	54.5	75.9	75.4	73.7	72.0	67.6	63.7	56.9	55.6	54.6	67.1	5.0	72.1
	20	67.4	76.7	54.6	76.3	75.9	74.1	72.6	67.7	63.4	57.4	55.9	54.8	67.4	5.0	72.4
	21	66.4	75.7	52.0	75.3	74.8	72.7	71.4	66.9	62.2	54.5	53.2	52.2	66.4	5.0	71.4
Night	22	64.8	73.3	49.4	73.0	72.7	71.4	70.3	65.6	60.0	51.3	50.3	49.5	64.8	10.0	74.8
	23	63.3	72.2	47.9	72.0	71.6	70.0	68.7	64.1	57.9	49.8	48.8	48.1	63.3	10.0	73.3
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	Leq (dBA)		
Day	Min	66.1	74.1	52.0	73.8	73.4	72.2	70.8	66.8	62.2	54.5	53.2	52.2	24-Hour CNEL	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	70.2	80.5	56.5	79.8	78.9	76.9	75.4	70.4	66.0	59.1	57.7	56.8			
Energy Average		67.8	Average:		76.4	75.9	74.1	72.4	67.9	63.8	56.8	55.5	54.3			
Night	Min	58.9	70.2	41.6	69.8	69.2	67.0	64.6	57.0	48.2	43.0	42.3	41.7	71.6	67.8	64.0
	Max	67.0	77.3	50.7	77.1	76.4	73.5	72.2	67.7	62.4	53.4	51.9	50.9			
Energy Average		64.0	Average:		73.1	72.6	70.6	68.7	62.4	55.6	48.0	47.1	46.5			

24-Hour Noise Level Measurement Summary

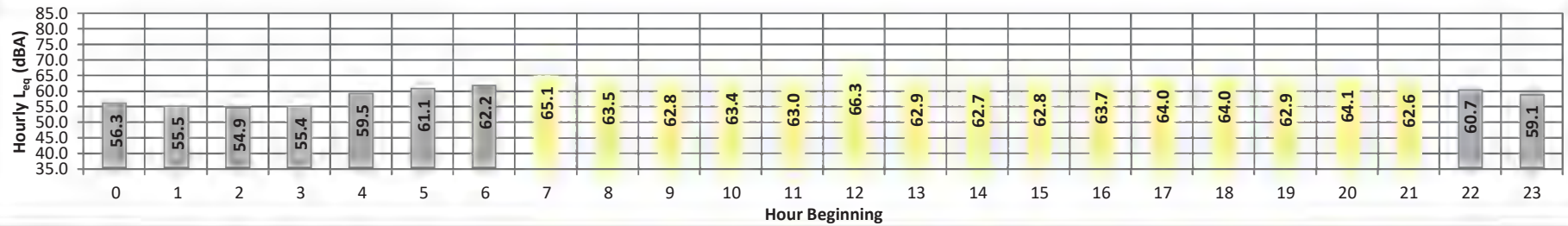
Date: Tuesday, May 14, 2024
Project: Maple Apartments

Location: L6 - Located south of the site near the residence at 18202
Source: Historic Rte 66

Meter: Piccolo II

JN: 15975
Analyst: Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L _{eq}	Adj.	Adj. L _{eq}
Night	0	56.3	67.3	40.3	67.0	66.4	63.9	62.2	54.7	47.3	41.3	40.7	40.4	56.3	10.0	66.3
	1	55.5	67.0	40.2	66.6	66.1	63.7	61.2	52.5	44.8	41.0	40.6	40.3	55.5	10.0	65.5
	2	54.9	66.1	38.5	65.8	65.4	63.1	61.0	51.5	43.7	39.2	38.8	38.6	54.9	10.0	64.9
	3	55.4	66.5	35.9	66.2	65.6	63.5	61.1	53.2	44.9	36.8	36.3	36.0	55.4	10.0	65.4
	4	59.5	70.0	38.6	69.6	69.1	67.3	65.5	58.0	50.8	40.3	39.3	38.7	59.5	10.0	69.5
	5	61.1	71.1	42.4	70.7	70.2	68.3	66.7	61.0	54.1	44.4	43.4	42.6	61.1	10.0	71.1
	6	62.2	70.5	45.5	70.3	69.9	68.5	67.4	63.4	57.7	48.0	46.7	45.7	62.2	10.0	72.2
Day	7	65.1	73.7	49.1	73.4	73.1	71.7	69.9	65.9	61.8	52.6	50.6	49.3	65.1	0.0	65.1
	8	63.5	70.9	49.6	70.7	70.3	68.7	67.8	64.8	61.4	53.0	51.0	49.9	63.5	0.0	63.5
	9	62.8	70.3	48.7	70.0	69.5	68.1	67.2	64.2	60.3	52.0	50.3	49.0	62.8	0.0	62.8
	10	63.4	71.8	50.7	71.6	71.1	69.5	68.0	64.2	60.5	53.5	52.2	50.9	63.4	0.0	63.4
	11	63.0	71.3	49.5	70.9	70.5	68.8	67.4	63.9	60.5	52.9	51.2	49.7	63.0	0.0	63.0
	12	66.3	73.7	59.2	73.5	72.9	70.8	69.8	67.0	64.9	61.0	60.3	59.4	66.3	0.0	66.3
	13	62.9	71.0	50.2	70.5	69.9	68.2	67.1	64.2	60.6	53.0	51.8	50.4	62.9	0.0	62.9
	14	62.7	70.1	48.6	69.8	69.3	67.8	66.8	64.1	60.7	51.9	50.2	48.7	62.7	0.0	62.7
	15	62.8	69.8	50.2	69.5	69.1	67.8	67.0	64.3	61.1	53.3	51.9	50.5	62.8	0.0	62.8
	16	63.7	72.2	49.2	71.9	71.3	69.3	68.0	64.8	61.2	52.4	50.8	49.5	63.7	0.0	63.7
	17	64.0	72.0	52.0	71.8	71.4	69.4	68.2	64.9	61.7	54.7	53.4	52.3	64.0	0.0	64.0
18	64.0	72.6	53.1	72.1	71.6	69.5	68.1	64.8	61.5	55.4	54.3	53.3	64.0	0.0	64.0	
19	62.9	70.0	51.5	69.6	69.2	67.9	67.1	64.3	61.0	53.9	52.7	51.7	62.9	5.0	67.9	
20	64.1	75.9	48.7	75.1	74.0	70.6	68.3	63.7	59.1	51.0	49.9	48.9	64.1	5.0	69.1	
21	62.6	73.8	46.6	73.0	71.9	69.5	67.0	62.7	57.8	48.9	47.8	46.8	62.6	5.0	67.6	
Night	22	60.7	69.9	44.3	69.7	69.2	67.8	66.1	61.3	55.2	46.0	45.1	44.5	60.7	10.0	70.7
	23	59.1	68.4	43.3	68.1	67.7	66.0	64.5	59.8	53.5	45.0	44.2	43.5	59.1	10.0	69.1
Timeframe	Hour	L _{eq}	L _{max}	L _{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	Leq (dBA)		
Day	Min	62.6	69.8	46.6	69.5	69.1	67.8	66.8	62.7	57.8	48.9	47.8	46.8	24-Hour CNEL	Daytime (7am-10pm)	Nighttime (10pm-7am)
	Max	66.3	75.9	59.2	75.1	74.0	71.7	69.9	67.0	64.9	61.0	60.3	59.4			
Energy Average		63.7	Average:		71.6	71.0	69.2	67.9	64.5	60.9	53.3	51.9	50.7			
Night	Min	54.9	66.1	35.9	65.8	65.4	63.1	61.0	51.5	43.7	36.8	36.3	36.0			
	Max	62.2	71.1	45.5	70.7	70.2	68.5	67.4	63.4	57.7	48.0	46.7	45.7			
Energy Average		59.0	Average:		68.2	67.7	65.8	64.0	57.3	50.2	42.4	41.7	41.1			

APPENDIX 7.1:

ON-SITE TRAFFIC NOISE WORKSHEETS

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

Scenario: Backyard No Wall
Road Name: Maple Ave.
Lot No: East Building #3

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS						
Highway Data		Site Conditions (Hard = 10, Soft = 15)						
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15						
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15						
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15						
Vehicle Speed: 35 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: 32.0 feet Centerline Dist. to Observer: 65.0 feet Barrier Distance to Observer: 33.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Barrier Elevation: 0.0 feet Road Grade: 1.0%		Autos:		77.5%	12.9%	9.6%	97.42%	
		Medium Trucks:		84.8%	4.9%	10.3%	1.84%	
		Heavy Trucks:		86.5%	2.7%	10.8%	0.74%	
		Noise Source Elevations (in feet)						
		Autos:		0.00				
		Medium Trucks:		2.30				
		Heavy Trucks:		8.01	Grade Adjustment: 0.0			
		Lane Equivalent Distance (in feet)						
		Autos:		58.907				
Medium Trucks:		58.756						
Heavy Trucks:		58.771						

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.17	-1.20	-0.16	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.15	-1.20	-0.41	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.16	-1.20	-1.47	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:	62.0	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	55.8	54.4	45.3	46.6	55.0	55.1
Vehicle Noise:	63.6	61.8	58.9	54.0	62.5	63.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.0	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	55.8	54.4	45.3	46.6	55.0	55.1
Vehicle Noise:	63.6	61.8	58.9	54.0	62.5	63.0

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

Scenario: Backyard No Wall
Road Name: Maple Ave.
Lot No: East Building #4

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph						
Near/Far Lane Distance: 12 feet						
Site Data		Vehicle Mix				
		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet		Autos:	77.5%	12.9%	9.6%	97.42%
Barrier Type (0-Wall, 1-Berm): 0.0		Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Centerline Dist. to Barrier: 29.0 feet		Heavy Trucks:	86.5%	2.7%	10.8%	0.74%
Centerline Dist. to Observer: 66.0 feet						
Barrier Distance to Observer: 37.0 feet		Noise Source Elevations (in feet)				
Observer Height (Above Pad): 5.0 feet		Autos:	0.00			
Pad Elevation: 0.0 feet		Medium Trucks:	2.30			
Road Elevation: 0.0 feet		Heavy Trucks:	8.01	Grade Adjustment:	0.0	
Barrier Elevation: 0.0 feet						
Road Grade: 1.0%		Lane Equivalent Distance (in feet)				
		Autos:	59.908			
		Medium Trucks:	59.760			
		Heavy Trucks:	59.775			

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.28	-1.20	-0.13	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.27	-1.20	-0.38	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.27	-1.20	-1.58	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	55.0
Vehicle Noise:	63.4	61.7	58.8	53.9	62.4	62.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	55.0
Vehicle Noise:	63.4	61.7	58.8	53.9	62.4	62.9

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

Scenario: Backyard No Wall
Road Name: Foothill Blvd.
Lot No: South Building #5

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 41.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 44.418				
Barrier Elevation: 0.0 feet		Medium Trucks: 43.981				
Road Grade: 1.0%		Heavy Trucks: 43.692				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.67	-1.20	-0.15	0.000	0.000
Medium Trucks:	77.62	-12.72	0.73	-1.20	-0.89	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.78	-1.20	-3.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.4	71.1	71.7
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	73.3	71.5	68.9	63.6	72.2	72.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.4	71.1	71.7
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	73.3	71.5	68.9	63.6	72.2	72.7

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

Scenario: Backyard No Wall
Road Name: Foothill Blvd.
Lot No: South Building #6

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph						
Near/Far Lane Distance: 60 feet						
		Vehicle Mix				
		VehicleType	Day	Evening	Night	Daily
		Autos:	77.5%	12.9%	9.6%	97.00%
		Medium Trucks:	84.8%	4.9%	10.3%	2.40%
		Heavy Trucks:	86.5%	2.7%	10.8%	0.60%
		Noise Source Elevations (in feet)				
		Autos:	0.00			
		Medium Trucks:	2.97			
		Heavy Trucks:	8.01	Grade Adjustment:	0.0	
		Lane Equivalent Distance (in feet)				
		Autos:	46.787			
		Medium Trucks:	46.371			
		Heavy Trucks:	46.098			

FHWA Noise Model Calculations							
VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.33	-1.20	-0.17	0.000	0.000
Medium Trucks:	77.62	-12.72	0.39	-1.20	-0.84	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.43	-1.20	-2.96	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

Mitigated Noise Levels (with Topo and barrier attenuation)						
VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

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

Scenario: Backyard With Wall
Road Name: Maple Ave.
Lot No: East Building #3

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 32.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 65.0 feet		Autos: 0.00				
Barrier Distance to Observer: 33.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 58.907				
Barrier Elevation: 0.0 feet		Medium Trucks: 58.756				
Road Grade: 1.0%		Heavy Trucks: 58.771				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.17	-1.20	-0.16	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.15	-1.20	-0.41	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.16	-1.20	-1.47	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:	62.0	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	55.8	54.4	45.3	46.6	55.0	55.1
Vehicle Noise:	63.6	61.8	58.9	54.0	62.5	63.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.0	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	55.8	54.4	45.3	46.6	55.0	55.1
Vehicle Noise:	63.6	61.8	58.9	54.0	62.5	63.0

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

Scenario: Backyard With Wall
Road Name: Maple Ave.
Lot No: East Building #4

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 29.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 66.0 feet		Autos: 0.00				
Barrier Distance to Observer: 37.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 59.908				
Barrier Elevation: 0.0 feet		Medium Trucks: 59.760				
Road Grade: 1.0%		Heavy Trucks: 59.775				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.28	-1.20	-0.13	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.27	-1.20	-0.38	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.27	-1.20	-1.58	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	55.0
Vehicle Noise:	63.4	61.7	58.8	53.9	62.4	62.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	55.0
Vehicle Noise:	63.4	61.7	58.8	53.9	62.4	62.9

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

Scenario: Backyard With Wall
Road Name: Foothill Blvd.
Lot No: South Building #5

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 41.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 44.418				
Barrier Elevation: 0.0 feet		Medium Trucks: 43.981				
Road Grade: 1.0%		Heavy Trucks: 43.692				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.67	-1.20	-0.15	0.000	0.000
Medium Trucks:	77.62	-12.72	0.73	-1.20	-0.89	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.78	-1.20	-3.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.4	71.1	71.7
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	73.3	71.5	68.9	63.6	72.2	72.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.4	71.1	71.7
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	73.3	71.5	68.9	63.6	72.2	72.7

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

Scenario: Backyard With Wall
Road Name: Foothill Blvd.
Lot No: South Building #6

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 43.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 85.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 46.787				
Barrier Elevation: 0.0 feet		Medium Trucks: 46.371				
Road Grade: 1.0%		Heavy Trucks: 46.098				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.33	-1.20	-0.17	0.000	0.000
Medium Trucks:	77.62	-12.72	0.39	-1.20	-0.84	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.43	-1.20	-2.96	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

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

Scenario: First Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #3

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 32.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 65.0 feet		Autos: 0.00				
Barrier Distance to Observer: 33.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 58.907				
Barrier Elevation: 0.0 feet		Medium Trucks: 58.756				
Road Grade: 1.0%		Heavy Trucks: 58.771				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.17	-1.20	-0.16	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.15	-1.20	-0.41	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.16	-1.20	-1.47	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:	62.0	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	55.8	54.4	45.3	46.6	55.0	55.1
Vehicle Noise:	63.6	61.8	58.9	54.0	62.5	63.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.0	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	54.5	53.0	46.7	45.1	53.6	53.8
Heavy Trucks:	55.8	54.4	45.3	46.6	55.0	55.1
Vehicle Noise:	63.6	61.8	58.9	54.0	62.5	63.0

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

Scenario: First Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #4

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 29.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 66.0 feet		Autos: 0.00				
Barrier Distance to Observer: 37.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 59.908				
Barrier Elevation: 0.0 feet		Medium Trucks: 59.760				
Road Grade: 1.0%		Heavy Trucks: 59.775				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.28	-1.20	-0.13	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.27	-1.20	-0.38	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.27	-1.20	-1.58	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	55.0
Vehicle Noise:	63.4	61.7	58.8	53.9	62.4	62.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.3	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	55.0
Vehicle Noise:	63.4	61.7	58.8	53.9	62.4	62.9

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

Scenario: First Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #5

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS					
Highway Data		Site Conditions (Hard = 10, Soft = 15)					
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15					
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15					
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15					
Vehicle Speed: 45 mph		Vehicle Mix					
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily	
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%					
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%					
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%					
Centerline Dist. to Barrier: 41.0 feet		Noise Source Elevations (in feet)					
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00					
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97					
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0					
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)					
Road Elevation: 0.0 feet		Autos: 44.418					
Barrier Elevation: 0.0 feet		Medium Trucks: 43.981					
Road Grade: 1.0%		Heavy Trucks: 43.692					

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.67	-1.20	-0.15	0.000	0.000
Medium Trucks:	77.62	-12.72	0.73	-1.20	-0.89	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.78	-1.20	-3.29	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.4	71.1	71.7
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	73.3	71.5	68.9	63.6	72.2	72.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	72.2	70.3	68.5	62.4	71.1	71.7
Medium Trucks:	64.4	62.9	56.6	55.0	63.5	63.7
Heavy Trucks:	63.0	61.6	52.5	53.8	62.1	62.2
Vehicle Noise:	73.3	71.5	68.9	63.6	72.2	72.7

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

Scenario: First Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #6

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 43.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 85.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 5.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 46.787				
Barrier Elevation: 0.0 feet		Medium Trucks: 46.371				
Road Grade: 1.0%		Heavy Trucks: 46.098				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.33	-1.20	-0.17	0.000	0.000
Medium Trucks:	77.62	-12.72	0.39	-1.20	-0.84	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.43	-1.20	-2.96	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.2	62.1	70.7	71.3
Medium Trucks:	64.1	62.6	56.2	54.7	63.1	63.4
Heavy Trucks:	62.6	61.2	52.2	53.4	61.8	61.9
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

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

Scenario: Fourth Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #3

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 32.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 65.0 feet		Autos: 0.00				
Barrier Distance to Observer: 33.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 66.851				
Barrier Elevation: 0.0 feet		Medium Trucks: 65.782				
Road Grade: 1.0%		Heavy Trucks: 63.409				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-2.00	-1.20	-4.74	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.89	-1.20	-5.88	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.65	-1.20	-9.28	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.2	59.3	57.6	51.5	60.1	60.7
Medium Trucks:	53.8	52.3	45.9	44.4	52.9	53.1
Heavy Trucks:	55.3	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	62.8	61.0	58.1	53.2	61.8	62.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.2	59.3	57.6	51.5	60.1	60.7
Medium Trucks:	53.8	52.3	45.9	44.4	52.9	53.1
Heavy Trucks:	55.3	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	62.8	61.0	58.1	53.2	61.8	62.2

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

Scenario: Fourth Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #4

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS					
Highway Data		Site Conditions (Hard = 10, Soft = 15)					
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15					
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15					
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15					
Vehicle Speed: 35 mph		Vehicle Mix					
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily	
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%					
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%					
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%					
Centerline Dist. to Barrier: 29.0 feet		Noise Source Elevations (in feet)					
Centerline Dist. to Observer: 66.0 feet		Autos: 0.00					
Barrier Distance to Observer: 37.0 feet		Medium Trucks: 2.30					
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0					
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)					
Road Elevation: 0.0 feet		Autos: 67.735					
Barrier Elevation: 0.0 feet		Medium Trucks: 66.680					
Road Grade: 1.0%		Heavy Trucks: 64.341					

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-2.08	-1.20	-3.83	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.98	-1.20	-4.97	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.75	-1.20	-8.47	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.1	59.2	57.5	51.4	60.0	60.6
Medium Trucks:	53.7	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	62.7	61.0	58.0	53.1	61.7	62.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.1	59.2	57.5	51.4	60.0	60.6
Medium Trucks:	53.7	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	62.7	61.0	58.0	53.1	61.7	62.2

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

Scenario: Fourth Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #5

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 41.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 32.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 55.982				
Barrier Elevation: 0.0 feet		Medium Trucks: 54.175				
Road Grade: 1.0%		Heavy Trucks: 51.358				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	-0.84	-1.20	-2.11	0.000	0.000
Medium Trucks:	77.62	-12.72	-0.63	-1.20	-4.05	0.000	0.000
Heavy Trucks:	82.14	-18.74	-0.28	-1.20	-8.61	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.7	68.8	67.0	60.9	69.6	70.2
Medium Trucks:	63.1	61.6	55.2	53.7	62.1	62.4
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	71.8	70.0	67.4	62.2	70.8	71.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.7	68.8	67.0	60.9	69.6	70.2
Medium Trucks:	63.1	61.6	55.2	53.7	62.1	62.4
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	71.8	70.0	67.4	62.2	70.8	71.3

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

Scenario: Fourth Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #6

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet						
Site Data		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet		Autos:	77.5%	12.9%	9.6%	97.00%
Barrier Type (0-Wall, 1-Berm): 0.0		Medium Trucks:	84.8%	4.9%	10.3%	2.40%
Centerline Dist. to Barrier: 43.0 feet		Heavy Trucks:	86.5%	2.7%	10.8%	0.60%
Centerline Dist. to Observer: 85.0 feet		Noise Source Elevations (in feet)				
Barrier Distance to Observer: 42.0 feet		Autos:	0.00			
Observer Height (Above Pad): 32.0 feet		Medium Trucks:	2.97			
Pad Elevation: 3.0 feet		Heavy Trucks:	8.01	Grade Adjustment: 0.0		
Road Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Barrier Elevation: 0.0 feet		Autos:	57.879			
Road Grade: 1.0%		Medium Trucks:	56.133			
		Heavy Trucks:	53.420			

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	-1.06	-1.20	-2.43	0.000	0.000
Medium Trucks:	77.62	-12.72	-0.86	-1.20	-4.27	0.000	0.000
Heavy Trucks:	82.14	-18.74	-0.53	-1.20	-8.48	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:	70.4	68.5	66.8	60.7	69.3	69.9
Medium Trucks:	62.8	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	61.7	60.2	51.2	52.5	60.8	60.9
Vehicle Noise:	71.6	69.8	67.2	62.0	70.5	71.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.4	68.5	66.8	60.7	69.3	69.9
Medium Trucks:	62.8	61.3	55.0	53.4	61.9	62.1
Heavy Trucks:	61.7	60.2	51.2	52.5	60.8	60.9
Vehicle Noise:	71.6	69.8	67.2	62.0	70.5	71.1

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

Scenario: Second Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #3

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 32.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 65.0 feet		Autos: 0.00				
Barrier Distance to Observer: 33.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 60.341				
Barrier Elevation: 0.0 feet		Medium Trucks: 59.849				
Road Grade: 1.0%		Heavy Trucks: 58.999				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.33	-1.20	-1.18	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.27	-1.20	-1.76	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.18	-1.20	-3.67	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.2	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.8	54.4	45.3	46.6	54.9	55.1
Vehicle Noise:	63.4	61.7	58.7	53.8	62.4	62.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.9	60.0	58.2	52.2	60.8	61.4
Medium Trucks:	54.4	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	55.8	54.4	45.3	46.6	54.9	55.1
Vehicle Noise:	63.4	61.7	58.7	53.8	62.4	62.9

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

Scenario: Second Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #4

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 29.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 66.0 feet		Autos: 0.00				
Barrier Distance to Observer: 37.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 61.319				
Barrier Elevation: 0.0 feet		Medium Trucks: 60.836				
Road Grade: 1.0%		Heavy Trucks: 59.999				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.43	-1.20	-0.93	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.38	-1.20	-1.51	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.29	-1.20	-3.54	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:	61.8	59.9	58.1	52.1	60.7	61.3
Medium Trucks:	54.3	52.8	46.5	44.9	53.4	53.6
Heavy Trucks:	55.7	54.2	45.2	46.5	54.8	54.9
Vehicle Noise:	63.3	61.6	58.6	53.7	62.3	62.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.8	59.9	58.1	52.1	60.7	61.3
Medium Trucks:	54.3	52.8	46.5	44.9	53.4	53.6
Heavy Trucks:	55.7	54.2	45.2	46.5	54.8	54.9
Vehicle Noise:	63.3	61.6	58.6	53.7	62.3	62.8

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

Scenario: Second Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #5

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 41.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 14.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 46.883				
Barrier Elevation: 0.0 feet		Medium Trucks: 45.889				
Road Grade: 1.0%		Heavy Trucks: 44.608				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.32	-1.20	-0.64	0.000	0.000
Medium Trucks:	77.62	-12.72	0.46	-1.20	-1.84	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.64	-1.20	-5.05	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:	71.8	69.9	68.1	62.1	70.7	71.3
Medium Trucks:	64.2	62.6	56.3	54.7	63.2	63.4
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.8	69.9	68.1	62.1	70.7	71.3
Medium Trucks:	64.2	62.6	56.3	54.7	63.2	63.4
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	72.9	71.1	68.5	63.3	71.9	72.4

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

Scenario: Second Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #6

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph						
Near/Far Lane Distance: 60 feet						
Site Data		Vehicle Mix				
		VehicleType	Day	Evening	Night	Daily
Barrier Height: 0.0 feet		Autos:	77.5%	12.9%	9.6%	97.00%
Barrier Type (0-Wall, 1-Berm): 0.0		Medium Trucks:	84.8%	4.9%	10.3%	2.40%
Centerline Dist. to Barrier: 43.0 feet		Heavy Trucks:	86.5%	2.7%	10.8%	0.60%
Centerline Dist. to Observer: 85.0 feet		Noise Source Elevations (in feet)				
Barrier Distance to Observer: 42.0 feet		Autos:	0.00			
Observer Height (Above Pad): 14.0 feet		Medium Trucks:	2.97			
Pad Elevation: 3.0 feet		Heavy Trucks:	8.01	Grade Adjustment:	0.0	
Road Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Barrier Elevation: 0.0 feet		Autos:	49.132			
Road Grade: 1.0%		Medium Trucks:	48.185			
		Heavy Trucks:	46.967			

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	0.01	-1.20	-0.73	0.000	0.000
Medium Trucks:	77.62	-12.72	0.14	-1.20	-1.84	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.30	-1.20	-4.74	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.8	61.8	70.4	71.0
Medium Trucks:	63.8	62.3	56.0	54.4	62.9	63.1
Heavy Trucks:	62.5	61.1	52.0	53.3	61.7	61.8
Vehicle Noise:	72.6	70.8	68.2	63.0	71.6	72.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.5	69.6	67.8	61.8	70.4	71.0
Medium Trucks:	63.8	62.3	56.0	54.4	62.9	63.1
Heavy Trucks:	62.5	61.1	52.0	53.3	61.7	61.8
Vehicle Noise:	72.6	70.8	68.2	63.0	71.6	72.1

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

Scenario: Third Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #3

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 32.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 65.0 feet		Autos: 0.00				
Barrier Distance to Observer: 33.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 63.040				
Barrier Elevation: 0.0 feet		Medium Trucks: 62.238				
Road Grade: 1.0%		Heavy Trucks: 60.579				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.61	-1.20	-2.84	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.53	-1.20	-3.72	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.35	-1.20	-6.41	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	54.2	52.7	46.3	44.8	53.2	53.5
Heavy Trucks:	55.6	54.2	45.2	46.4	54.8	54.9
Vehicle Noise:	63.2	61.4	58.4	53.6	62.1	62.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	54.2	52.7	46.3	44.8	53.2	53.5
Heavy Trucks:	55.6	54.2	45.2	46.4	54.8	54.9
Vehicle Noise:	63.2	61.4	58.4	53.6	62.1	62.6

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

Scenario: Third Floor With Wall
Road Name: Maple Ave.
Lot No: East Building #4

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 10,400 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 1,040 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 35 mph		Vehicle Mix				
Near/Far Lane Distance: 12 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.42%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 1.84%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.74%				
Centerline Dist. to Barrier: 29.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 66.0 feet		Autos: 0.00				
Barrier Distance to Observer: 37.0 feet		Medium Trucks: 2.30				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 0.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 63.977				
Barrier Elevation: 0.0 feet		Medium Trucks: 63.187				
Road Grade: 1.0%		Heavy Trucks: 61.553				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	65.11	-0.69	-1.71	-1.20	-2.26	0.000	0.000
Medium Trucks:	74.83	-17.93	-1.63	-1.20	-3.14	0.000	0.000
Heavy Trucks:	80.05	-21.88	-1.46	-1.20	-5.94	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.5	59.6	57.8	51.8	60.4	61.0
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	55.5	54.1	45.0	46.3	54.7	54.8
Vehicle Noise:	63.1	61.3	58.3	53.5	62.0	62.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.5	59.6	57.8	51.8	60.4	61.0
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	55.5	54.1	45.0	46.3	54.7	54.8
Vehicle Noise:	63.1	61.3	58.3	53.5	62.0	62.5

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

Scenario: Third Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #5

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 41.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 83.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 50.843				
Barrier Elevation: 0.0 feet		Medium Trucks: 49.390				
Road Grade: 1.0%		Heavy Trucks: 47.252				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	-0.21	-1.20	-1.33	0.000	0.000
Medium Trucks:	77.62	-12.72	-0.02	-1.20	-2.94	0.000	0.000
Heavy Trucks:	82.14	-18.74	0.26	-1.20	-6.88	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.3	69.4	67.6	61.6	70.2	70.8
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	63.0
Heavy Trucks:	62.5	61.0	52.0	53.3	61.6	61.7
Vehicle Noise:	72.4	70.6	68.0	62.8	71.4	71.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.3	69.4	67.6	61.6	70.2	70.8
Medium Trucks:	63.7	62.2	55.8	54.3	62.7	63.0
Heavy Trucks:	62.5	61.0	52.0	53.3	61.6	61.7
Vehicle Noise:	72.4	70.6	68.0	62.8	71.4	71.9

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

Scenario: Third Floor With Wall
Road Name: Foothill Blvd.
Lot No: South Building #6

Project Name: Maple Apartmets
Job Number: 15975
Analyst: N. Johnson

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS				
Highway Data		Site Conditions (Hard = 10, Soft = 15)				
Average Daily Traffic (Adt): 34,000 vehicles		Autos: 15				
Peak Hour Percentage: 10%		Medium Trucks (2 Axles): 15				
Peak Hour Volume: 3,400 vehicles		Heavy Trucks (3+ Axles): 15				
Vehicle Speed: 45 mph		Vehicle Mix				
Near/Far Lane Distance: 60 feet		VehicleType	Day	Evening	Night	Daily
Site Data		Autos: 77.5% 12.9% 9.6% 97.00%				
Barrier Height: 0.0 feet		Medium Trucks: 84.8% 4.9% 10.3% 2.40%				
Barrier Type (0-Wall, 1-Berm): 0.0		Heavy Trucks: 86.5% 2.7% 10.8% 0.60%				
Centerline Dist. to Barrier: 43.0 feet		Noise Source Elevations (in feet)				
Centerline Dist. to Observer: 85.0 feet		Autos: 0.00				
Barrier Distance to Observer: 42.0 feet		Medium Trucks: 2.97				
Observer Height (Above Pad): 23.0 feet		Heavy Trucks: 8.01 Grade Adjustment: 0.0				
Pad Elevation: 3.0 feet		Lane Equivalent Distance (in feet)				
Road Elevation: 0.0 feet		Autos: 52.924				
Barrier Elevation: 0.0 feet		Medium Trucks: 51.530				
Road Grade: 1.0%		Heavy Trucks: 49.485				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	69.34	3.35	-0.47	-1.20	-1.53	0.000	0.000
Medium Trucks:	77.62	-12.72	-0.30	-1.20	-3.04	0.000	0.000
Heavy Trucks:	82.14	-18.74	-0.04	-1.20	-6.65	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:	71.0	69.1	67.4	61.3	69.9	70.5
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	62.2	60.7	51.7	53.0	61.3	61.4
Vehicle Noise:	72.2	70.4	67.7	62.5	71.1	71.6

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	71.0	69.1	67.4	61.3	69.9	70.5
Medium Trucks:	63.4	61.9	55.5	54.0	62.4	62.7
Heavy Trucks:	62.2	60.7	51.7	53.0	61.3	61.4
Vehicle Noise:	72.2	70.4	67.7	62.5	71.1	71.6

APPENDIX 10.1:

HVAC

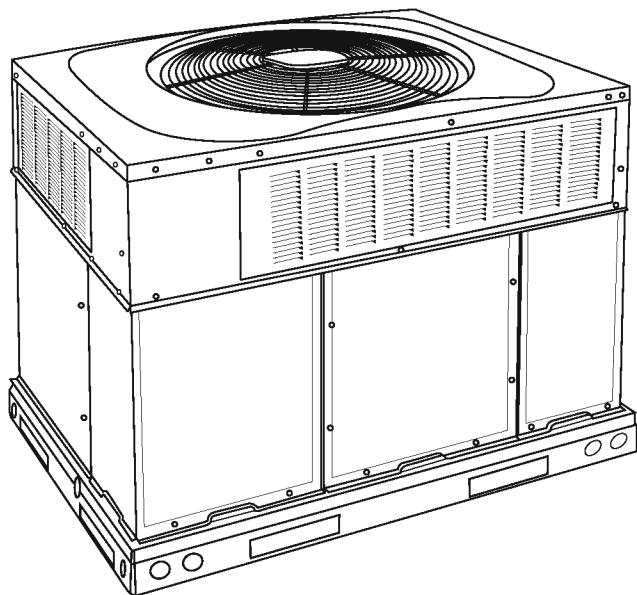
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50VR-A

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



Product Data



A09033

Fig. 1 - Unit 50VR-A

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

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

FEATURES/BENEFITS

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

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

Easy Installation

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

Innovative Unit Base Design

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

Convertible duct configuration

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

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

Durable, dependable components

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

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

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

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

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

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

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

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

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

Dehumidification Feature

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

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

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

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

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

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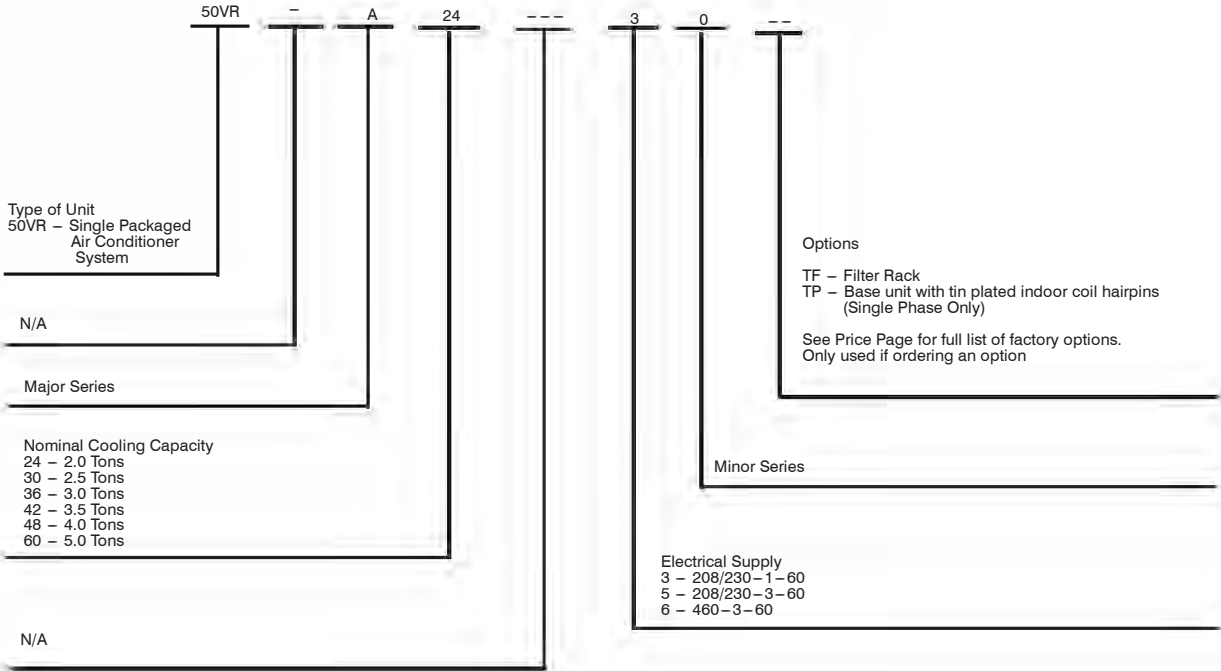
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MODEL NUMBER NOMENCLATURE



50VR-A



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



AHRI* CAPACITIES

Cooling Capacities and Efficiencies

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

Heat Pump Heating Capacities and Efficiencies

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

LEGEND

dB—Sound Levels (decibels)

db—Dry Bulb

SEER—Seasonal Energy Efficiency Ratio

wb—Wet Bulb

COP—Coefficient of Performance

* Air Conditioning, Heating & Refrigeration Institute.

**At "A" conditions—80°F (26.7°C) indoor db/67°F (19.4°C) indoor wb & 95°F (35°C) outdoor db.

† Rated in accordance with U.S. Government DOE Department of Energy) test procedures and/or AHRI Standards 210/240.

Notes:

1. Ratings are net values, reflecting the effects of circulating fan heat.

Ratings are based on:

Cooling Standard: 80°F (26.7°C) db, 67°F wb (19.4°C) indoor entering—air temperature and 95°F db (35°C) outdoor entering—air temperature.

2. Before purchasing this appliance, read important energy cost and efficiency information available from AHRI directory.org.

A-WEIGHTED SOUND POWER LEVEL (dBA)

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

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

PHYSICAL DATA

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

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

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

50VR-A

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

Small Cabinet: 24-30

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

Large Cabinet: 36-60

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

OPTIONS AND ACCESSORIES

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

*Refer to Price Page for application detail.

Electric Heaters

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

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

X = Approved combinations.

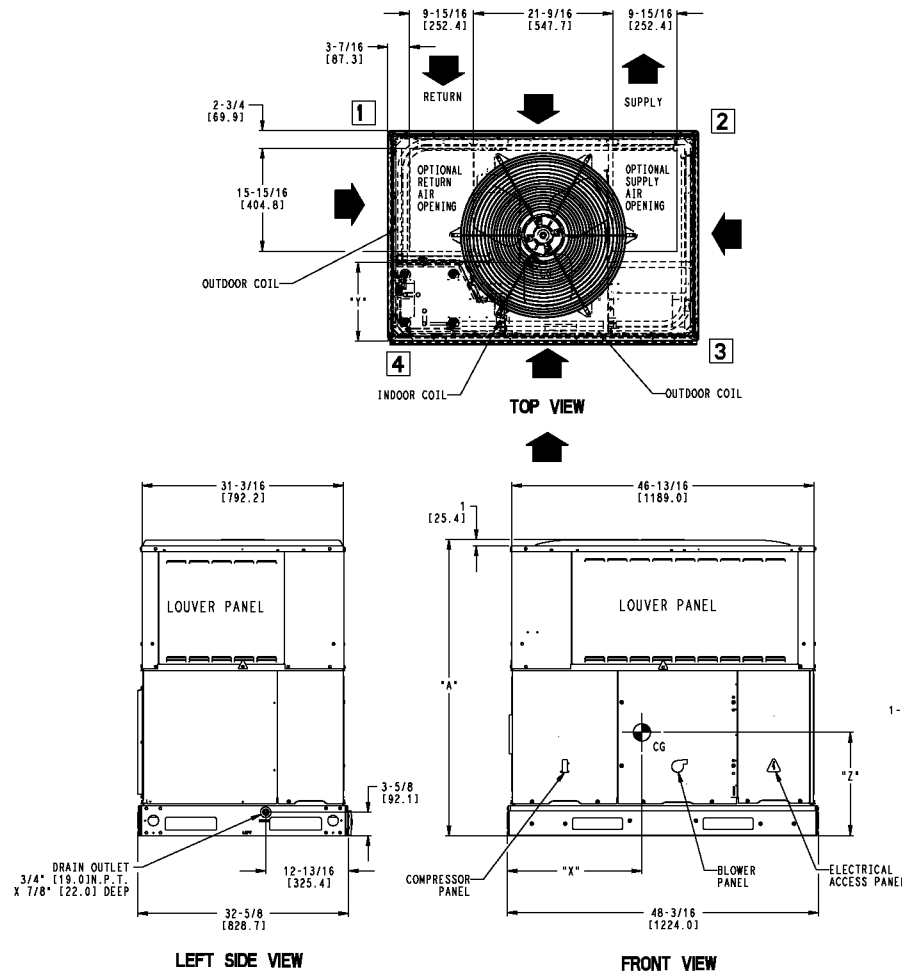
Minimum Airflow for Safe Electric Heater Operation (CFM)

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

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

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

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



REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

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

NEC. REQUIRED CLEARANCES.

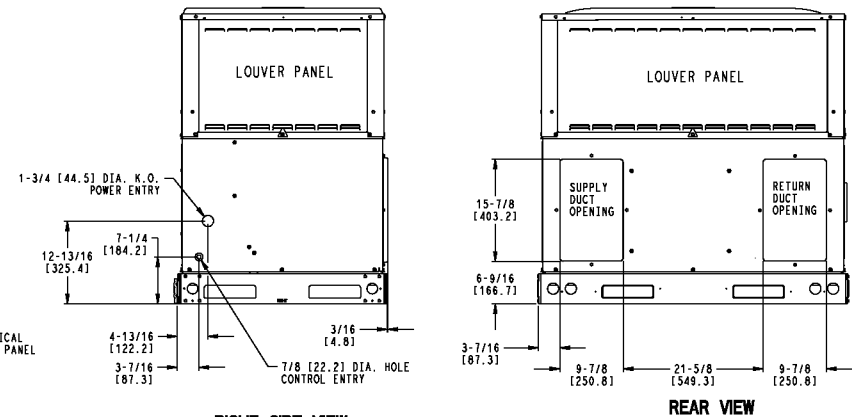
	INCHES [MM]
BETWEEN UNITS, POWER ENTRY SIDE.....	42 [1066.8]
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE.....	36 [914.0]
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE.....	42 [1066.8]

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

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

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

DIMENSIONS IN [] ARE IN MILLIMETERS



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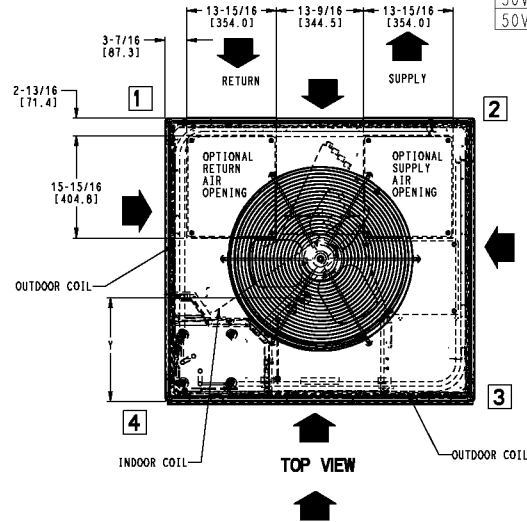
REV

50VR-A

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

UNIT	VOLTAGE	CORNER WEIGHTS LB/KG			
		"1"	"2"	"3"	"4"
50VR-A36---(3/5/6)0	208/230/460	49.6	28.1	66.1	37.5
50VR-A42---(3/5/6)0	208/230/460	53.3	30.2	71.0	40.3
50VR-A48---(3/5/6)0	208/230/460	53.6	30.4	71.5	40.6
50VR-A60---(3/5/6)0	208/230/460	60.4	34.2	80.5	45.6

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



REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

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

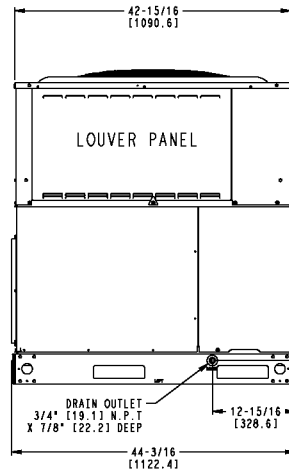
NEC. REQUIRED CLEARANCES.

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

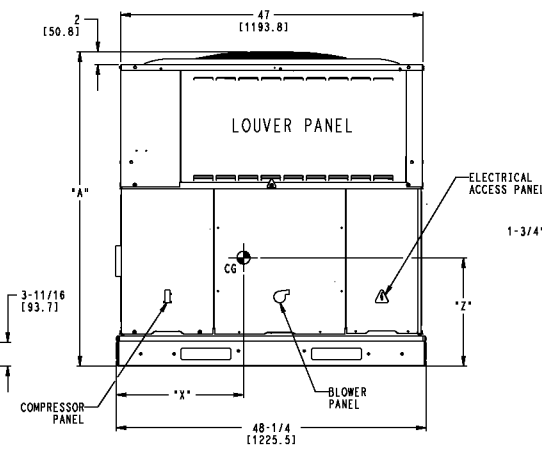
REQUIRED CLEARANCE FOR OPERATION AND SERVICING

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

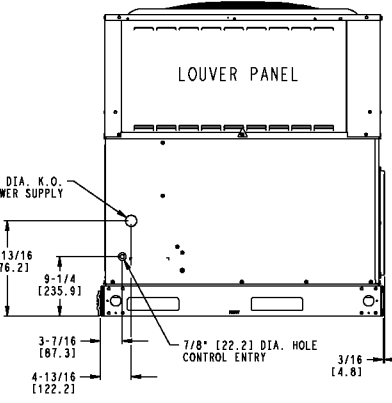
*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12 [304.8] FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISED. DIMENSIONS IN [] ARE IN MM



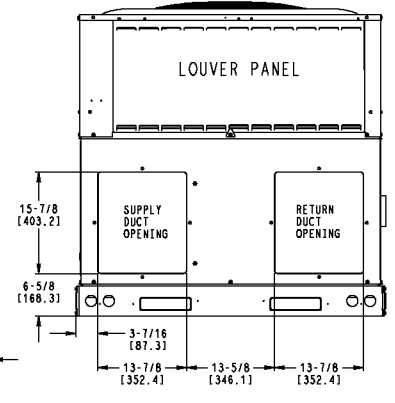
LEFT SIDE VIEW



FRONT VIEW



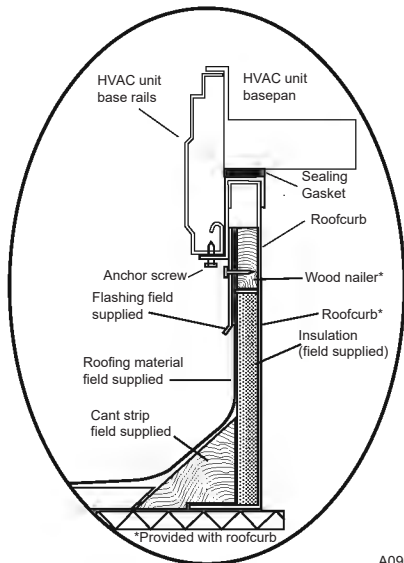
RIGHT SIDE VIEW



REAR VIEW

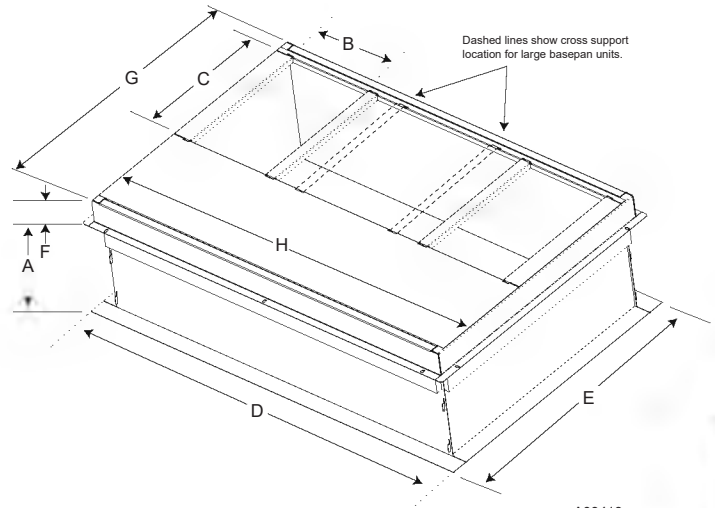
50VR500141	REV
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ROOF CURB ACCESSORY - 50VR-A24-60



A09090

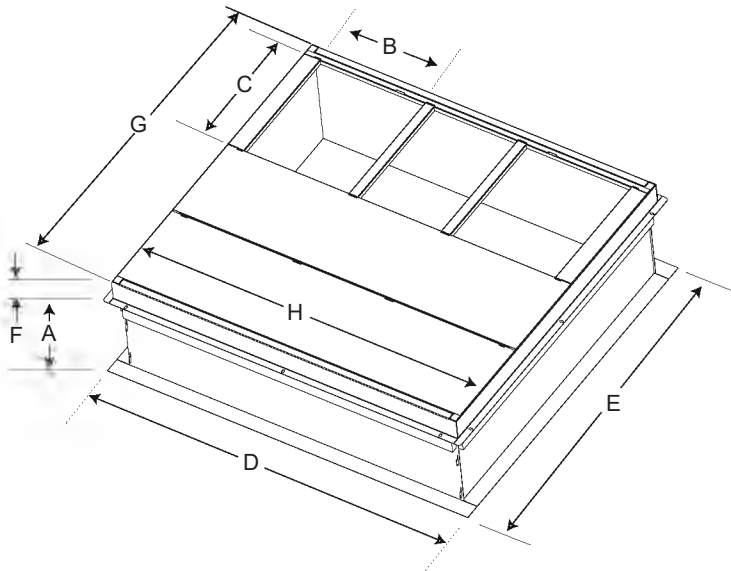
ROOF CURB DETAIL



SMALL/COMMON CURB

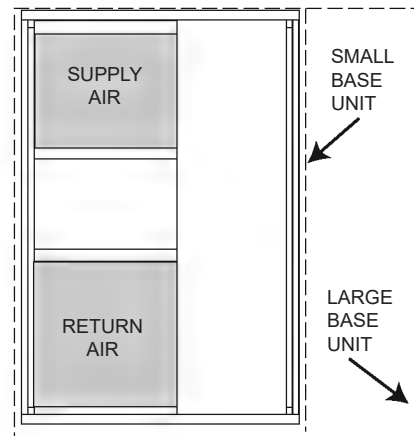
A09413

50VR-A



LARGE CURB

A09415



UNIT PLACEMENT ON
COMMON CURB

A09094

SMALL OR LARGE BASE UNIT

A09414

UNIT SIZE	CATALOG NUMBER	A IN. (mm)	B (small/common base) IN. (mm)*	B (large base) IN. (mm)*	C IN. (mm)	D IN. (mm)	E IN. (mm)	F IN. (mm)	G IN. (mm)	H IN. (mm)
Small or Large	CPRFCURB010A00	11 (279)	10 (254)	14 (356)	16 (406)	47.8 (1214)	32.4 (822)	2.7 (69)	30.6 (778)	46.1 (1170)
	CPRFCURB011A00	14 (356)								
Large	CPRFCURB012A00	11 (279)	14 (356)				43.9 (1116)		42.2 (1072)	
	CPRFCURB013A00	14 (356)								

* Part Numbers CPRFCURB010A00 and CPRFCURB011A00 can be used on both small and large basepan units. The cross supports must be located based on whether the unit is a small basepan or a large basepan.

NOTES:

1. Roof curb must be set up for unit being installed.
2. Seal strip must be applied, as required, to unit being installed.
3. Roof curb is made of 16-gauge steel.
4. Attach ductwork to curb (flanges of duct rest on curb).
5. Insulated panels: 1-in. (25.4 mm) thick fiberglass 1 lb. density.

SELECTION PROCEDURE (WITH EXAMPLE)

1. Determine cooling and heating requirements at design conditions:

Given:

Required Cooling Capacity (TC)	34,000 Btuh
Sensible Heat Capacity (SHC)	24,000 Btuh
Required Heating Capacity	12,500 Btuh
Condenser Entering Air Temperature	95°F(35°C)
Indoor-Air Temperature	80°F (26°C) edb 67°F (19°C) ewb
Evaporator Air Quantity	1200 CFM
External Static Pressure	0.20 IN. W.C.
Electrical Characteristics	230-1-60

2. Select unit based on required cooling capacity.

Enter Net Cooling Capacities table at condenser entering temperature of 95°F (35°C), indoor air entering at 1200 cfm and 67°F (19°C) ewb (entering wet bulb). The unit will provide a total capacity of 34,200 Btuh and a SHC of 24,500 Btuh.

3. Select electric heat.

The required heating capacity is 15,000 Btuh.

Determine additional electric heat capacity in kW.

$$\frac{15,000 \text{ Btuh}}{3,414 \text{ Btuh/kW}} = 4.4 \text{ kW of heat required}$$

Enter the electric Heater Packages table for 208/240, single-phase, 50VR-A36 unit. The 5 kW heater at 240v most closely satisfies the heating required. To calculate kW at the 208v, multiply the heater kW by multiplication factor 0.75 found in the Wattage Multiplication Factors table.

$$5 \text{ kW} \times 0.75 = 3.75 \text{ kW}$$

$$3.75 \text{ kW} \times 3414 = 12802.50 \text{ Btuh}$$

4. Determine fan speed and power requirements at design conditions.

Before entering the air delivery tables, calculate the total static pressure required. From the given example, the Wet Coil Pressure Drop Table, and the Filter Pressure Drop Table:

External Static Pressure	0.200 IN. W.C.
Filter	0.000 IN. W.C.
Wet Coil Pressure Drop	<u>0.130 IN. W.C.</u>
Total Static Pressure	0.330 IN. W.C.

Enter the table for Wet Coil Air Delivery—horizontal discharge, 230. At 0.33 IN. W.C. ESP (external static pressure) and medium speed, the fan will deliver 1293 cfm. Adjusting for 208v, the motor delivers 114 cfm (deduct 10%).

5. Select unit that corresponds to power source available.

The Electrical Data Table shows that the unit is designed to operate at 208-1-60.

APPENDIX 10.2:

OPERATIONAL MODEL

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15975 - Maple Apartments

CadnaA Noise Prediction Model: 15975-02_Operation.cna

Date: 15.05.24

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	49.8	49.4	56.1	0.0	0.0	0.0		x	Total	5.00	a 6211463.75	2349055.71	5.00
R2		R2	50.1	49.6	56.2	0.0	0.0	0.0		x	Total	5.00	a 6211707.24	2349058.31	5.00
R3		R3	45.4	44.4	50.9	0.0	0.0	0.0		x	Total	5.00	a 6211987.19	2348894.25	5.00
R4		R4	37.2	34.7	41.4	0.0	0.0	0.0		x	Total	5.00	a 6212160.36	2348178.10	5.00
R5		R5	37.0	34.5	41.2	0.0	0.0	0.0		x	Total	5.00	a 6212074.43	2348072.63	5.00
R6		R6	43.9	42.8	49.5	0.0	0.0	0.0		x	Total	5.00	a 6211552.29	2348202.84	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)				(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	g 6211825.02	2348850.86	38.00
AC002		AC002	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211824.84	2348848.25	38.00
AC003		AC003	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211824.84	2348845.47	38.00
AC004		AC004	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211824.84	2348842.87	38.00
AC005		AC005	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211824.84	2348840.26	38.00
AC006		AC006	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211824.84	2348837.31	38.00
AC007		AC007	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.22	2348850.86	38.00
AC008		AC008	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.05	2348837.31	38.00
AC009		AC009	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.05	2348848.25	38.00
AC010		AC010	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.05	2348845.47	38.00
AC011		AC011	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.05	2348842.87	38.00
AC012		AC012	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.05	2348840.26	38.00
AC013		AC013	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.22	2348758.32	38.00
AC014		AC014	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211834.22	2348755.72	38.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)				(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC015		AC015	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.02	2348760.92	38.00
AC016		AC016	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211834.22	2348752.76	38.00
AC017		AC017	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211834.22	2348763.70	38.00
AC018		AC018	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.02	2348763.70	38.00
AC019		AC019	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.02	2348752.76	38.00
AC020		AC020	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211834.22	2348760.92	38.00
AC021		AC021	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.02	2348755.72	38.00
AC022		AC022	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.19	2348766.31	38.00
AC023		AC023	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.02	2348758.32	38.00
AC024		AC024	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211834.39	2348766.31	38.00
AC025		AC025	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211826.23	2348510.58	38.00
AC026		AC026	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.09	2348581.58	38.00
AC027		AC027	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.89	2348584.54	38.00
AC028		AC028	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211826.06	2348507.97	38.00
AC029		AC029	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.26	2348499.99	38.00
AC030		AC030	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.26	2348507.97	38.00
AC031		AC031	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211826.06	2348595.13	38.00
AC032		AC032	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.09	2348584.54	38.00
AC033		AC033	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.09	2348589.74	38.00
AC034		AC034	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.89	2348589.74	38.00
AC035		AC035	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.26	2348505.20	38.00
AC036		AC036	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.26	2348502.59	38.00
AC037		AC037	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211826.06	2348502.59	38.00
AC038		AC038	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.09	2348587.14	38.00
AC039		AC039	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.09	2348592.52	38.00
AC040		AC040	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211826.06	2348499.99	38.00
AC041		AC041	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211826.06	2348497.04	38.00
AC042		AC042	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.26	2348595.13	38.00
AC043		AC043	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.26	2348497.04	38.00
AC044		AC044	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.89	2348581.58	38.00
AC045		AC045	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.89	2348587.14	38.00
AC046		AC046	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211826.06	2348505.20	38.00
AC047		AC047	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211835.43	2348510.58	38.00
AC048		AC048	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211825.89	2348592.52	38.00
AC049		AC049	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211723.07	2348410.46	38.00
AC050		AC050	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211725.58	2348401.23	38.00
AC051		AC051	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211804.57	2348400.57	38.00
AC052		AC052	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211818.11	2348400.25	38.00
AC053		AC053	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211725.68	2348410.43	38.00
AC054		AC054	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211807.62	2348409.74	38.00
AC055		AC055	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211815.60	2348409.65	38.00
AC056		AC056	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211728.18	2348401.20	38.00
AC057		AC057	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211804.67	2348409.77	38.00
AC058		AC058	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211810.22	2348409.71	38.00
AC059		AC059	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211733.66	2348410.17	38.00
AC060		AC060	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211722.97	2348401.26	38.00
AC061		AC061	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211730.96	2348401.17	38.00
AC062		AC062	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211733.56	2348400.97	38.00
AC063		AC063	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211815.51	2348400.45	38.00
AC064		AC064	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211812.83	2348409.68	38.00
AC065		AC065	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211731.06	2348410.37	38.00
AC066		AC066	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211720.12	2348410.49	38.00
AC067		AC067	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211807.52	2348400.53	38.00
AC068		AC068	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211728.28	2348410.40	38.00
AC069		AC069	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211810.12	2348400.51	38.00
AC070		AC070	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211818.21	2348409.45	38.00
AC071		AC071	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211720.02	2348401.29	38.00
AC072		AC072	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211812.73	2348400.48	38.00
AC073		AC073	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211629.49	2348411.30	38.00
AC074		AC074	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211640.08	2348411.01	38.00
AC075		AC075	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211626.44	2348402.13	38.00
AC076		AC076	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211637.38	2348402.01	38.00
AC077		AC077	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211634.70	2348411.24	38.00
AC078		AC078	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211632.10	2348411.27	38.00
AC079		AC079	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211637.48	2348411.21	38.00
AC080		AC080	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211632.00	2348402.07	38.00
AC081		AC081	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211634.60	2348402.04	38.00
AC082		AC082	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211639.98	2348401.81	38.00
AC083		AC083	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211626.54	2348411.33	38.00
AC084		AC084	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211629.39	2348402.10	38.00
AC085		AC085	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211392.07	2348607.68	38.00
AC086		AC086	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211397.38	2348616.83	38.00
AC087		AC087	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211392.17	2348616.88	38.00
AC088		AC088	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211397.28	2348607.63	38.00
AC089		AC089	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211402.76	2348616.60	38.00
AC090		AC090	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211389.22	2348616.91	38.00
AC091		AC091	76.0	76.0	76.0											

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)				(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC092		AC092	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211394.77	2348616.85	38.00
AC093		AC093	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211402.66	2348607.40	38.00
AC094		AC094	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211400.06	2348607.60	38.00
AC095		AC095	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211400.15	2348616.80	38.00
AC096		AC096	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211394.68	2348607.65	38.00
AC097		AC097	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211544.85	2348402.82	38.00
AC098		AC098	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211550.15	2348411.97	38.00
AC099		AC099	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211544.95	2348412.02	38.00
AC100		AC100	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211550.06	2348402.76	38.00
AC101		AC101	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211555.53	2348411.74	38.00
AC102		AC102	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211542.00	2348412.05	38.00
AC103		AC103	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211541.90	2348402.85	38.00
AC104		AC104	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211547.55	2348411.99	38.00
AC105		AC105	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211555.44	2348402.53	38.00
AC106		AC106	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211552.83	2348402.74	38.00
AC107		AC107	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211552.93	2348411.94	38.00
AC108		AC108	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211547.45	2348402.79	38.00
AC109		AC109	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211354.50	2348616.85	38.00
AC110		AC110	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211354.40	2348607.65	38.00
AC111		AC111	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211362.48	2348616.60	38.00
AC112		AC112	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211348.84	2348607.71	38.00
AC113		AC113	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211357.10	2348616.83	38.00
AC114		AC114	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211351.89	2348616.88	38.00
AC115		AC115	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211359.88	2348616.80	38.00
AC116		AC116	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211362.38	2348607.40	38.00
AC117		AC117	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211359.78	2348607.60	38.00
AC118		AC118	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211348.94	2348616.91	38.00
AC119		AC119	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211351.79	2348607.68	38.00
AC120		AC120	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211357.00	2348607.63	38.00
AC121		AC121	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211395.99	2348802.24	38.00
AC122		AC122	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211398.67	2348793.01	38.00
AC123		AC123	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211347.55	2348802.33	38.00
AC124		AC124	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211401.27	2348792.81	38.00
AC125		AC125	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211347.45	2348793.13	38.00
AC126		AC126	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211350.40	2348793.10	38.00
AC127		AC127	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211355.71	2348802.24	38.00
AC128		AC128	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211393.29	2348793.07	38.00
AC129		AC129	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211401.37	2348802.01	38.00
AC130		AC130	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211387.83	2348802.33	38.00
AC131		AC131	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211393.38	2348802.27	38.00
AC132		AC132	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211353.01	2348793.07	38.00
AC133		AC133	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211360.99	2348792.81	38.00
AC134		AC134	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211358.49	2348802.21	38.00
AC135		AC135	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211358.39	2348793.01	38.00
AC136		AC136	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211353.11	2348802.27	38.00
AC137		AC137	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211387.73	2348793.13	38.00
AC138		AC138	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211395.89	2348793.04	38.00
AC139		AC139	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211361.09	2348802.01	38.00
AC140		AC140	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211355.61	2348793.04	38.00
AC141		AC141	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211398.77	2348802.21	38.00
AC142		AC142	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211390.68	2348793.10	38.00
AC143		AC143	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211390.78	2348802.30	38.00
AC144		AC144	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211350.50	2348802.30	38.00
AC145		AC145	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211344.88	2348767.20	38.00
AC146		AC146	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211353.84	2348761.43	38.00
AC147		AC147	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211343.43	2348724.17	38.00
AC148		AC148	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211343.32	2348721.57	38.00
AC149		AC149	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211343.20	2348718.97	38.00
AC150		AC150	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211343.84	2348729.54	38.00
AC151		AC151	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211345.17	2348769.80	38.00
AC152		AC152	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211353.03	2348729.14	38.00
AC153		AC153	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211354.36	2348769.40	38.00
AC154		AC154	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211352.39	2348718.57	38.00
AC155		AC155	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211344.53	2348759.23	38.00
AC156		AC156	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211353.60	2348755.88	38.00
AC157		AC157	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211344.64	2348761.83	38.00
AC158		AC158	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211343.55	2348726.95	38.00
AC159		AC159	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211343.07	2348716.02	38.00
AC160		AC160	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211353.72	2348758.83	38.00
AC161		AC161	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211352.62	2348723.77	38.00
AC162		AC162	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211344.40	2348756.28	38.00
AC163		AC163	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211352.51	2348721.17	38.00
AC164		AC164	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211352.74	2348726.55	38.00
AC165		AC165	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211353.95	2348764.03	38.00
AC166		AC166	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211344.76	2348764.43	38.00
AC167		AC167	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211352.27	2348715.62	38.00
AC168		AC168	76.0	76.0	76.0											

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)
AC169		AC169	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211343.20	2348667.58	38.00
AC170		AC170	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211352.74	2348675.16	38.00
AC171		AC171	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211343.07	2348664.63	38.00
AC172		AC172	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211343.84	2348678.15	38.00
AC173		AC173	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211352.51	2348669.78	38.00
AC174		AC174	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211352.62	2348672.38	38.00
AC175		AC175	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211343.43	2348672.79	38.00
AC176		AC176	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211343.55	2348675.56	38.00
AC177		AC177	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211352.39	2348667.18	38.00
AC178		AC178	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211352.27	2348664.23	38.00
AC179		AC179	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211353.03	2348677.75	38.00
AC180		AC180	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211343.32	2348670.18	38.00
AC181		AC181	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211342.81	2348712.38	38.00
AC182		AC182	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211352.01	2348711.97	38.00
AC183		AC183	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211352.27	2348707.29	38.00
AC184		AC184	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211343.07	2348707.69	38.00
AC185		AC185	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.91	2348643.63	38.00
AC186		AC186	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211681.18	2348640.92	38.00
AC187		AC187	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211681.10	2348643.87	38.00
AC188		AC188	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211680.90	2348651.85	38.00
AC189		AC189	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.77	2348648.84	38.00
AC190		AC190	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.98	2348640.68	38.00
AC191		AC191	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211681.04	2348646.47	38.00
AC192		AC192	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.84	2348646.24	38.00
AC193		AC193	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.81	2348654.22	38.00
AC194		AC194	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211680.97	2348649.07	38.00
AC195		AC195	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211681.01	2348654.46	38.00
AC196		AC196	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.70	2348651.62	38.00
AC197		AC197	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.63	2348684.43	38.00
AC198		AC198	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.49	2348689.99	38.00
AC199		AC199	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211680.69	2348690.22	38.00
AC200		AC200	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211680.76	2348687.62	38.00
AC201		AC201	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211680.83	2348684.67	38.00
AC202		AC202	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211671.56	2348687.38	38.00
AC203		AC203	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211611.27	2348787.63	38.00
AC204		AC204	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211611.17	2348778.43	38.00
AC205		AC205	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211654.84	2348788.04	38.00
AC206		AC206	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211603.28	2348787.72	38.00
AC207		AC207	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211657.45	2348788.01	38.00
AC208		AC208	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211603.18	2348778.51	38.00
AC209		AC209	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211568.21	2348787.66	38.00
AC210		AC210	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211660.13	2348778.78	38.00
AC211		AC211	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211573.59	2348787.43	38.00
AC212		AC212	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211563.00	2348787.72	38.00
AC213		AC213	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211565.61	2348787.69	38.00
AC214		AC214	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211568.11	2348778.46	38.00
AC215		AC215	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211662.83	2348787.78	38.00
AC216		AC216	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211613.77	2348778.23	38.00
AC217		AC217	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211570.89	2348778.43	38.00
AC218		AC218	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211600.23	2348778.55	38.00
AC219		AC219	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211652.24	2348788.06	38.00
AC220		AC220	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211559.95	2348778.55	38.00
AC221		AC221	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211613.87	2348787.43	38.00
AC222		AC222	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211605.79	2348778.49	38.00
AC223		AC223	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211562.90	2348778.51	38.00
AC224		AC224	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211560.05	2348787.75	38.00
AC225		AC225	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211600.33	2348787.75	38.00
AC226		AC226	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211660.22	2348787.98	38.00
AC227		AC227	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211573.49	2348778.23	38.00
AC228		AC228	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211657.35	2348778.81	38.00
AC229		AC229	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211608.49	2348787.66	38.00
AC230		AC230	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211649.29	2348788.09	38.00
AC231		AC231	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211652.14	2348778.86	38.00
AC232		AC232	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211608.39	2348778.46	38.00
AC233		AC233	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211570.99	2348787.63	38.00
AC234		AC234	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211654.74	2348778.83	38.00
AC235		AC235	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211662.73	2348778.58	38.00
AC236		AC236	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211605.88	2348787.69	38.00
AC237		AC237	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211565.51	2348778.49	38.00
AC238		AC238	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211649.19	2348778.89	38.00
AC239		AC239	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211561.52	2348601.43	38.00
AC240		AC240	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211612.38	2348601.15	38.00
AC241		AC241	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211566.72	2348601.38	38.00
AC242		AC242	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211650.85	2348610.98	38.00
AC243		AC243	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211558.56	2348601.46	38.00
AC244		AC244	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211558.66	2348610.66	38.00
AC245		AC245	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g 6211612.48	2348610.35	38.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC246		AC246	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211601.79	2348601.43	38.00
AC247		AC247	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211609.88	2348610.55	38.00
AC248		AC248	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211598.94	2348610.66	38.00
AC249		AC249	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211564.22	2348610.60	38.00
AC250		AC250	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211566.82	2348610.58	38.00
AC251		AC251	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211653.36	2348601.75	38.00
AC252		AC252	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211601.89	2348610.63	38.00
AC253		AC253	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211572.20	2348610.35	38.00
AC254		AC254	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211655.96	2348601.72	38.00
AC255		AC255	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211658.84	2348610.89	38.00
AC256		AC256	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211598.84	2348601.46	38.00
AC257		AC257	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211607.10	2348610.58	38.00
AC258		AC258	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211569.60	2348610.55	38.00
AC259		AC259	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211572.10	2348601.15	38.00
AC260		AC260	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211661.34	2348601.49	38.00
AC261		AC261	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211569.50	2348601.35	38.00
AC262		AC262	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211656.06	2348610.92	38.00
AC263		AC263	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211607.00	2348601.38	38.00
AC264		AC264	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211658.74	2348601.69	38.00
AC265		AC265	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211604.40	2348601.40	38.00
AC266		AC266	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211564.12	2348601.40	38.00
AC267		AC267	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211647.80	2348601.81	38.00
AC268		AC268	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211561.61	2348610.63	38.00
AC269		AC269	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211604.50	2348610.60	38.00
AC270		AC270	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211647.90	2348611.01	38.00
AC271		AC271	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211609.78	2348601.35	38.00
AC272		AC272	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211661.44	2348610.69	38.00
AC273		AC273	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211653.45	2348610.95	38.00
AC274		AC274	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211650.75	2348601.78	38.00
AC275		AC275	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211681.32	2348726.16	38.00
AC276		AC276	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211681.35	2348731.54	38.00
AC277		AC277	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211672.12	2348725.92	38.00
AC278		AC278	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211672.33	2348717.77	38.00
AC279		AC279	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211681.45	2348720.95	38.00
AC280		AC280	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211672.19	2348723.32	38.00
AC281		AC281	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211672.16	2348731.31	38.00
AC282		AC282	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211681.25	2348728.94	38.00
AC283		AC283	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211672.25	2348720.72	38.00
AC284		AC284	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211681.38	2348723.55	38.00
AC285		AC285	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211672.05	2348728.70	38.00
AC286		AC286	76.0	76.0	76.0	Lw	76		675.00	0.00	270.00	3.00	g	6211681.53	2348718.00	38.00
TRASH1		TRASH1	89.0	89.0	89.0	Lw	89		900.00	0.00	540.00	8.00	a	6211770.20	2348905.48	8.00
TRASH2		TRASH2	89.0	89.0	89.0	Lw	89		900.00	0.00	540.00	8.00	a	6211754.57	2348471.45	8.00

Line Source(s)

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

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

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
PARK1		PARK1	101.8	101.8	101.8	63.0	63.0	63.0	Lw''	63					0.	a
PARK2		PARK2	93.3	93.3	93.3	63.0	63.0	63.0	Lw''	63					0.	a
PARK3		PARK3	99.9	99.9	99.9	63.0	63.0	63.0	Lw''	63					0.	a

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
PARK1	PARK1	0.00	a	6211715.68	2348751.31	0.00	0.00
				6211715.68	2348796.11	0.00	0.00
				6211734.09	2348795.76	0.00	0.00
				6211733.74	2348809.99	0.00	0.00
				6211723.32	2348821.11	0.00	0.00
				6211703.18	2348819.72	0.00	0.00
				6211502.49	2348821.80	0.00	0.00
				6211431.48	2348821.28	0.00	0.00
				6211327.32	2348822.32	0.00	0.00
				6211317.42	2348818.33	0.00	0.00
				6211312.56	2348809.30	0.00	0.00

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
				6211314.30	2348783.95	0.00	0.00
				6211314.30	2348771.11	0.00	0.00
				6211315.34	2348593.33	0.00	0.00
				6211326.10	2348593.67	0.00	0.00
				6211326.10	2348585.34	0.00	0.00
				6211431.31	2348584.65	0.00	0.00
				6211437.56	2348582.56	0.00	0.00
				6211437.91	2348553.74	0.00	0.00
				6211429.92	2348554.09	0.00	0.00
				6211429.57	2348536.04	0.00	0.00
				6211281.31	2348535.34	0.00	0.00
				6211263.25	2348552.36	0.00	0.00
				6211264.30	2348626.66	0.00	0.00
				6211281.66	2348626.31	0.00	0.00
				6211282.35	2348633.95	0.00	0.00
				6211263.60	2348634.30	0.00	0.00
				6211264.30	2348816.94	0.00	0.00
				6211283.39	2348816.94	0.00	0.00
				6211283.05	2348837.08	0.00	0.00
				6211264.30	2348837.08	0.00	0.00
				6211264.64	2348916.59	0.00	0.00
				6211287.56	2348916.59	0.00	0.00
				6211287.56	2348935.34	0.00	0.00
				6211763.95	2348933.95	0.00	0.00
				6211764.99	2348893.67	0.00	0.00
				6211782.70	2348894.37	0.00	0.00
				6211783.05	2348746.80	0.00	0.00
				6211734.78	2348747.49	0.00	0.00
				6211734.78	2348751.66	0.00	0.00
PARK2	PARK2	0.00	a	6211439.99	2348797.84	0.00	0.00
				6211488.60	2348798.19	0.00	0.00
				6211490.34	2348793.33	0.00	0.00
				6211490.34	2348762.42	0.00	0.00
				6211507.00	2348762.27	0.00	0.00
				6211507.35	2348636.38	0.00	0.00
				6211488.95	2348636.04	0.00	0.00
				6211489.64	2348629.09	0.00	0.00
				6211489.88	2348609.34	0.00	0.00
				6211439.30	2348609.99	0.00	0.00
PARK3	PARK3	0.00	a	6211782.00	2348733.26	0.00	0.00
				6211782.00	2348716.24	0.00	0.00
				6211763.95	2348715.55	0.00	0.00
				6211765.68	2348706.52	0.00	0.00
				6211772.28	2348698.54	0.00	0.00
				6211781.31	2348698.19	0.00	0.00
				6211779.57	2348648.19	0.00	0.00
				6211768.81	2348642.63	0.00	0.00
				6211764.30	2348636.38	0.00	0.00
				6211763.60	2348628.74	0.00	0.00
				6211780.96	2348628.74	0.00	0.00
				6211782.00	2348594.02	0.00	0.00
				6211762.56	2348593.67	0.00	0.00
				6211763.25	2348579.79	0.00	0.00
				6211781.31	2348579.09	0.00	0.00
				6211781.66	2348475.27	0.00	0.00
				6211763.60	2348474.58	0.00	0.00
				6211763.95	2348477.70	0.00	0.00
				6211745.20	2348477.36	0.00	0.00
				6211744.85	2348453.05	0.00	0.00
				6211579.92	2348453.40	0.00	0.00
				6211579.92	2348471.45	0.00	0.00
				6211573.67	2348471.45	0.00	0.00
				6211573.67	2348454.79	0.00	0.00
				6211503.53	2348453.05	0.00	0.00
				6211503.53	2348470.41	0.00	0.00
				6211500.75	2348471.80	0.00	0.00
				6211487.56	2348464.16	0.00	0.00
				6211488.25	2348448.19	0.00	0.00
				6211506.31	2348448.54	0.00	0.00
				6211504.92	2348368.33	0.00	0.00
				6211457.70	2348368.33	0.00	0.00
				6211438.60	2348368.67	0.00	0.00
				6211439.30	2348524.92	0.00	0.00
				6211457.70	2348526.66	0.00	0.00
				6211459.09	2348539.51	0.00	0.00
				6211453.53	2348548.19	0.00	0.00
				6211444.16	2348554.09	0.00	0.00

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
				6211445.55	2348582.22	0.00	0.00
				6211487.21	2348584.30	0.00	0.00
				6211494.16	2348571.45	0.00	0.00
				6211504.94	2348570.75	0.00	0.00
				6211703.18	2348569.72	0.00	0.00
				6211718.12	2348567.29	0.00	0.00
				6211734.43	2348580.83	0.00	0.00
				6211734.43	2348593.67	0.00	0.00
				6211716.03	2348594.02	0.00	0.00
				6211715.34	2348646.11	0.00	0.00
				6211734.09	2348646.80	0.00	0.00
				6211734.09	2348697.15	0.00	0.00
				6211715.68	2348696.80	0.00	0.00
				6211715.34	2348734.30	0.00	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)
BUILDING			BUILDING00001	x	0		35.00	a	6211431.48	2348821.28	35.00	0.00
									6211432.35	2348783.95	35.00	0.00
									6211422.98	2348783.95	35.00	0.00
									6211422.98	2348781.87	35.00	0.00
									6211418.46	2348782.56	35.00	0.00
									6211418.46	2348778.74	35.00	0.00
									6211422.98	2348779.09	35.00	0.00
									6211422.63	2348777.01	35.00	0.00
									6211427.14	2348777.70	35.00	0.00
									6211426.10	2348758.95	35.00	0.00
									6211417.42	2348758.26	35.00	0.00
									6211416.73	2348742.29	35.00	0.00
									6211407.35	2348742.29	35.00	0.00
									6211407.35	2348745.76	35.00	0.00
									6211377.49	2348746.11	35.00	0.00
									6211374.37	2348742.29	35.00	0.00
									6211374.71	2348713.47	35.00	0.00
									6211378.18	2348713.12	35.00	0.00
									6211378.18	2348693.67	35.00	0.00
									6211375.06	2348694.02	35.00	0.00
									6211375.06	2348663.81	35.00	0.00
									6211377.14	2348661.73	35.00	0.00
									6211407.00	2348661.04	35.00	0.00
									6211406.66	2348665.20	35.00	0.00
									6211416.38	2348665.20	35.00	0.00
									6211416.38	2348648.54	35.00	0.00
									6211425.75	2348648.19	35.00	0.00
									6211425.41	2348629.44	35.00	0.00
									6211421.59	2348629.44	35.00	0.00
									6211421.93	2348622.84	35.00	0.00
									6211430.96	2348622.84	35.00	0.00
									6211431.31	2348584.65	35.00	0.00
									6211326.10	2348585.34	35.00	0.00
									6211326.10	2348593.67	35.00	0.00
									6211315.34	2348593.33	35.00	0.00
									6211315.34	2348623.19	35.00	0.00
									6211326.45	2348623.54	35.00	0.00
									6211326.80	2348630.13	35.00	0.00
									6211314.99	2348629.79	35.00	0.00
									6211316.03	2348771.45	35.00	0.00
									6211314.30	2348771.11	35.00	0.00
									6211314.30	2348783.95	35.00	0.00
									6211315.68	2348784.30	35.00	0.00
									6211316.73	2348813.81	35.00	0.00
									6211326.45	2348814.16	35.00	0.00
									6211327.32	2348822.32	35.00	0.00
BUILDING			BUILDING00002	x	0		35.00	a	6211502.49	2348821.80	35.00	0.00
									6211515.34	2348821.80	35.00	0.00
									6211515.34	2348820.76	35.00	0.00
									6211703.18	2348819.72	35.00	0.00
									6211703.88	2348798.88	35.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates			
							Begin	x	y	z	Ground
							(ft)	(ft)	(ft)	(ft)	(ft)
								6211693.81	2348798.54	35.00	0.00
								6211694.16	2348790.55	35.00	0.00
								6211703.18	2348790.20	35.00	0.00
								6211703.18	2348780.13	35.00	0.00
								6211707.35	2348780.13	35.00	0.00
								6211707.70	2348770.41	35.00	0.00
								6211703.88	2348771.11	35.00	0.00
								6211704.57	2348758.95	35.00	0.00
								6211702.14	2348758.95	35.00	0.00
								6211702.14	2348736.04	35.00	0.00
								6211703.18	2348736.04	35.00	0.00
								6211703.53	2348704.79	35.00	0.00
								6211705.96	2348705.13	35.00	0.00
								6211705.96	2348665.90	35.00	0.00
								6211703.18	2348666.24	35.00	0.00
								6211703.18	2348653.05	35.00	0.00
								6211705.62	2348653.40	35.00	0.00
								6211705.27	2348642.29	35.00	0.00
								6211701.80	2348641.59	35.00	0.00
								6211702.14	2348591.24	35.00	0.00
								6211703.18	2348590.90	35.00	0.00
								6211703.18	2348569.72	35.00	0.00
								6211503.18	2348570.76	35.00	0.00
								6211503.18	2348579.09	35.00	0.00
								6211492.42	2348579.44	35.00	0.00
								6211493.12	2348598.54	35.00	0.00
								6211489.99	2348599.58	35.00	0.00
								6211489.64	2348629.09	35.00	0.00
								6211527.84	2348629.79	35.00	0.00
								6211528.18	2348617.98	35.00	0.00
								6211545.89	2348617.29	35.00	0.00
								6211545.89	2348634.65	35.00	0.00
								6211556.31	2348633.95	35.00	0.00
								6211555.96	2348630.13	35.00	0.00
								6211566.73	2348630.13	35.00	0.00
								6211566.38	2348627.01	35.00	0.00
								6211578.18	2348626.31	35.00	0.00
								6211578.18	2348631.17	35.00	0.00
								6211589.30	2348630.48	35.00	0.00
								6211588.60	2348627.01	35.00	0.00
								6211607.35	2348626.31	35.00	0.00
								6211608.05	2348630.83	35.00	0.00
								6211618.81	2348630.83	35.00	0.00
								6211618.81	2348627.01	35.00	0.00
								6211630.27	2348627.01	35.00	0.00
								6211629.92	2348630.13	35.00	0.00
								6211637.91	2348630.13	35.00	0.00
								6211640.68	2348633.26	35.00	0.00
								6211640.34	2348641.24	35.00	0.00
								6211640.68	2348745.76	35.00	0.00
								6211646.93	2348745.76	35.00	0.00
								6211646.93	2348753.05	35.00	0.00
								6211636.52	2348762.77	35.00	0.00
								6211630.62	2348762.77	35.00	0.00
								6211630.27	2348759.99	35.00	0.00
								6211599.02	2348760.69	35.00	0.00
								6211598.67	2348756.52	35.00	0.00
								6211589.30	2348756.52	35.00	0.00
								6211589.30	2348761.04	35.00	0.00
								6211557.70	2348760.69	35.00	0.00
								6211557.35	2348757.56	35.00	0.00
								6211546.93	2348757.56	35.00	0.00
								6211546.59	2348773.88	35.00	0.00
								6211529.23	2348774.58	35.00	0.00
								6211528.88	2348762.08	35.00	0.00
								6211490.34	2348762.42	35.00	0.00
								6211490.34	2348793.33	35.00	0.00
								6211502.14	2348793.33	35.00	0.00
BUILDING			BUILDING00003	x	0		35.00 a	6211805.62	2348873.88	35.00	0.00
								6211820.55	2348874.23	35.00	0.00
								6211832.70	2348874.23	35.00	0.00
								6211832.00	2348872.84	35.00	0.00
								6211866.73	2348872.49	35.00	0.00
								6211867.42	2348870.06	35.00	0.00
								6211869.85	2348870.76	35.00	0.00
								6211870.20	2348857.22	35.00	0.00
								6211867.42	2348856.87	35.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground	
							(ft)	(ft)	(ft)	(ft)	(ft)	
								6211867.77	2348854.79	35.00	0.00	
								6211861.52	2348855.13	35.00	0.00	
								6211860.82	2348817.63	35.00	0.00	
								6211867.42	2348817.29	35.00	0.00	
								6211867.77	2348815.90	35.00	0.00	
								6211870.55	2348815.90	35.00	0.00	
								6211870.55	2348801.31	35.00	0.00	
								6211867.07	2348801.31	35.00	0.00	
								6211867.42	2348797.49	35.00	0.00	
								6211869.85	2348797.84	35.00	0.00	
								6211870.20	2348783.95	35.00	0.00	
								6211866.73	2348784.99	35.00	0.00	
								6211866.38	2348782.56	35.00	0.00	
								6211861.17	2348782.56	35.00	0.00	
								6211861.52	2348779.44	35.00	0.00	
								6211858.39	2348777.36	35.00	0.00	
								6211858.39	2348770.41	35.00	0.00	
								6211860.48	2348768.67	35.00	0.00	
								6211860.48	2348765.55	35.00	0.00	
								6211861.17	2348765.55	35.00	0.00	
								6211860.48	2348763.81	35.00	0.00	
								6211868.81	2348764.86	35.00	0.00	
								6211868.81	2348722.15	35.00	0.00	
								6211866.38	2348722.84	35.00	0.00	
								6211867.07	2348719.02	35.00	0.00	
								6211854.57	2348719.37	35.00	0.00	
								6211854.57	2348723.19	35.00	0.00	
								6211832.35	2348722.84	35.00	0.00	
								6211832.35	2348725.62	35.00	0.00	
								6211809.43	2348725.27	35.00	0.00	
								6211809.09	2348721.80	35.00	0.00	
								6211796.59	2348721.80	35.00	0.00	
								6211796.93	2348725.27	35.00	0.00	
								6211795.55	2348725.62	35.00	0.00	
								6211796.24	2348765.90	35.00	0.00	
								6211806.66	2348765.90	35.00	0.00	
								6211806.66	2348774.92	35.00	0.00	
								6211803.53	2348774.58	35.00	0.00	
								6211803.53	2348782.56	35.00	0.00	
								6211796.93	2348782.56	35.00	0.00	
								6211796.93	2348784.65	35.00	0.00	
								6211794.16	2348784.30	35.00	0.00	
								6211793.81	2348797.84	35.00	0.00	
								6211797.63	2348798.54	35.00	0.00	
								6211797.63	2348802.36	35.00	0.00	
								6211794.50	2348803.05	35.00	0.00	
								6211794.85	2348815.20	35.00	0.00	
								6211796.59	2348814.86	35.00	0.00	
								6211796.93	2348817.29	35.00	0.00	
								6211803.53	2348816.94	35.00	0.00	
								6211802.49	2348853.40	35.00	0.00	
								6211797.63	2348853.40	35.00	0.00	
								6211797.63	2348855.48	35.00	0.00	
								6211794.85	2348855.13	35.00	0.00	
								6211794.85	2348868.67	35.00	0.00	
								6211797.63	2348868.67	35.00	0.00	
								6211797.28	2348870.06	35.00	0.00	
								6211805.27	2348869.72	35.00	0.00	
BUILDING			BUILDING00004	x	0		35.00	a	6211796.59	2348622.15	35.00	0.00
									6211808.39	2348623.54	35.00	0.00
									6211809.09	2348618.67	35.00	0.00
									6211831.31	2348618.67	35.00	0.00
									6211831.66	2348622.49	35.00	0.00
									6211853.88	2348622.15	35.00	0.00
									6211854.23	2348625.27	35.00	0.00
									6211866.73	2348624.23	35.00	0.00
									6211866.38	2348621.11	35.00	0.00
									6211867.77	2348621.80	35.00	0.00
									6211866.73	2348580.48	35.00	0.00
									6211860.13	2348580.48	35.00	0.00
									6211860.48	2348561.04	35.00	0.00
									6211866.38	2348561.04	35.00	0.00
									6211866.38	2348558.95	35.00	0.00
									6211868.81	2348559.30	35.00	0.00
									6211868.81	2348545.41	35.00	0.00
									6211866.38	2348545.06	35.00	0.00
									6211866.73	2348542.29	35.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground	
							(ft)	(ft)	(ft)	(ft)	(ft)	
								6211868.81	2348541.94	35.00	0.00	
								6211869.16	2348528.40	35.00	0.00	
								6211866.03	2348528.74	35.00	0.00	
								6211866.03	2348527.01	35.00	0.00	
								6211859.43	2348527.36	35.00	0.00	
								6211860.13	2348488.81	35.00	0.00	
								6211865.68	2348488.81	35.00	0.00	
								6211866.03	2348486.73	35.00	0.00	
								6211868.46	2348487.42	35.00	0.00	
								6211868.46	2348473.19	35.00	0.00	
								6211865.68	2348473.54	35.00	0.00	
								6211865.68	2348472.15	35.00	0.00	
								6211830.27	2348472.15	35.00	0.00	
								6211830.62	2348469.37	35.00	0.00	
								6211819.50	2348469.72	35.00	0.00	
								6211819.16	2348470.76	35.00	0.00	
								6211802.84	2348470.76	35.00	0.00	
								6211803.18	2348474.23	35.00	0.00	
								6211795.89	2348474.23	35.00	0.00	
								6211795.89	2348475.97	35.00	0.00	
								6211792.77	2348475.97	35.00	0.00	
								6211792.77	2348489.51	35.00	0.00	
								6211795.89	2348489.51	35.00	0.00	
								6211795.89	2348491.24	35.00	0.00	
								6211801.80	2348490.90	35.00	0.00	
								6211802.14	2348526.66	35.00	0.00	
								6211796.93	2348526.66	35.00	0.00	
								6211796.59	2348529.09	35.00	0.00	
								6211793.46	2348529.09	35.00	0.00	
								6211793.46	2348541.59	35.00	0.00	
								6211796.93	2348542.29	35.00	0.00	
								6211796.59	2348544.02	35.00	0.00	
								6211796.24	2348546.45	35.00	0.00	
								6211793.46	2348547.15	35.00	0.00	
								6211793.81	2348559.99	35.00	0.00	
								6211796.24	2348559.99	35.00	0.00	
								6211795.20	2348561.73	35.00	0.00	
								6211802.84	2348561.04	35.00	0.00	
								6211802.84	2348569.37	35.00	0.00	
								6211805.62	2348569.37	35.00	0.00	
								6211805.62	2348578.05	35.00	0.00	
								6211795.20	2348578.05	35.00	0.00	
								6211795.55	2348619.02	35.00	0.00	
								6211797.28	2348619.02	35.00	0.00	
BUILDING			BUILDING00005	x	0		35.00	a	6211850.41	2348441.94	35.00	0.00
									6211853.18	2348440.55	35.00	0.00
									6211852.49	2348428.40	35.00	0.00
									6211850.06	2348428.74	35.00	0.00
									6211850.06	2348405.83	35.00	0.00
									6211851.10	2348405.48	35.00	0.00
									6211851.80	2348382.56	35.00	0.00
									6211855.62	2348382.91	35.00	0.00
									6211855.96	2348370.41	35.00	0.00
									6211852.14	2348370.41	35.00	0.00
									6211852.14	2348369.72	35.00	0.00
									6211811.87	2348369.37	35.00	0.00
									6211811.17	2348377.36	35.00	0.00
									6211792.07	2348376.31	35.00	0.00
									6211791.73	2348370.06	35.00	0.00
									6211790.34	2348370.06	35.00	0.00
									6211790.34	2348367.98	35.00	0.00
									6211776.10	2348367.63	35.00	0.00
									6211776.45	2348370.76	35.00	0.00
									6211772.98	2348370.76	35.00	0.00
									6211772.63	2348367.98	35.00	0.00
									6211759.09	2348368.67	35.00	0.00
									6211759.43	2348370.76	35.00	0.00
									6211758.05	2348370.76	35.00	0.00
									6211758.39	2348377.36	35.00	0.00
									6211720.20	2348377.70	35.00	0.00
									6211719.85	2348370.76	35.00	0.00
									6211718.46	2348371.11	35.00	0.00
									6211718.12	2348367.98	35.00	0.00
									6211703.88	2348367.98	35.00	0.00
									6211704.23	2348371.11	35.00	0.00
									6211702.14	2348370.76	35.00	0.00
									6211702.84	2348406.17	35.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground	
							(ft)	(ft)	(ft)	(ft)	(ft)	
								6211700.41	2348405.83	35.00	0.00	
								6211700.06	2348417.63	35.00	0.00	
								6211701.80	2348417.63	35.00	0.00	
								6211702.14	2348433.95	35.00	0.00	
								6211705.62	2348433.95	35.00	0.00	
								6211705.27	2348440.90	35.00	0.00	
								6211707.00	2348440.90	35.00	0.00	
								6211707.00	2348444.02	35.00	0.00	
								6211720.89	2348443.33	35.00	0.00	
								6211720.89	2348441.59	35.00	0.00	
								6211721.93	2348441.24	35.00	0.00	
								6211721.93	2348435.34	35.00	0.00	
								6211758.05	2348434.65	35.00	0.00	
								6211758.05	2348440.90	35.00	0.00	
								6211759.43	2348440.90	35.00	0.00	
								6211759.09	2348443.67	35.00	0.00	
								6211773.32	2348443.67	35.00	0.00	
								6211773.67	2348441.24	35.00	0.00	
								6211776.45	2348441.24	35.00	0.00	
								6211776.80	2348444.02	35.00	0.00	
								6211790.68	2348444.72	35.00	0.00	
								6211790.68	2348440.90	35.00	0.00	
								6211792.42	2348440.90	35.00	0.00	
								6211792.77	2348434.65	35.00	0.00	
								6211800.06	2348434.99	35.00	0.00	
								6211799.71	2348430.83	35.00	0.00	
								6211809.09	2348430.83	35.00	0.00	
								6211808.74	2348442.29	35.00	0.00	
BUILDING			BUILDING00006	x	0		35.00	a	6211667.07	2348440.90	35.00	0.00
									6211666.73	2348433.26	35.00	0.00
									6211669.85	2348432.56	35.00	0.00
									6211670.20	2348416.94	35.00	0.00
									6211670.89	2348417.29	35.00	0.00
									6211671.24	2348405.83	35.00	0.00
									6211668.81	2348405.83	35.00	0.00
									6211669.16	2348371.80	35.00	0.00
									6211667.77	2348372.15	35.00	0.00
									6211667.42	2348368.33	35.00	0.00
									6211654.57	2348367.98	35.00	0.00
									6211654.23	2348370.76	35.00	0.00
									6211652.49	2348370.76	35.00	0.00
									6211652.14	2348377.01	35.00	0.00
									6211613.60	2348376.66	35.00	0.00
									6211613.60	2348370.76	35.00	0.00
									6211612.91	2348370.76	35.00	0.00
									6211613.25	2348367.98	35.00	0.00
									6211598.32	2348367.98	35.00	0.00
									6211598.32	2348371.11	35.00	0.00
									6211594.85	2348371.11	35.00	0.00
									6211595.20	2348367.98	35.00	0.00
									6211584.09	2348367.98	35.00	0.00
									6211580.96	2348368.33	35.00	0.00
									6211580.96	2348371.45	35.00	0.00
									6211579.92	2348371.80	35.00	0.00
									6211580.27	2348377.36	35.00	0.00
									6211560.48	2348377.70	35.00	0.00
									6211560.48	2348370.06	35.00	0.00
									6211519.16	2348370.06	35.00	0.00
									6211518.81	2348371.11	35.00	0.00
									6211515.68	2348371.45	35.00	0.00
									6211516.03	2348383.95	35.00	0.00
									6211519.50	2348383.26	35.00	0.00
									6211518.81	2348406.17	35.00	0.00
									6211522.28	2348406.52	35.00	0.00
									6211522.28	2348430.13	35.00	0.00
									6211519.16	2348430.13	35.00	0.00
									6211519.50	2348442.63	35.00	0.00
									6211529.23	2348442.98	35.00	0.00
									6211563.25	2348442.63	35.00	0.00
									6211563.25	2348432.22	35.00	0.00
									6211572.28	2348432.22	35.00	0.00
									6211571.93	2348435.34	35.00	0.00
									6211580.27	2348435.69	35.00	0.00
									6211580.62	2348441.59	35.00	0.00
									6211581.66	2348441.59	35.00	0.00
									6211581.66	2348444.37	35.00	0.00
									6211595.89	2348444.02	35.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates			
							Begin	x	y	z	Ground
							(ft)	(ft)	(ft)	(ft)	(ft)
								6211595.89	2348441.94	35.00	0.00
								6211599.02	2348441.59	35.00	0.00
								6211599.02	2348444.72	35.00	0.00
								6211613.25	2348444.02	35.00	0.00
								6211612.91	2348441.24	35.00	0.00
								6211613.95	2348441.24	35.00	0.00
								6211613.95	2348435.34	35.00	0.00
								6211650.75	2348434.99	35.00	0.00
								6211650.41	2348441.24	35.00	0.00
								6211652.14	2348441.59	35.00	0.00
								6211651.45	2348444.37	35.00	0.00
								6211665.68	2348443.67	35.00	0.00
								6211664.99	2348440.55	35.00	0.00

Ground Absorption(s)

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

Contour(s)

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

Vertical Area Source(s)

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

Rail

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

Sound Level Spectra

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

Roads

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

RoadsGeo

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

APPENDIX 11.1:

CONSTRUCTION NOISE MODEL

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15975 - Maple Apartments

CadnaA Noise Prediction Model: 15975-02_Construction.cna

Date: 09.05.24

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	64.3	-35.7	61.3	0.0	0.0	0.0		x	Total	5.00	a	6211463.75	2349055.71	5.00
R2		R2	64.2	-35.8	61.2	0.0	0.0	0.0		x	Total	5.00	a	6211707.24	2349058.31	5.00
R3		R3	64.1	-35.9	61.1	0.0	0.0	0.0		x	Total	5.00	a	6211987.19	2348894.25	5.00
R4		R4	58.2	-41.8	55.1	0.0	0.0	0.0		x	Total	5.00	a	6212160.36	2348178.10	5.00
R5		R5	58.0	-42.0	54.9	0.0	0.0	0.0		x	Total	5.00	a	6212074.43	2348072.63	5.00
R6		R6	63.2	-36.8	60.2	0.0	0.0	0.0		x	Total	5.00	a	6211552.29	2348202.84	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)

Urban Crossroads, Inc.

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)		
ConstructionArea1		ConstructionArea1	116.6	16.6	16.6	71.3	-28.7	-28.7	PWL-Pt	116.6					8	a

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
ConstructionArea1	ConstructionArea1	8.00	a	6211434.90	2348337.33	8.00	0.00
				6211436.24	2348529.56	8.00	0.00
				6211261.10	2348531.01	8.00	0.00
				6211259.64	2348953.35	8.00	0.00
				6211885.56	2348948.57	8.00	0.00
				6211901.77	2348940.09	8.00	0.00
				6211902.72	2348596.01	8.00	0.00
				6211903.90	2348475.99	8.00	0.00
				6211903.23	2348378.41	8.00	0.00
				6211861.26	2348336.46	8.00	0.00
				6211788.99	2348326.81	8.00	0.00
				6211652.79	2348327.84	8.00	0.00
				6211534.73	2348328.77	8.00	0.00
				6211434.85	2348329.58	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)	(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		Dreffl	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)		