Birtcher Logistics Center Rialto (MC2020-0031)

NOISE IMPACT ANALYSIS

CITY OF RIALTO

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TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Birtcher Logistics Center Rialto
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for Birtcher Logistics Center Rialto development ("Project"). The Project is proposed to consist of a single 492,410 square foot warehouse building. This study has been prepared to satisfy applicable City of Rialto standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Birtcher Logistics Center Rialto Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

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

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of Birtcher Logistics Center Rialto ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The Birtcher Logistics Center Rialto Project is located at the northwest corner of Valley Boulevard and Willow Avenue in the City of Rialto, as shown on Exhibit 1-A. The nearest sensitive residential land use is located west of the project site.

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of a single 492,410 square foot warehouse building. It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2023. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, parking lot vehicle movements, trash enclosure activity, and truck movements. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP

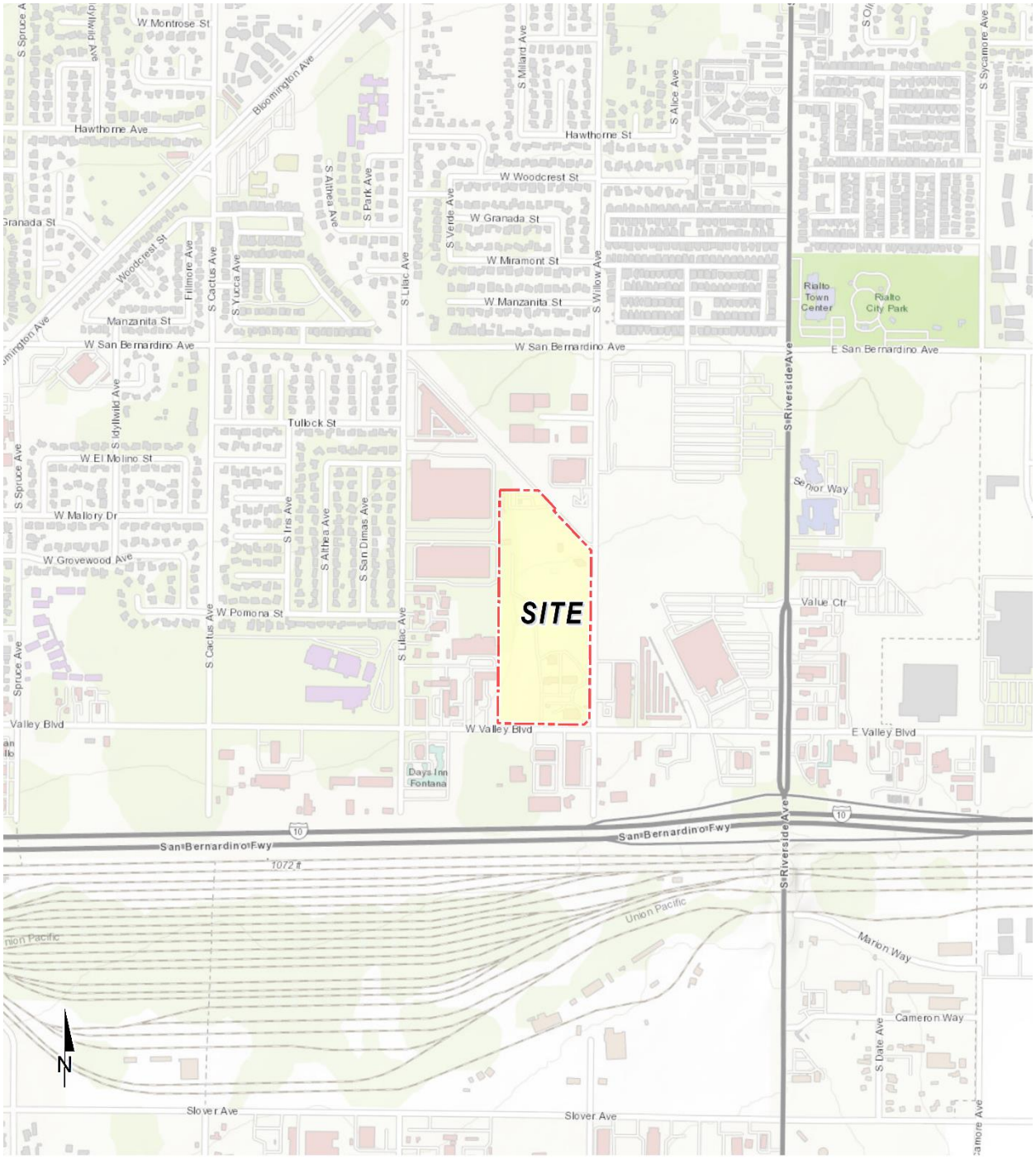
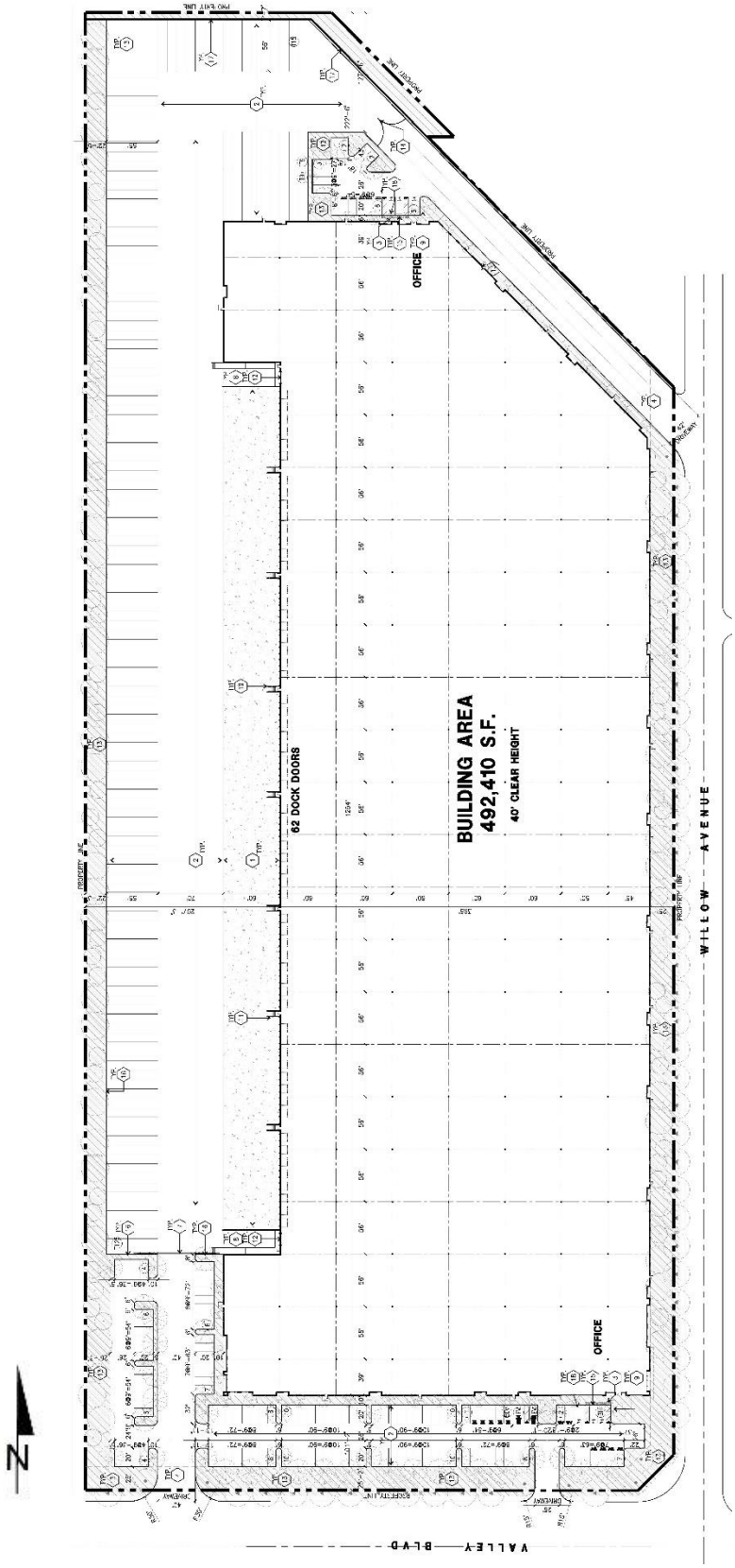


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

2.1 RANGE OF NOISE

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

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels 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.

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

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. 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 Rialto 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 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

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

2.3.4 SHIELDING

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

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels. (4) If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify

reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

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

2.6 LAND USE COMPATIBILITY WITH NOISE

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

2.7 COMMUNITY RESPONSE TO NOISE

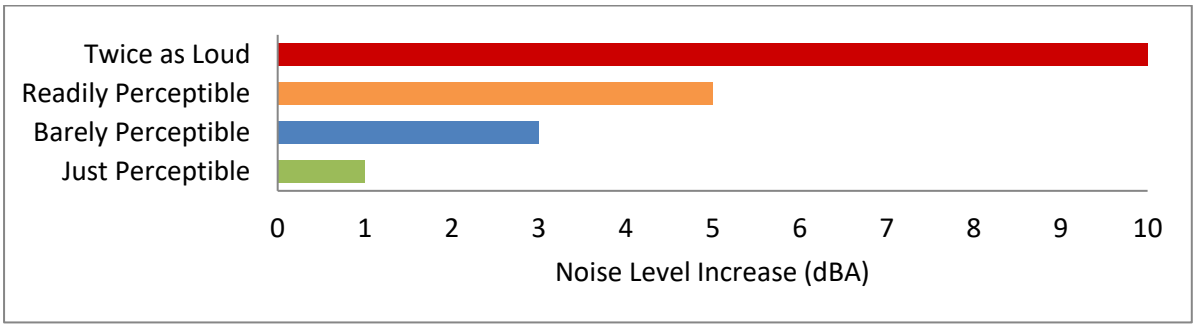
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- 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



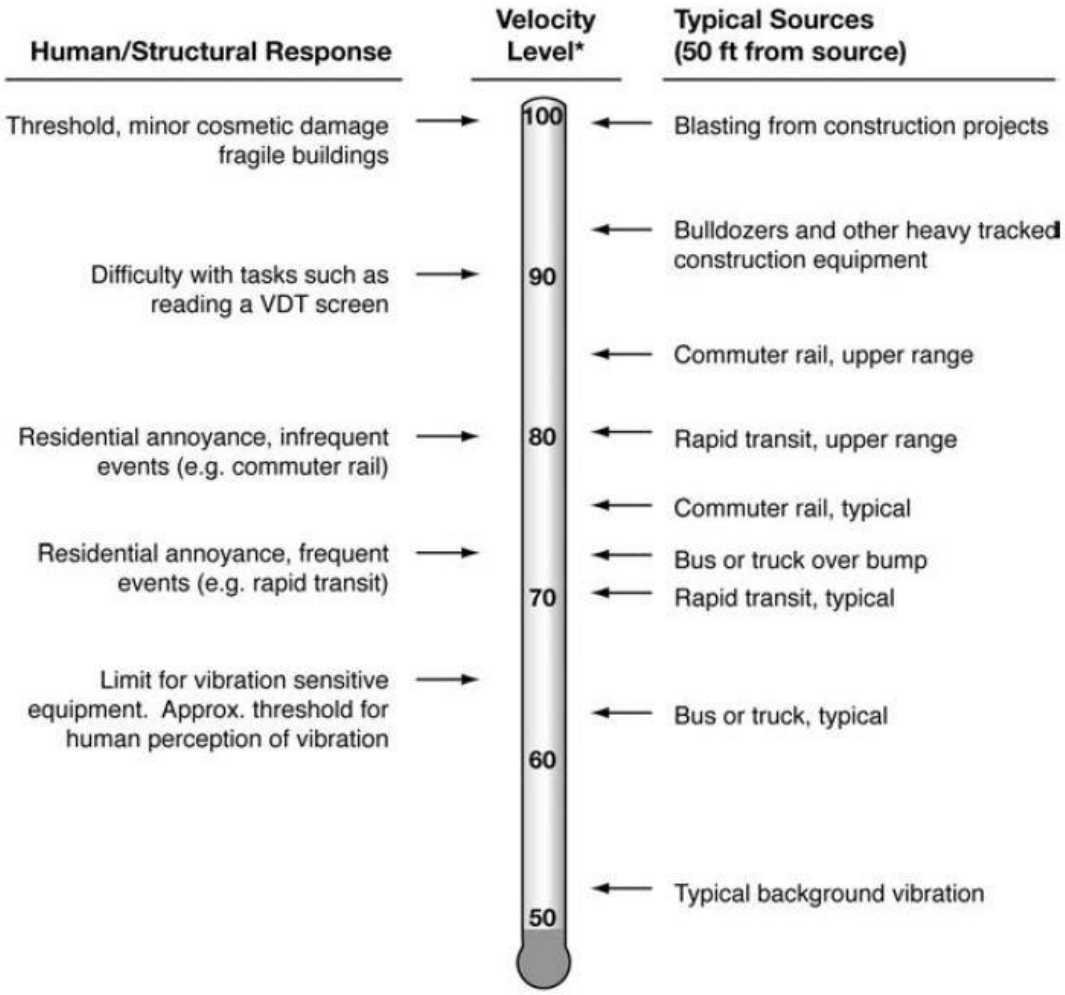
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (7), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. 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



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

3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

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

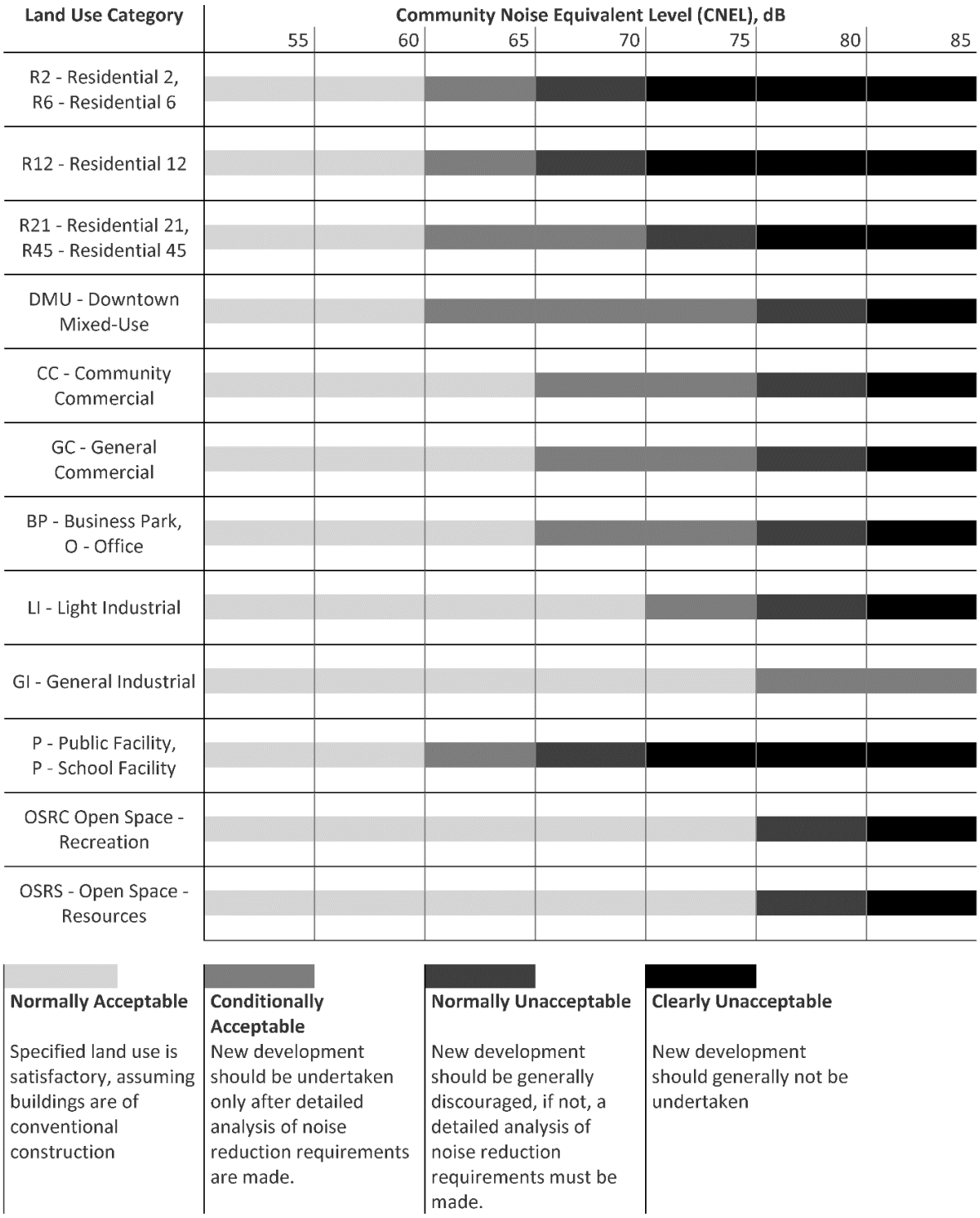
The City of Rialto *General Plan Safety & Noise Element* establishes policies to guard against the creation of any new noise and land use conflicts, and to minimize the impact of existing noise sources on the community. (9) The *Noise Element* does not contain specific transportation-related noise standards, however, it does provide land use compatibility guidelines for future development and the future noise contour boundaries for major roadways in the City of Rialto.

LAND USE COMPATIBILITY

The noise criteria identified in the City of Rialto Safety & Noise Element (Exhibit 5.5) are guidelines to evaluate the land use compatibility of transportation-related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City of Rialto with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Rialto Noise Guidelines for Land Use Planning* matrix indicates that industrial land uses, such as the Project site, are considered *normally acceptable* with exterior noise levels below 70 dBA CNEL, and *conditionally acceptable* with noise levels below 75 dBA CNEL. Noise-sensitive residential land uses are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL, and *conditionally acceptable* with noise levels below 65 dBA CNEL. For *conditionally acceptable* land uses, *new development should be undertaken only after detailed analysis of noise reduction requirements are made.* (9)

EXHIBIT 3-A: RIALTO NOISE GUIDELINES FOR LAND USE PLANNING



Source: City of Rialto General Plan Safety & Noise Element, Exhibit 5.5.

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Birtcher Logistics Center Rialto Project, stationary-source (operational) noise such as the expected loading dock activity, roof-top air conditioning units, parking lot vehicle movements, trash enclosure activity, and truck movements are typically evaluated against standards established under a jurisdiction's Municipal Code. Section 9.50.050[B] of the City Rialto Municipal Code included in Appendix 3.2 restricts loading/unloading, the use of dollies, carts, forklifts, or wheeled equipment that causes any unnecessary noise within one thousand feet of a residence between the hours of 8:00 p.m. and 7:00 a.m. However, the City of Rialto Municipal Code does not identify specific exterior noise level standards. (10) Therefore, the County of San Bernardino Development Code standards are used in this noise study to assess the potential impacts at adjacent sensitive receiver locations consistent with Section 9.50.050[B] of the City Rialto Municipal Code. The operational noise level standards used in this noise study are summarized on Table 3-1.

The San Bernardino County Code, Title 8 Development Code, Section 83.01.080(c) establishes the noise level standards for stationary noise sources. Since the Project's industrial land use will potentially impact adjacent noise-sensitive uses in the Project study area, this noise study relies on the more conservative residential noise level standards to describe potential operational noise impacts. For residential properties, the exterior noise level shall not exceed 55 dBA L_{eq} during the daytime hours (7:00 a.m. to 10:00 p.m.) and 45 dBA L_{eq} during the nighttime hours (10:00 p.m. to 7:00 a.m.) for both the whole hour, and for not more than 30 minutes in any hour. (11)

The exterior noise level standards shall apply for a cumulative period of 30 minutes in any hour, as well as the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. Further, Section 83.01.080(e) indicates that if the existing ambient noise level already exceeds any of the exterior noise level limit categories, then the standard shall be adjusted to reflect the ambient conditions. The County of San Bernardino operational noise level standards are shown on Table 3-1 and included in Appendix 3.1.

TABLE 3-1: OPERATIONAL NOISE LEVEL STANDARDS

Time Period	Exterior Noise Level Standards (dBA)[1]				
	L_{50} (30 mins)	L_{25} (15 mins)	L_{8} (5 mins)	L_{2} (1 min)	L_{max} (Anytime)
Daytime (7:00 a.m. to 10:00 p.m.)	55	60	65	70	75
Nighttime (10:00 p.m. to 7:00 a.m.)	45	50	55	60	65

[1] County of San Bernardino Development Code, Title 8, Section 83.01.080 (Appendix 3.1). The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{50} is the noise level exceeded 50% of the time. .

The percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project operational activities, the L_{50} or average L_{eq} noise level metrics best describe the loading dock activity, roof-top air conditioning units, parking lot vehicle movements, trash enclosure activity, and truck movements. In addition, the L_{eq} noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median (L_{50}) and the mean (L_{eq}), the L_{eq} will always be larger than or equal to the L_{50}. The more variable the noise becomes, the larger the L_{eq} becomes in comparison to the L_{50}. Therefore, this noise study conservatively relies on the average L_{eq} sound level limits to describe the Project operational noise levels.

3.4 CONSTRUCTION NOISE STANDARDS

Section 9.50.050[F] of the City Rialto Municipal Code included in Appendix 3.2 restricts the use pile driver, steam or gasoline shovel, pneumatic hammer, steam or electric hoist or other similar devices and 9.50.050[G] electrically operated compressor, fan or other similar devices between the hours of 8:00 p.m. and 7:00 a.m. In addition, , Section 9.50.070 of the City of Rialto Municipal Code, states that construction activities are permitted between the hours of 7:00 a.m. to 5:30 p.m. Monday through Friday from October 1st to April 30th, 6:00 a.m. to 7:00 p.m. Monday through Friday from May 1st to September 30th, and 8:00 a.m. to 5:00 p.m. on Saturdays any time of year; with no activity allowed on Sundays or state holidays. (10) While the City establishes limits to the hours during which construction activity may take place, neither the City of Rialto or County of San Bernardino General Plans or 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 with a nighttime exterior construction noise level of 70 dBA L_{eq}. (7 p. 179)

3.5 CONSTRUCTION VIBRATION STANDARDS

To analyze vibration impacts originating from the operation and construction of the Birtcher Logistics Center Rialto, vibration-generating activities are typically evaluated against standards established under a jurisdiction's Municipal Code. Since the City of Rialto Municipal Code does not identify specific vibration level standards, the County Development Code vibration level standards are used in this analysis to assess potential impacts at nearby sensitive receiver locations.

The County Development Code, Section 83.01.090(a) states that vibration shall be no *greater than or equal to two-tenths inches per second measured at or beyond the lot line*. (11) Therefore, to determine if the vibration levels due to the operation and construction of the Project, the peak particle velocity (PPV) vibration level standard of 0.2 inches per second (in/sec) is used.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (8) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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

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

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

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

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The Project site is not located within two miles of a public airport or within an airport land use plan. The closest airport is the San Bernardino International Airport located roughly 6.6 miles northeast of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to CEQA Appendix G Guideline C.

4.2 NOISE-SENSITIVE NOISE LEVEL INCREASES

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (12)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal

Interagency Committee on Noise (FICON) (13) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (12) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (14 p. 2_48).

4.3 NON-NOISE-SENSITIVE NOISE LEVEL INCREASES

The City of Rialto General Plan Safety & Noise Element, Exhibit 5.5, *Noise Compatibility Guidelines* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, non-noise-sensitive land uses such as office, commercial, and industrial uses with exterior noise levels approaching 70 dBA CNEL are considered *normally acceptable* per the City of Rialto exterior transportation-related noise level criteria. To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *readily perceptible* 5 dBA and *barely perceptible* 3 dBA criteria were used. When the without Project noise levels at the non-noise-sensitive land uses are below the *normally acceptable* 70 dBA CNEL compatibility criteria, a *readily perceptible* 5 dBA or greater noise level increase is considered a significant impact. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise

level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses rely on the City of Rialto General Plan Safety & Noise Element, Exhibit 5.5 *normally acceptable* 70 dBA CNEL exterior noise level criteria.

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed Project. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site	Noise-Sensitive[1]	if ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		if ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		if ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise Sensitive[1,2]	if ambient is < 70 dBA CNEL	≥ 5 dBA CNEL Project increase	
		if ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	Residential	Exterior Noise Level Limit[3]	55 dBA L_{eq}	45 dBA L_{eq}
	Noise-Sensitive[1]	if ambient is < 60 dBA L_{eq}	≥ 5 dBA L_{eq} Project increase	
		if ambient is 60 - 65 dBA L_{eq}	≥ 3 dBA L_{eq} Project increase	
		if ambient is > 65 dBA L_{eq}	≥ 1.5 dBA L_{eq} Project increase	
Construction	Noise-Sensitive	Noise Level Threshold[4]	80 dBA L_{eq}	70 dBA L_{eq}
		Vibration Level Threshold[5]	0.2 PPV in/sec	n/a

[1] FICON, 1992.
2 The City of Rialto General Plan Safety & Noise Element, Exhibit 5.5.
[3] County of San Bernardino Development Code, Title 8, Section 83.01.080 (Appendix 3.1)
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[5] Section 83.01.090(a) of the County of San Bernardino County Code.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m. "n/a" = construction activities are not planned during the nighttime hours; "PPV" = peak particle velocity.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, June 9th, 2021. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (15)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (7)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (7) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels

and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

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

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

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	North of the Project site on West Tullock Street near the House of Hope Church located at 327 West Tullock Street.	57.6	53.4
L2	East of the Project site on Senior Way near the Rialto Senior Center located at 1401 South Riverside Avenue.	60.7	57.2
L3	West of the Project site on Lilac Avenue near Joe Baca Middle School located at 1640 South Lilac Avenue.	61.6	59.5
L4	West of the Project site on Lilac Avenue near a single-family residence located at 1480 South Lilac Avenue.	60.6	56.6

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

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with City of Rialto Noise Guidelines for Land Use Planning (see Exhibit 3-A), all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (16) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (17) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. 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. (18)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the five off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the City of Rialto General Plan Circulation Element, and the posted vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on *Birtcher Logistics Center Rialto Traffic Analysis*, prepared by Urban Crossroads, Inc. for the following traffic scenarios. (19)

- Existing 2021 Traffic Conditions
- Existing Plus Project Traffic Conditions
- Existing Plus Ambient Growth (EA) 2023 Traffic Conditions
- Existing Plus Ambient Growth (EAP) 2023 Plus Project Traffic Conditions
- Existing Plus Ambient Growth Plus Cumulative (EAC) 2023 Traffic Conditions
- Existing Plus Ambient Growth Plus Cumulative (EAPC) 2023 Plus Project Traffic Conditions
- Horizon Year (HY) 2040 Traffic Conditions
- Horizon Year Plus Project (HYP) 2040 Traffic Conditions

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts at the boundary of the right-of-way of the receiving adjacent land use, without and with project ADT traffic volumes from the Project traffic study.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Distance from Centerline to Receiving Land Use (Feet)[2]	Vehicle Speed (mph)[3]
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	32'	40
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	60'	40
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	60'	40
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	60'	40
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	60'	40

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] Distance to receiving land use is based upon the right-of-way distances.
[3] Birtcher Logistics Center Rialto (MC2020-0031) Traffic Analysis, Urban Crossroads, Inc.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-8 show the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]							
			Existing		Existing Plus Ambient Growth		Existing Plus Ambient Growth Plus Cumulative		Horizon Year	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Willow Av.	n/o Valley Bl.	4,523	4,995	4,706	5,177	6,320	6,791	6,952	7,423
2	Riverside Av.	s/o Valley Bl.	44,904	46,156	46,718	47,970	50,492	51,744	55,541	56,794
3	Valley Bl.	w/o Dwy. 1	20,733	20,823	21,571	21,661	23,179	23,269	25,497	25,587
4	Valley Bl.	e/o Willow Av.	23,304	24,602	24,246	25,543	26,340	27,637	28,974	30,271
5	Valley Bl.	e/o Riverside Av.	15,536	15,581	16,164	16,209	16,578	16,623	18,236	18,281

[1] Birtcher Logistics Center Rialto (MC2020-0031) Traffic Analysis, Urban Crossroads, Inc.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	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 vehicle mix.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	96.78%	1.77%	1.45%	100.00%

Based on an existing vehicle count taken at Willow Avenue and Valley Boulevard (Birtcher Logistics Center Rialto (MC2020-0031) Traffic Analysis, Urban Crossroads, Inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-5: EXISTING (2021) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Willow Av.	n/o Valley Bl.	93.94%	1.66%	4.39%	100.00%
2	Riverside Av.	s/o Valley Bl.	95.52%	1.75%	2.74%	100.00%
3	Valley Bl.	w/o Dwy. 1	96.80%	1.76%	1.44%	100.00%
4	Valley Bl.	e/o Willow Av.	94.42%	1.72%	3.87%	100.00%
5	Valley Bl.	e/o Riverside Av.	96.79%	1.77%	1.44%	100.00%

[1] Birtcher Logistics Center Rialto (MC2020-0031) Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: EA (2023) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Willow Av.	n/o Valley Bl.	94.04%	1.67%	4.29%	100.00%
2	Riverside Av.	s/o Valley Bl.	95.57%	1.75%	2.69%	100.00%
3	Valley Bl.	w/o Dwy. 1	96.80%	1.76%	1.44%	100.00%
4	Valley Bl.	e/o Willow Av.	94.50%	1.72%	3.78%	100.00%
5	Valley Bl.	e/o Riverside Av.	96.79%	1.77%	1.44%	100.00%

[1] Birtcher Logistics Center Rialto (MC2020-0031) Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: EAC (2023) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Willow Av.	n/o Valley Bl.	94.69%	1.69%	3.61%	100.00%
2	Riverside Av.	s/o Valley Bl.	95.65%	1.75%	2.60%	100.00%
3	Valley Bl.	w/o Dwy. 1	96.79%	1.76%	1.44%	100.00%
4	Valley Bl.	e/o Willow Av.	94.68%	1.72%	3.60%	100.00%
5	Valley Bl.	e/o Riverside Av.	96.79%	1.77%	1.44%	100.00%

[1] Birtcher Logistics Center Rialto (MC2020-0031) Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-8: HY (2040) WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Willow Av.	n/o Valley Bl.	94.87%	1.70%	3.43%	100.00%
2	Riverside Av.	s/o Valley Bl.	95.75%	1.75%	2.50%	100.00%
3	Valley Bl.	w/o Dwy. 1	96.79%	1.77%	1.44%	100.00%
4	Valley Bl.	e/o Willow Av.	94.86%	1.73%	3.41%	100.00%
5	Valley Bl.	e/o Riverside Av.	96.79%	1.77%	1.44%	100.00%

[1] Birtcher Logistics Center Rialto (MC2020-0031) Traffic Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the Birtcher Logistics Center Rialto Traffic Analysis prepared by Urban Crossroads, Inc. (19) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 to 7-8 present a summary of the exterior traffic noise levels for each traffic condition. Appendix 7.1 includes the traffic noise level contours worksheets for each traffic condition.

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	65.5	RW	34	74
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	72.9	94	202	436
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	69.9	RW	128	276
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	70.4	64	138	298
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	68.7	RW	106	228

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	68.1	RW	52	111
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	74.2	114	245	527
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.0	60	128	276
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	72.6	89	192	415
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	68.7	RW	106	228

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EA WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	65.6	RW	35	76
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	73.1	96	208	448
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.1	61	132	283
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	70.6	66	142	306
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	68.9	RW	108	234

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EA WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	68.2	RW	52	113
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	74.3	116	250	538
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.1	61	132	284
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	72.7	91	196	421
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	68.9	RW	109	234

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: EAC WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	66.9	RW	43	93
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	73.4	102	219	471
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.4	64	138	297
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	71.0	70	150	324
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	69.0	RW	110	238

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: EAC WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	69.0	RW	59	127
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	74.5	121	260	560
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.4	64	138	298
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	72.9	94	202	436
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	69.0	RW	110	238

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-7: HY WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	67.3	RW	46	99
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	73.8	108	233	502
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.8	68	147	317
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	71.4	74	160	345
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	69.4	RW	118	253

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-8: HY WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Nearest Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	69.2	RW	61	132
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	74.9	127	273	588
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.8	68	147	317
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	73.2	98	211	455
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	69.4	RW	118	254

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes and to fully analyze all the existing traffic scenarios identified in the Traffic Analysis prepared by Urban Crossroads, Inc. However, the analysis of existing off-site traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until Year 2023 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 65.5 to 72.9 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 68.1 to 74.2 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level increases range from 0.0 to 2.6 dBA CNEL on the study area roadway segments. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

7.3 EA TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the Existing plus Ambient Growth without Project conditions CNEL noise levels. The Existing plus Ambient Growth without Project exterior noise levels range from 65.6 to 73.1 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows that the Existing plus Ambient Growth with Project conditions will range from 68.2 to 74.3 dBA CNEL. Table 7-10 shows that the Project off-site traffic noise level increases range from 0.0 to 2.6 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

7.4 EAC TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the EAC without Project conditions CNEL noise levels. The EAC without Project exterior noise levels range from 66.9 to 73.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows that the EAC with Project conditions will range from 69.0 to 74.5 dBA CNEL. Table 7-11 shows that the Project off-site traffic noise level increases range from 0.0 to 2.1 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

7.5 HY TRAFFIC NOISE LEVEL INCREASES

Table 7-7 presents the HY without Project conditions CNEL noise levels. The HY without Project exterior noise levels range from 67.3 to 73.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-8 shows that the HY with Project conditions range from 69.2 to 74.9 dBA CNEL. Table 7-12 shows that the Project off-site traffic noise level increases range from 0.0 to 1.9 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project-related traffic.

TABLE 7-9: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	65.5	68.1	2.6	5.0	No
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	72.9	74.2	1.3	3.0	No
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	69.9	70.0	0.1	5.0	No
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	70.4	72.6	2.2	3.0	No
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	68.7	68.7	0.0	5.0	No

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

TABLE 7-10: EA WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	65.6	68.2	2.6	5.0	No
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	73.1	74.3	1.2	3.0	No
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.1	70.1	0.0	3.0	No
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	70.6	72.7	2.1	3.0	No
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	68.9	68.9	0.0	5.0	No

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

TABLE 7-11: EAC WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	66.9	69.0	2.1	5.0	No
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	73.4	74.5	1.1	3.0	No
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.4	70.4	0.0	3.0	No
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	71.0	72.9	1.9	3.0	No
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	69.0	69.0	0.0	5.0	No

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

TABLE 7-12: HY WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				No Project	With Project	Project Addition	Limit	Exceeded?
1	Willow Av.	n/o Valley Bl.	Non-Sensitive	67.3	69.2	1.9	5.0	No
2	Riverside Av.	s/o Valley Bl.	Non-Sensitive	73.8	74.9	1.1	3.0	No
3	Valley Bl.	w/o Dwy. 1	Non-Sensitive	70.8	70.8	0.0	3.0	No
4	Valley Bl.	e/o Willow Av.	Non-Sensitive	71.4	73.2	1.8	3.0	No
5	Valley Bl.	e/o Riverside Av.	Non-Sensitive	69.4	69.4	0.0	5.0	No

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

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8 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, 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 House of Hope Church at 372 W Tullock Street, approximately 535 feet north of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R1 is placed at the building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise sensitive Rialto Senior Center at 1401 S Riverside Avenue, approximately 1,556 feet northeast of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R2 is placed at the building façade. 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 Days Inn by Wyndham Fontana/ Rialto hotel at 475 W Valley Boulevard, approximately 399 feet southwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the building façade. A 24-hour noise measurement was taken, L3, to describe the existing ambient noise environment.

R4: Location R4 represents the existing noise sensitive Joe Baca Middle School at 1640 S Lilac Avenue, approximately 846 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R4 is placed at the

building façade. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R5: Location R5 represents the existing noise sensitive residence at 1492 S Lilac Avenue, approximately 713 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R5 is placed at the building façade. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

EXHIBIT 8-A: SENSITIVE RECEIVER LOCATIONS

9 OPERATIONAL NOISE IMPACTS

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

9.1 OPERATIONAL NOISE SOURCES

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

9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. 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 on Exhibit 9-A. The reference project operational sound power levels are summarized below:

- Loading Dock Activity: 112 dBA L_w based on reference noise level measurements describing cold collected by Urban Crossroads, Inc. This includes truck idling, deliveries, backup alarms, trailer docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background operation activities.
- A/C Condenser Units: Represents a Lennox SCA120 series 10-ton model packaged air conditioning unit with a reference sound power level of 89 dBA L_w.
- Parking Lot Vehicle Movements: 79 dBA L_w based on reference noise level measurements describing warehouse parking lot vehicle activity collected by Urban Crossroads, Inc.
- Trash Enclosure Activity: 89 dBA L_w based on reference noise level measurements describing trash enclosure event activity collected by Urban Crossroads, Inc.
- Truck Movements: 93 dBA L_w based on reference noise level measurements describing truck movements collected by Urban Crossroads, Inc. This includes trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area.

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

9.3 CADNAA NOISE PREDICTION MODEL

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

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

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

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning units, parking lot vehicle movements, trash enclosure activity, and truck movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-1 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 26.8 to 45.6 dBA L_{eq}.

Table 9-2 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 25.6 to 44.6 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the duration of noise activity. .

TABLE 9-1: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)				
	R1	R2	R3	R4	R5
Loading Dock Activity	37.2	20.5	45.2	45.5	44.9
Roof-Top Air Conditioning Units	23.7	20.8	20.3	20.6	22.0
Parking Lot Vehicle Movements	29.6	16.4	25.4	24.7	25.7
Trash Enclosure Activity	13.0	0.0	14.4	3.9	0.0
Truck Movements	32.5	23.0	27.8	25.1	27.5
Total (All Noise Sources)	**39.1**	**26.8**	**45.3**	**45.6**	**45.1**

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

TABLE 9-2: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)				
	R1	R2	R3	R4	R5
Loading Dock Activity	36.3	19.6	44.2	44.5	43.9
Roof-Top Air Conditioning Units	21.3	18.4	17.9	18.2	19.6
Parking Lot Vehicle Movements	28.6	15.5	24.4	23.7	24.7
Trash Enclosure Activity	12.0	0.0	13.4	2.9	0.0
Truck Movements	31.5	22.1	26.8	24.2	26.5
Total (All Noise Sources)	**38.2**	**25.6**	**44.3**	**44.6**	**44.0**

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

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the County of San Bernardino exterior noise level standards at nearest noise-sensitive receiver locations. Table 9-3 shows the operational noise levels associated with Birtcher Logistics Center Rialto Project will satisfy the Section 9.50.050[B] of the City Rialto Municipal Code and the County of San Bernardino exterior noise level standards at the nearest receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearest noise-sensitive receiver locations.

TABLE 9-3: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Threshold Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	39.1	38.2	55	45	No	No
R2	26.8	25.6	55	45	No	No
R3	45.3	44.3	55	45	No	No
R4	45.6	44.6	55	45	No	No
R5	45.1	44.0	55	45	No	No

[1] See Exhibit 8-A for receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-1 and 9-2.
[3] County of San Bernardino Development Code, Title 8, Section 83.01.080.
[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.

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

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

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

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. As indicated on Tables 9-4 and 9-5, the Project will generate daytime and nighttime operational noise level increases ranging from 0.0 to 0.3 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented on Table 4-1. Therefore, the incremental Project operational noise level increase is considered *less than significant* at all receiver locations.

TABLE 9-4: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?[7]
R1	39.1	L1	57.6	57.7	0.1	5.0	No
R2	26.8	L2	60.7	60.7	0.0	3.0	No
R3	45.3	L3	61.6	61.7	0.1	3.0	No
R4	45.6	L4	60.6	60.7	0.1	3.0	No
R5	45.1	L4	60.6	60.7	0.1	3.0	No

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

TABLE 9-5: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?[7]
R1	38.2	L1	53.4	53.5	0.1	5.0	No
R2	25.6	L2	57.2	57.2	0.0	5.0	No
R3	44.3	L3	59.5	59.6	0.1	5.0	No
R4	44.6	L4	56.6	56.9	0.3	5.0	No
R5	44.0	L4	56.6	56.8	0.2	5.0	No

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

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 8. According to Section 9.50.050[F] of the City Rialto Municipal Code the use pile driver, steam or gasoline shovel, pneumatic hammer, steam or electric hoist or other similar devices and 9.50.050[G] electrically operated compressor, fan or other similar devices are restricted between the hours of 8:00 p.m. and 7:00 a.m. Section 9.50.070 of the City of Rialto Municipal Code, states that construction activities are permitted between the hours of 7:00 a.m. to 5:30 p.m. Monday through Friday from October 1st to April 30th, 6:00 a.m. to 7:00 p.m. Monday through Friday from May 1st to September 30th, and 8:00 a.m. to 5:00 p.m. on Saturdays any time of year; with no activity allowed on Sundays or state holidays. (10)

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

10.1 CONSTRUCTION NOISE LEVELS

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

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

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA). (20). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 10-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA Leq using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (21) to describe the construction activities for each stage of Project construction.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE AND RECEIVER LOCATIONS

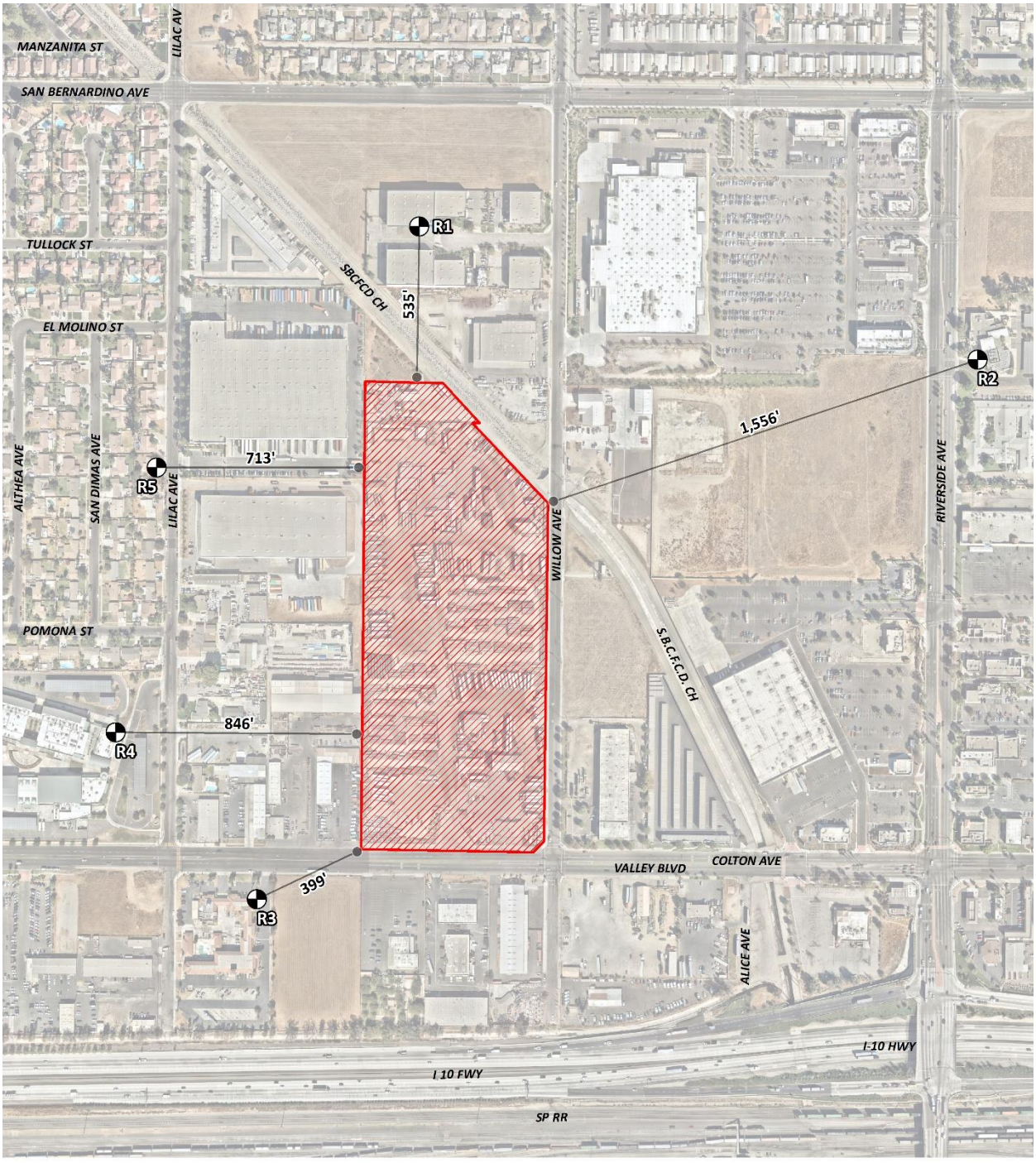


TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})[2]
Demolition	Demolition Equipment	69	73
	Backhoes	61	
	Hauling Trucks	71	
Site Preparation	Crawler Tractors	77	79
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	74
	Tractors	72	
	Welders	65	
Paving	Pavers	70	74
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	72
	Air Compressors	67	
	Generator Sets	67	

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

10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when multiple pieces of equipment with the highest reference noise level are operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. Consistent with FTA guidance for general construction noise assessment, Table 10-1 presents the combined noise level for all equipment, assuming they operate at the same time. As shown on Table 10-2, the construction noise levels are expected to range from 53.2 to 66.6 dBA L_{eq}, and the highest construction levels are expected to range from 60.2 to 66.6 dBA L_{eq} at the nearest receiver locations from the property line. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	59.2	65.2	65.2	60.2	60.2	58.2	65.2
R2	54.2	60.2	60.2	55.2	55.2	53.2	60.2
R3	60.6	66.6	66.6	61.6	61.6	59.6	66.6
R4	58.9	64.9	64.9	59.9	59.9	57.9	64.9
R5	59.5	65.5	65.5	60.5	60.5	58.5	65.5

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

10.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	65.2	80	No
R2	60.2	80	No
R3	66.6	80	No
R4	64.9	80	No
R5	65.5	80	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 10-2.
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground-borne vibration levels resulting from typical construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA) (7). However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used.

Ground vibration levels associated with various types of construction equipment are summarized on Table 10-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. The FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 10-5 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 399 feet to 1,556 feet from Project construction activities (at the Project site boundary), construction vibration levels are estimated to range from 0.000 to 0.001 PPV in/sec and will remain below the County of San Bernardino 0.2 PPV in/sec threshold for vibration at all receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site.

Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating simultaneously adjacent to the Project site perimeter.

TABLE 10-5: PROJECT CONSTRUCTION VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)	Receiver PPV Levels (in/sec)[2]					Threshold PPV (in/sec)[3]	Threshold Exceeded?[4]
		Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Peak Vibration		
R1	535'	0.000	0.000	0.001	0.001	0.001	0.2	No
R2	1,556'	0.000	0.000	0.000	0.000	0.000	0.2	No
R3	399'	0.000	0.001	0.001	0.001	0.001	0.2	No
R4	846'	0.000	0.000	0.000	0.000	0.000	0.2	No
R5	713'	0.000	0.000	0.000	0.001	0.001	0.2	No

[1] Receiver locations are shown on Exhibit 10-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 10-4.
[3] County of San Bernardino Development Code, Section 83.01.090(a) (Appendix 3.1)
[4] Does the vibration level exceed the maximum acceptable vibration threshold?

10.6 CONCRETE CRUSHING CONSTRUCTION REFERENCE NOISE LEVELS

An additional analysis was completed to assess potential noise level impacts due to concrete crushing activities planned near the eastern project site boundary on Willow Avenue. Exhibit 10-B shows the location of the planned concrete crushing activity area in relation to the nearest receiver locations. The concrete crushing construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published in the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels (22). Table 10-6 provides a summary of the reference average L_{eq} noise levels used to describe concrete crushing construction activities. The reference noise level summary describes construction activity noise levels with multiple pieces of concrete construction equipment operating simultaneously and includes source noise levels for a hoe ram or breaker representing a percussion hammer fitted to an excavator for breaking concrete. A default ground attenuation factor of 0.5 was used in the CadnaA noise prediction model to account for mixed ground representing a combination of hard and soft surfaces.

TABLE 10-6: CONCRETE CRUSHING CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})[2]
Concrete Crushing	Impact Hammer (hoe ram)	83	84
	Front End Loader	75	
	Dump Truck	72	

[1] FHWA's Roadway Construction Noise Model, January 2006.
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance for general construction noise assessment.

10.7 CONCRETE CRUSHING CONSTRUCTION NOISE ANALYSIS AND COMPLIANCE

Using the reference RCNM concrete crushing construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when multiple pieces of equipment with the highest reference noise level are operating at the closest point from the edge of primary construction activity (as shown on Exhibit 10-B) to each receiver location.

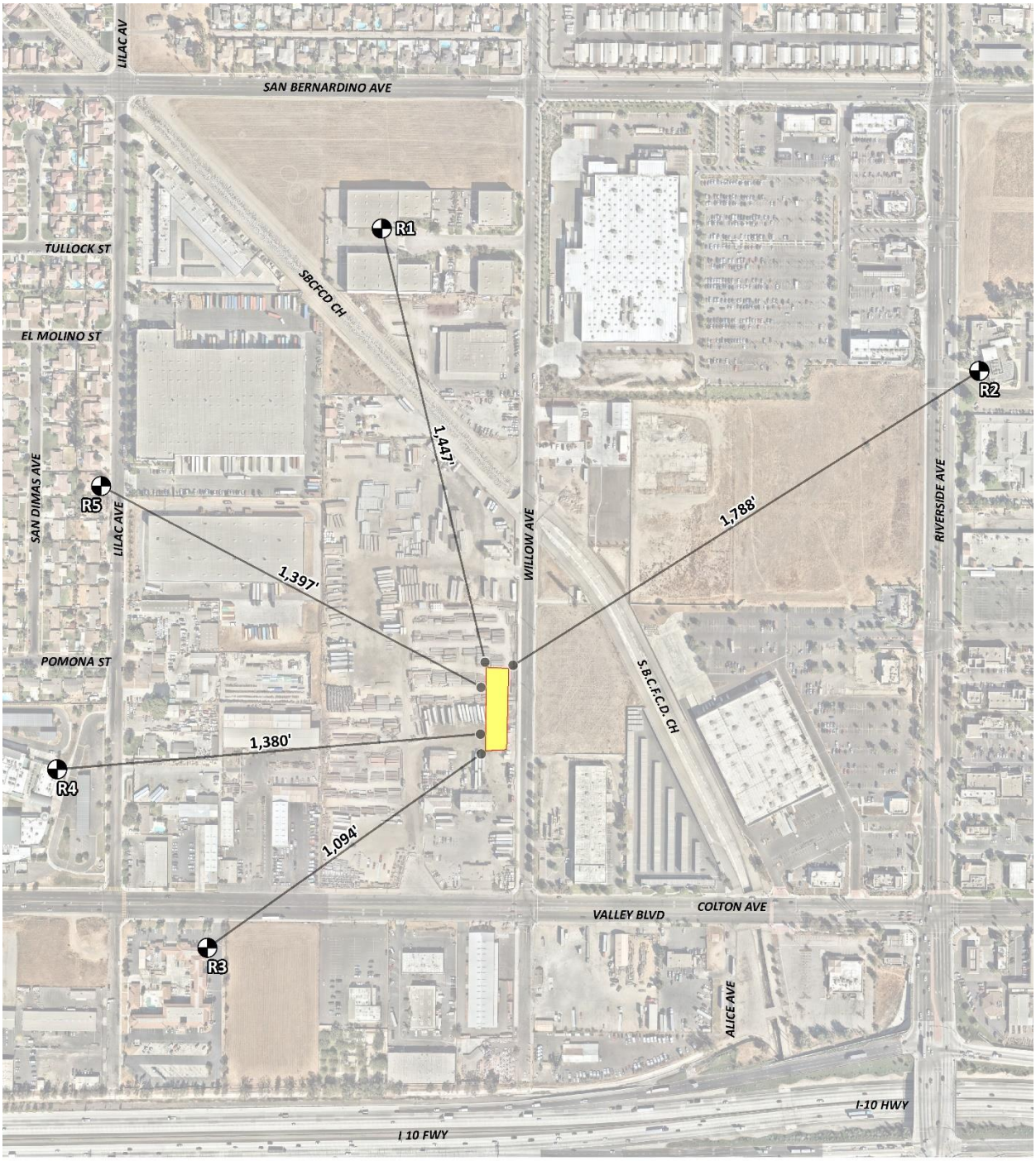
As shown on Table 10-7, the concrete crushing construction noise levels are estimated to range from 48.8 to 53.0 dBA L_{eq} at the nearest receiver locations. The concrete crushing construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold. Therefore, the noise impacts due to the Project concrete crushing noise is considered *less than significant* at all receiver locations. Appendix 10.2 includes the detailed CadnaA concrete crushing construction equipment noise model inputs.

TABLE 10-7: CONCRETE CRUSHING CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Concrete Crushing[2]	Daytime Threshold[3]	Threshold Exceeded?[4]
R1	50.5	80	No
R2	48.8	80	No
R3	53.0	80	No
R4	51.5	80	No
R5	51.3	80	No

[1] Noise receiver locations are shown on Exhibit 10-B.
[2] Concrete crushing noise level calculations provided in Appendix 10.2
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[4] Do the estimated Project construction noise levels exceed the daytime construction noise level threshold?

EXHIBIT 10-B: CONCRETE CRUSHING NOISE SOURCE LOCATIONS



10.8 CONCRETE CRUSHING CONSTRUCTION VIBRATION ANALYSIS AND COMPLIANCE

Using the vibration source level of construction equipment list provided on Table 10-4 that includes source levels for a hoe ram or breaker representing a percussion hammer fitted to an excavator for breaking concrete and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project concrete crushing construction vibration impacts. Table 10-8 presents the expected concrete crushing construction equipment vibration levels when the equipment with the highest reference vibration activity operating at the closest point from the edge of concrete crushing activity to each receiver location.

At distances ranging from 1,094 feet to 1,788 feet from the Project concrete crushing construction activities as shown on Exhibit 10-B, construction vibration levels are estimated at 0.000 PPV (in/sec) and will remain below the County of San Bernardino 0.2 in/sec PPV threshold for vibration at all receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during Project concrete crushing construction activities at the Project site.

TABLE 10-8: CONCRETE CRUSHING EQUIPMENT VIBRATION LEVELS

Receiver[1]	Distance to Concrete Crushing Activity (Feet)	Receiver PPV Levels (in/sec)[2]					Threshold PPV (in/sec)[3]	Threshold Exceeded?[4]
		Hoe Ram (Breaker)	Jack-hammer	Loaded Trucks	Large Bulldozer	Peak Vibration		
R1	1,447'	0.000	0.000	0.000	0.000	0.000	0.2	No
R2	1,788'	0.000	0.000	0.000	0.000	0.000	0.2	No
R3	1,094'	0.000	0.000	0.000	0.000	0.000	0.2	No
R4	1,380'	0.000	0.000	0.000	0.000	0.000	0.2	No
R5	1,397'	0.000	0.000	0.000	0.000	0.000	0.2	No

[1] Concrete Crushing receiver locations are shown on Exhibit 10-B
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 10-4.
[3] County of San Bernardino Development Code, Section 83.01.090(a) (Appendix 3.1)
[4] Does the vibration level exceed the maximum acceptable vibration threshold?

10.9 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building area as shown on Exhibit 10-C. Since the nighttime concrete pours will take place outside the permitted City of Rialto Development Code, Section 9.50.070 hours of 7:00 a.m. to 5:30 p.m. Monday through Friday from October 1st to April 30th, 6:00 a.m. to 7:00 p.m. Monday through Friday from May 1st to September 30th, and 8:00 a.m. to 5:00 p.m. on Saturdays any time of year, the Project Applicant shall be required to obtain authorization for nighttime work from the City of Rialto. Any nighttime construction noise activities shall satisfy the FTA residential 70 dBA L_{eq} noise limit outlined in Table 4-1. The

reference concrete pour noise levels are expected to occur during the building construction stage and range from 65 to 72 dBA L_{eq} at 50 feet with a combined noise level of 74 dBA L_{eq} as previously shown on Table 10.1.

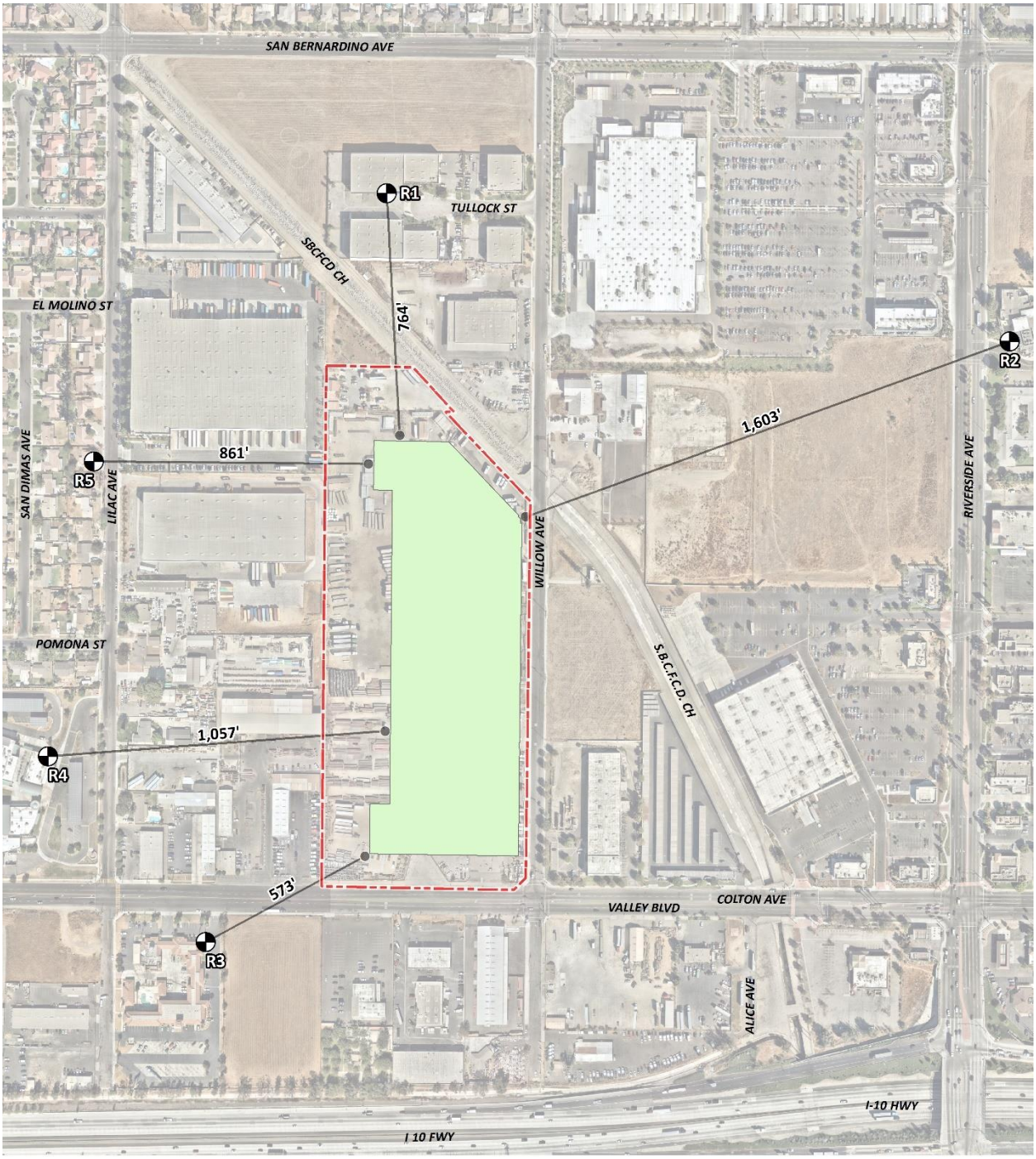
As shown on Table 10-9, the noise levels associated with the nighttime concrete pour activities (paving) are estimated to range from 48.6 to 52.2 dBA L_{eq} and will satisfy the FTA 70 dBA L_{eq} nighttime residential noise level threshold at all the receiver locations. Based on the results of this analysis, all nearest noise receiver locations will experience *less than significant* impacts due to the Project related nighttime concrete pour activities. Appendix 10.3 includes the CadnaA nighttime concrete pour noise model inputs.

TABLE 10-9: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Paving Construction[2]	Nighttime Threshold[3]	Threshold Exceeded?[4]
R1	52.5	70	No
R2	48.7	70	No
R3	51.2	70	No
R4	48.6	70	No
R5	49.5	70	No

[1] Noise receiver locations are shown on Exhibit 8-B.
[2] Paving construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations.
[3] Exterior noise level standards as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the nighttime construction noise level threshold?

EXHIBIT 10-C: NIGHTTIME CONCRETE POUR NOISE SOURCE AND RECEIVER LOCATIONS



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11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
4. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
5. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
6. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
7. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
8. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
9. **City of Rialto.** *General Plan Safety & Noise Element.* December 2010.
10. —. *Municipal Code, Chapter 9.50 - Noise Control.*
11. **County of San Bernardino.** *Code of Ordinances, Title 8 Development Code, Chapter 83.01 General Performance Standards.*
12. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
13. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
14. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
15. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
16. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
17. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
18. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
19. **Urban Crossroads.** *Birtcher Logistics Center Rialto (MC2020-0031).* June 2021.
20. **Department of Environment, Food and Rural Affiars (Defra).** *Update of Noise Database for Prediction of Noise on Construction and Open Sites.* 2004.
21. **FHWA.** *Roadway Construction Noise Model.* January 2006.

22. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.

12 CERTIFICATION

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

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EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

COUNTY OF SAN BERNARDINO DEVELOPMENT CODE

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§ 83.01.080 Noise.

This Section establishes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses.

(a) *Noise Measurement.* Noise shall be measured:

(1) At the property line of the nearest site that is occupied by, and/or zoned or designated to allow the development of noise-sensitive land uses;

(2) With a sound level meter that meets the standards of the American National Standards Institute (ANSI § SI4 1979, Type 1 or Type 2);

(3) Using the “A” weighted sound pressure level scale in decibels (ref. pressure = 20 micronewtons per meter squared). The unit of measure shall be designated as dB(A).

(b) *Noise Impacted Areas.* Areas within the County shall be designated as “noise-impacted” if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Subdivision (d) (Noise Standards for Stationary Noise Sources) and Subdivision (e) (Noise Standards for Adjacent Mobile Noise Sources), below. New development of residential or other noise-sensitive land uses shall not be allowed in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to these standards. Noise-sensitive land uses shall include residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses.

(c) *Noise Standards for Stationary Noise Sources.*

(1) *Noise Standards.* Table 83-2 (Noise Standards for Stationary Noise Sources) describes the noise standard for emanations from a stationary noise source, as it affects adjacent properties:

Table 83-2

Noise Standards for Stationary Noise Sources

Affected Land Uses (Receiving Noise)	***7:00 a.m. - 10:00 p.m. Leq***	***10:00 p.m. - 7:00 a.m. Leq***
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)

Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.

(2) *Noise Limit Categories.* No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:

(A) The noise standard for the receiving land use as specified in Subdivision (b) (Noise-Impacted Areas), above, for a cumulative period of more than 30 minutes in any hour.

(B) The noise standard plus five dB(A) for a cumulative period of more than 15 minutes in any hour.

(C) The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour.

(D) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour.

(E) The noise standard plus 20 dB(A) for any period of time.

(d) *Noise Standards for Adjacent Mobile Noise Sources.* Noise from mobile sources may affect adjacent properties adversely. When it does, the noise shall be mitigated for any new development to a level that shall not exceed the standards described in the following Table 83-3 (Noise Standards for Adjacent Mobile Noise Sources).

Table 83-3

Noise Standards for Adjacent Mobile Noise Sources

Land Use		***Ldn (or CNEL) dB(A)***	
Categories	***Uses***	***Interior*** (1)	***Exterior*** (2)
Residential	Single and multi-family, duplex, mobile homes	45	60(3)
Commercial	Hotel, motel, transient housing	45	60(3)
	Commercial retail, bank, restaurant	50	N/A
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	N/A
Institutional/Public	Hospital, nursing home, school classroom, religious institution, library	45	65
Open Space	Park	N/A	65

Notes:

(1) The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.

(2) The outdoor environment shall be limited to:
- Hospital/office building patios
- Hotel and motel recreation areas
- Mobile home parks

· Multi-family private patios or balconies · Park picnic areas · Private yard of single-family dwellings · School playgrounds
(3) An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.
CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

(e) *Increases in Allowable Noise Levels.* If the measured ambient level exceeds any of the first four noise limit categories in Subdivision (d)(2), above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category in Subdivision (d)(2), above, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

(f) *Reductions in Allowable Noise Levels.* If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 83-2 (Noise Standards for Stationary Noise Sources) shall be reduced by five dB(A).

(g) *Exempt Noise.* The following sources of noise shall be exempt from the regulations of this Section:

(1) Motor vehicles not under the control of the commercial or industrial use.

(2) Emergency equipment, vehicles, and devices.

(3) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

(h) *Noise Standards for Other Structures.* All other structures shall be sound attenuated against the combined input of all present and projected exterior noise to not exceed the criteria.

Table 83-4

Noise Standards for Other Structures

Typical Uses	***12-Hour Equivalent Sound Level (Interior) in dBA Ldn***
Educational, institutions, libraries, meeting facilities, etc.	45
General office, reception, etc.	50
Retail stores, restaurants, etc.	55
Other areas for manufacturing, assembly, testing, warehousing, etc.	65

In addition, the average of the maximum levels on the loudest of intrusive sounds occurring during a 24-hour period shall not exceed 65 dBA interior.

(Ord. 4011, passed - -2007; Am. Ord. 4245, passed - -2014)

APPENDIX 3.2:

CITY OF RIALTO MUNICIPAL CODE

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Chapter 9.50 - NOISE CONTROL

Sections:

A. It is the purpose of these regulations to implement the goals and objectives of the noise element of the city's general plan to establish community-wide noise standards and to serve as a reference for locating other city regulations relating to noise in the community. It is further the purpose of these regulations to recognize that the existence of excessive noise within the city is a condition that is detrimental to the health, safety, welfare and quality of life of the citizens and shall be regulated in the public interest.

B. In furtherance of the foregoing purpose, it is found and declared as follows:

1. The making, creation or maintenance of such loud, unnecessary, unnatural or unusual noises that are prolonged, unusual, annoying, disturbing and unnatural in their time, place and use are a detriment to public health, comfort, convenience, safety, general welfare and the peace and quiet of the city and its inhabitants; and
2. The public necessity for the provisions and prohibitions contained in and enacted by this chapter is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions set forth in and enacted by this chapter are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, general welfare and property and the peace and quiet of the city and its inhabitants.

(Ord. 1417 § 1 (part), 2008)

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

"Construction equipment" means tools, machinery or equipment used in connection with construction operations, including all types of "special construction" equipment as defined in the pertinent sections of California Vehicle Code when used in the construction process on any construction site, home improvement site or property maintenance site, regardless of whether such site be located on highway or off highway.

"Enforcement officer" means a city code enforcement officer or peace officer authorized to enforce the provisions and prohibitions of this chapter pursuant to Section 9.50.080.

"Plainly audible" means any sound that can be detected by a person using his or her unaided hearing faculties. As an example, if the sound source under investigation is a portable or personal vehicular sound amplification or reproduction device, the investigating enforcement officer need not determine the title of a song, specific words, or the artist performing the song. The detection of the vibration from the rhythmic bass component of the music is sufficient to constitute a plainly audible sound.

"Public right-of-way" means any street, avenue, boulevard, highway, sidewalk, alley or similar place, owned or controlled by a government entity.

"Public space" means any real property or structures on real property, owned by a government entity and normally accessible to the public, including but not limited to parks and other recreation areas.

"Responsible person" means:

1. Any person who owns, leases or is lawfully in charge of the property or motor vehicle where the noise violation takes place; or
2. Any person who owns or controls the source of the noise or violation. If the responsible person is a minor, then the parent or guardian who has custody of the child at the time of the violation shall be the responsible person who is liable under this chapter.

(Ord. 1417 § 1 (part), 2008)

9.50.030 - Prohibited acts.

A. It is unlawful for any person to engage in the following activities:

1. Sounding any horn or signal device on any automobile, motorcycle, bus or other motor vehicle in any other manner or circumstances or for any other purpose than required or permitted by the Vehicle Code or other California laws.
2. Racing the engine of any motor vehicle while the vehicle is not in motion, except when necessary to do so in the course of repairing, adjusting or testing the same.
3. Operating or permitting the use of any motor vehicle on any public right-of-way or public place or on private property within a residential zone for which the exhaust muffler, intake muffler or any other noise abatement device has been modified or changed in a manner such that the noise emitted by the motor vehicle is increased above that emitted by the vehicle as originally manufactured.
4. Operating or permitting the use or operation of personal or commercial music or sound amplification or production equipment that is:
   a. Plainly audible across property boundaries;
   b. Plainly audible through partitions common to two residences within a building;
   c. Plainly audible at a distance of fifty feet in any direction from the source of music or sound between the hours of eight a.m. and ten p.m.; or
   d. Plainly audible at a distance of twenty-five feet in any direction from the source of music or sound between the hours of ten p.m. and eight a.m.
5. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or any motor vehicle burglar alarm, except for emergency purposes or for testing, unless such alarm is terminated within fifteen minutes of activation.
6. Creating excessive noise adjacent to any school, church, court or library while the same is in use, or adjacent to any hospital or care facility, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital, students in the school, users of the court or library, provided conspicuous signs are displayed in such streets indicating the presence of a school, institution of learning, church, court or hospital.
7. Making or knowingly and unreasonably permitting to be made any unreasonably loud, unnecessary or unusual noise that disturbs the comfort, repose, health, peace and quiet or which causes discomfort or annoyance to any reasonable person of normal sensitivity. The characteristics and conditions that may be considered in determining whether this section has been violated, include, but are not limited to, the following:
   a. The level of noise;

b. Whether the nature of the noise is usual or unusual;

c. Whether the origin of the noise is natural or unnatural;

d. The level of the background noise;

e. The proximity of the noise to sleeping facilities;

f. The nature and zoning of the areas within which the noise emanates;

g. The density of the inhabitation of the area within which the noise emanates;

h. The time of day or night the noise occurs;

i. The duration of the noise;

j. Whether the noise is recurrent, intermittent or constant; and

k. Whether the noise is produced by a commercial or noncommercial activity.

B. A violation of this section is an infraction and a public nuisance.

C. A violation of this section may result in the following:

1. Issuance of an infraction citation;
2. Issuance of a notice of public nuisance;
3. Imposition of criminal and civil penalties; and
4. Confiscation and impoundment as evidence, of the components that are amplifying or transmitting the prohibited noise.

D. An enforcement officer who encounters a violation of this section may issue a written notice to the responsible person demanding immediate abatement of the violation (written notice). The written notice shall inform the recipient that a second violation of the same provision within a seventy-two-hour period may result in the issuance of a criminal citation and/or notice of public nuisance, the imposition of criminal and civil penalties, and confiscation and impoundment as evidence, of the components that are amplifying or transmitting the prohibited noise.

E. Any peace officer who encounters a second violation of this section within a seventy-two-hour period following issuance of a written notice is empowered to confiscate and impound as evidence, any or all of the components amplifying or transmitting the sound.

F. Any person claiming legal ownership of the items confiscated and impounded under this section may request the return of the item by filing a written request with the police department within seven calendar days of the confiscation. Such requests shall be processed in accordance with the procedures adopted by the department.

(Ord. 1417 § 1 (part), 2008)

9.50.040 - Excessive noise and vibration emanating from a motor vehicle.

A. No person shall operating or occupy a motor vehicle on any public right-of-way, public place or private property, while operating or permitting the use or operation of any radio, stereo receiver, musical instrument, television, computer, compact disc player, tape recorder, cassette player or any other device for the production or reproduction of sound from within the motor vehicle so that the sound is plainly audible at a distance of fifty feet from such vehicle, or in the case of a motor vehicle on private property, beyond the property line.

B. Pursuant to Section 9.50.130, a violation of this section is a misdemeanor offense and a public nuisance.

C. A violation of this section may result in the following:

1. Issuance of a misdemeanor citation;

2. Issuance of a notice of public nuisance;
3. Imposition of criminal and civil penalties; and
4. Immediate confiscation and impoundment as evidence, of the components that are amplifying or transmitting the prohibited noise or the immediate confiscation and impoundment of the motor vehicle to which the component is attached if the same may not be removed without causing harm to the vehicle or the component.

D. Any person claiming legal ownership of a motor vehicle confiscated and impounded under this section may request the return of the vehicle by filing a written request with the police department within seven calendar days of the confiscation. Such requests shall be processed in accordance with the procedures adopted by the department.

E. Any person claiming legal ownership of the items confiscated and impounded under this section, other than a motor vehicle, may request the return of the item by filing a written request with the police department, which shall be processed in accordance with the procedures adopted by the department.

(Ord. 1417 § 1 (part), 2008)

9.50.050 - Controlled hours of operation.

It is unlawful for any person to engage in the following activities other than between the hours of seven a.m. and eight p.m. in all zones:

A. Operate or permit the use of powered model vehicles and planes;

B. Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous or unnecessary noise within one thousand feet of a residence;

C. Operate or permit the use of domestic power tools, or machinery or any other equipment or tool in any garage, workshop, house or any other structure;

D. Operate or permit the use of gasoline or electric powered leaf blowers, such as commonly used by gardeners and other persons for cleaning lawns, yards, driveways, gutters and other property;

E. Operate or permit the use of privately operated street/parking lot sweepers or vacuums, except that emergency work and/or work necessitated by unusual conditions may be performed with the written consent of the city manager;

F. Operate or permit the use of pile driver, steam or gasoline shovel, pneumatic hammer, steam or electric hoist or other similar devices;

G. Operate or permit the use of electrically operated compressor, fan, and other similar devices;

H. Perform ground maintenance on golf course grounds and tennis courts contiguous to golf courses that creates a noise disturbance across a residential or commercial property line;

I. Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of ten thousand pounds, or of any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than fifteen minutes in any hour while the vehicle is stationary and on a public right-of-way or public space except when movement of the vehicle is restricted by other traffic;

J. Repair, rebuild, reconstruct or dismantle any motor vehicle or other mechanical equipment or devices in a manner so as to be plainly audible across property lines.

(Ord. 1417 § 1 (part), 2008)

9.50.060 - Exemptions.

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

A. Those noise events in the community (e.g., airport noise, arterial traffic noise, railroad noise) that are more accurately measured by application of the general plan noise element policy, utilizing the community noise equivalent level (CNEL) method;

B. Activities conducted on the grounds of any public or private school during regular hours of operation;

C. Outdoor gatherings, public dances, shows and sporting and entertainment events provided the events are authorized by the city;

D. Activities conducted at public spaces during regular hours of operation;

E. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work;

F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions;

G. Mobile noise sounds associated with agricultural operations provided such operations do not take place between the hours of eight p.m. and seven a.m. on weekdays, including Saturdays, or at any time on Sunday or a state holiday;

H. Mobile noise sources associated with agricultural pest control through pesticide application;

I. Warning devices necessary for the protection of the public safety, including, but not limited to, police, fire and ambulance sirens and train horns and sounds for the purpose of alerting persons to the existence of an emergency;

J. Construction, repair or excavation necessary for the immediate preservation of life or property;

K. Construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation departments, public work projects or essential public services and facilities, including trash collection and those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission;

L. Construction, repair or excavation work performed pursuant to a valid written agreement with the city or any of its political subdivisions which agreement provides for noise mitigation measures;

M. Any activity to the extent regulation thereof has been preempted by state or federal law;

N. Any activity or noise source governed elsewhere in this code. Such activities include but are not limited to:

1. Security alarm systems (see Chapter 7.01 of this code),
2. Animal noise (see Title 6 of this code),
3. Sound trucks and advertising by sound (see Chapter 9 of this code),
4. Performance standards for various commercial and industrial uses (see Title 18 of this code);

O. Sounds generated in commercial and industrial zones that are necessary and incidental to the uses permitted therein;

P. Sounds generated from or incidental to emergency repairs to any public works function; and

Q. Sounds generated in connection with speech or communication protected by the U.S. Constitution or the California Constitution, expect to the extent such sounds are subject to permissible time, manner and place restrictions.

(Ord. 1417 § 1 (part), 2008)

9.50.070 - Disturbances from construction activity.

A. No person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours provided for by subsection B of this section.

B. The permitted hours for such construction work are as follows:

1. October 1st through April 30th.

Monday—Friday	7:00 a.m. to 5:30 p.m.
Saturday	8:00 a.m. to 5:00 p.m.
Sunday	No permissible hours
State holidays	No permissible hours

2. May 1st through September 30th.

Monday—Friday	6:00 a.m. to 7:00 p.m.
Saturday	8:00 a.m. to 5:00 p.m.
Sunday	No permissible hours
State holidays	No permissible hours

C. For purposes of this section, the following definitions shall apply:

1. "Building" means any structure used or intended for supporting or sheltering any use or occupancy.
2. "Structure" means that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

D. For purposes of this section, the following exceptions shall apply:

1. Emergency repair of existing installations, equipment, or appliances; and
2. Such work that complies with the terms and conditions of a written early work permit issued by the city manager or his or her designee upon a showing of a sufficient need and justification for the permit due to hot or inclement weather, the use of an unusually long process material, or other circumstances of an unusual and compelling nature.

(Ord. 1417 § 1 (part), 2008)

9.50.080 - Administration.

Except as otherwise provided, the provisions and prohibitions of this chapter shall be jointly administered by and the responsibility of the city's police department and department of development services, code enforcement division. The chief of police may adopt administrative rules and regulations which are consistent with the provisions of this chapter for the purpose of implementing the same.

(Ord. 1417 § 1 (part), 2008)

9.50.090 - Cost recovery for second response.

A. Any and all personnel who may be deployed by the city pursuant to this chapter shall be deemed to be on regular duty under the general supervision of the chief of police, fire chief, the director of development services or other city department director, and any officer or employee in charge under their respective commands and shall be entitled to any and all benefits provided by law or ordinance for such personnel as employees of the city, except that the rate of pay for such special security services shall be set forth herein. The pay for each employee thus employed during such employment shall be at his or her actual rate of pay. The chief of police or other department director, as the case may be, shall report to the chief financial officer the name of the person, firm, organization or corporation requiring such personnel, the names of the employees so employed and the number of hours of employment of each. The chief financial officer shall thereupon bill the person.

B. Whenever any enforcement officer issues a written warning to a responsible person to discontinue a noise violation, the responsible person shall be liable for the actual cost of each subsequent response required to abate the violation within seventy-two hours of the issuance of the written warning (response charge).

C. The bill for the response charge shall be served upon the responsible person within thirty days after the violation. If the responsible person has no last known business or residence address, the location of the violation shall be deemed to be the proper address for service. The bill shall include a notice of the right of the person being charged to request a hearing to dispute the imposition of the response charge or the amount of the charge.

D. The response charge shall be deemed to be a civil debt to the city.

E. All responsible persons shall be jointly and severally liable for the response charge regardless of whether or not they received a written notice.

(Ord. 1417 § 1 (part), 2008)

9.50.100 - Public nuisance.

A violation of this chapter by any person responsible for committing, causing or maintaining such violation shall constitute a public nuisance that shall be subject to the provisions of Chapters 9.39 and 9.42 of this title.

(Ord. 1417 § 1 (part), 2008)

9.50.110 - Infraction violation.

A violation of Section 9.50.030, 9.50.050 or 9.50.070 of this chapter by any person responsible for committing, causing or maintaining such violation shall constitute an infraction violation and the violator shall be subject to the provisions set forth in Section 1.16.010 of this code, including but not limited to the imposition of any and all criminal penalties set forth therein.

(Ord. 1417 § 1 (part), 2008)

9.50.120 - Misdemeanor violation.

A violation of Section 9.50.040 of this chapter by any person responsible for committing, causing or maintaining such violation shall constitute a misdemeanor violation which shall be subject to the provisions set forth in Section 1.16.010 of this code, including but not limited to the imposition of any and all criminal penalties set forth therein.

(Ord. 1417 § 1 (part), 2008)

9.50.130 - Civil fines.

Any person convicted of an infraction or misdemeanor violation under this chapter shall, for each separate violation, be subject to: (A) a fine in an amount not to exceed two hundred fifty dollars for a first conviction of an offense; (B) a fine in an amount not to exceed five hundred dollars for a second conviction of the same offense within a twelve-month period from the date of the first offense; and (C) a fine in an amount not to exceed seven hundred fifty dollars for the third conviction of the same offense within a twelve-month period from the date of the first offense. The fine for a fourth and any subsequent convictions of the same offense within a twelve-month period from the date of the first offense shall be one thousand dollars.

(Ord. 1417 § 1 (part), 2008)

9.50.140 - Additional penalties.

Nothing in this chapter shall preclude the city from pursuing any other legal remedies provided by this code or otherwise available to the city at law or in equity.

(Ord. 1417 § 1 (part), 2008)

APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 13681 Study Area Photos

L1_E
34, 4' 34.990000"117, 22' 33.460000"

L1_N
34, 4' 35.080000"117, 22' 33.460000"

L1_S
34, 4' 35.000000"117, 22' 33.460000"

L1_W
34, 4' 35.030000"117, 22' 33.460000"

L2_E
34, 4' 30.720000"117, 22' 11.080000"

L2_N
34, 4' 30.630000"117, 22' 11.100000"

JN: 13681 Study Area Photos

L2_S
34, 4' 30.690000"117, 22' 11.100000"

L2_W
34, 4' 30.630000"117, 22' 11.080000"

L3_E
34, 4' 20.160000"117, 22' 44.720000"

L3_N
34, 4' 20.120000"117, 22' 44.500000"

L3_S
34, 4' 20.200000"117, 22' 44.720000"

L3_W
34, 4' 20.160000"117, 22' 44.580000"

JN: 13681 Study Area Photos

L4_E
34, 4' 26.970000"117, 22' 43.980000"

L4_N
34, 4' 26.790000"117, 22' 43.950000"

L4_S
34, 4' 26.950000"117, 22' 43.980000"

L4_W
34, 4' 26.890000"117, 22' 43.950000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

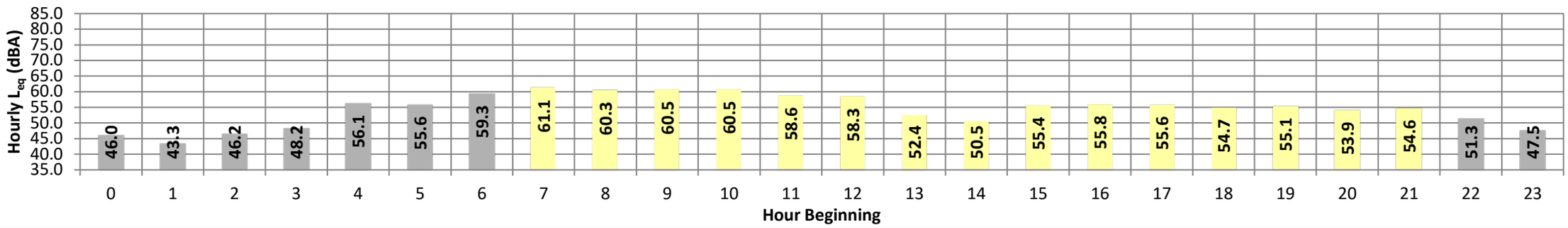
Date: Wednesday, June 9, 2021
Project: Valley Boulevard and Willow Avenue

Location: L1 - North of the Project site on West Tullock Street near the House of Hope Church located at 327 West Tullock Street.

Meter: Piccolo II

JN: 13681
Analyst: N. Boyko

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	46.0	53.3	43.4	52.8	52.0	49.7	48.1	46.0	44.9	43.8	43.7	43.5	46.0	10.0	56.0
	1	43.3	53.1	40.9	51.7	48.6	46.4	45.2	43.0	42.2	41.3	41.2	41.0	43.3	10.0	53.3
	2	46.2	53.5	42.4	53.3	53.0	51.7	50.0	46.0	44.4	42.8	42.7	42.5	46.2	10.0	56.2
	3	48.2	56.3	43.1	55.8	54.9	52.6	51.6	48.5	46.4	43.9	43.6	43.2	48.2	10.0	58.2
	4	56.1	65.0	47.0	64.9	64.5	63.0	61.4	55.7	52.8	47.6	47.4	47.1	56.1	10.0	66.1
	5	55.6	76.1	60.2	75.8	75.0	71.7	69.2	64.2	62.2	60.7	60.5	60.3	55.6	10.0	65.6
	6	59.3	76.4	62.4	76.1	75.9	73.7	72.1	66.9	64.4	62.9	62.8	62.6	59.3	10.0	69.3
Day	7	61.1	73.4	56.3	73.1	72.7	70.6	68.6	63.2	61.5	57.7	57.0	56.5	61.1	0.0	61.1
	8	60.3	77.2	62.4	76.8	76.6	74.6	73.2	65.6	64.3	63.0	62.8	62.5	60.3	0.0	60.3
	9	60.5	64.4	56.6	64.0	63.5	62.7	62.4	61.2	60.2	58.0	57.5	56.8	60.5	0.0	60.5
	10	60.5	67.8	59.1	67.0	66.4	64.9	64.4	63.1	62.2	60.1	59.8	59.3	60.5	0.0	60.5
	11	58.6	62.2	54.5	61.9	61.5	60.7	60.4	59.6	58.4	55.7	55.0	54.6	58.6	0.0	58.6
	12	58.3	68.6	57.8	67.8	67.0	65.6	65.0	62.8	61.2	59.1	58.7	58.0	58.3	0.0	58.3
	13	52.4	59.4	48.0	58.9	58.2	56.8	56.1	52.8	50.7	48.7	48.4	48.1	52.4	0.0	52.4
	14	50.5	55.7	47.6	55.3	54.9	53.8	53.2	51.1	49.5	48.2	47.9	47.6	50.5	0.0	50.5
	15	55.4	65.4	51.2	64.1	63.0	60.2	58.9	54.5	53.1	51.8	51.6	51.3	55.4	0.0	55.4
	16	55.8	64.0	51.8	63.6	63.0	61.1	59.4	55.4	54.0	52.5	52.3	51.9	55.8	0.0	55.8
	17	55.6	68.7	63.5	68.0	67.2	66.3	66.0	65.1	64.6	63.9	63.8	63.6	55.6	0.0	55.6
	18	54.7	61.7	51.1	60.8	60.1	58.2	57.3	55.1	53.5	51.9	51.6	51.2	54.7	0.0	54.7
	19	55.1	63.8	50.3	63.3	62.7	61.2	59.8	54.8	52.9	51.0	50.7	50.4	55.1	5.0	60.1
	20	53.9	63.9	49.1	63.4	62.0	58.5	56.4	53.6	51.8	49.9	49.6	49.2	53.9	5.0	58.9
	21	54.6	62.0	49.1	61.7	61.3	59.9	58.4	55.0	52.7	49.9	49.6	49.2	54.6	5.0	59.6
Night	22	51.3	58.1	45.5	57.5	57.0	55.8	54.9	52.3	49.7	46.5	46.1	45.7	51.3	10.0	61.3
	23	47.5	56.0	43.6	55.3	54.4	51.9	50.4	47.4	45.8	44.3	44.0	43.8	47.5	10.0	57.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	50.5	55.7	47.6	55.3	54.9	53.8	53.2	51.1	49.5	48.2	47.9	47.6
	Max	61.1	77.2	63.5	76.8	76.6	74.6	73.2	65.6	64.6	63.9	63.8	63.6
Energy Average		57.6	Average:		64.7	64.0	62.4	61.3	58.2	56.7	54.8	54.4	54.0
Night	Min	43.3	53.1	40.9	51.7	48.6	46.4	45.2	43.0	42.2	41.3	41.2	41.0
	Max	59.3	76.4	62.4	76.1	75.9	73.7	72.1	66.9	64.4	62.9	62.8	62.6
Energy Average		53.4	Average:		60.3	59.5	57.4	55.9	52.2	50.3	48.2	48.0	47.7

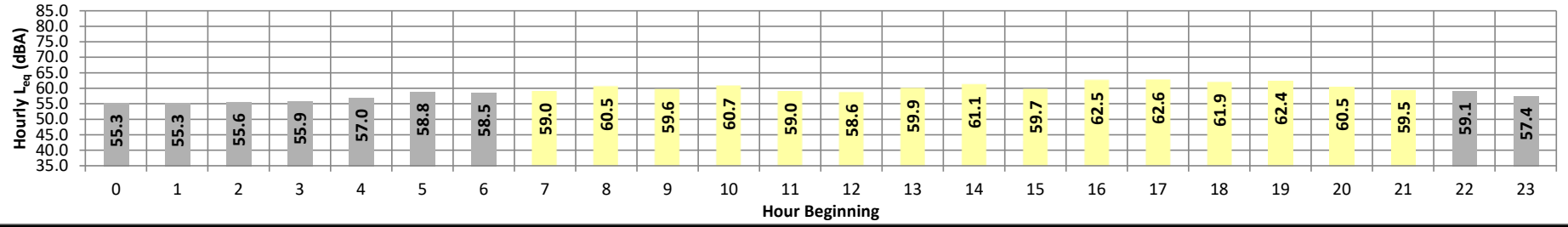
24-Hour	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
56.4	**57.6**	**53.4**

24-Hour Noise Level Measurement Summary

Date: Wednesday, June 9, 2021 *Location:* L2 - East of the Project site on Senior Way near the Rialto Senior Center located at 1401 South Riverside Avenue. *Meter:* Piccolo II *JN:* 13681

Project: Valley Boulevard and Willow Avenue *Analyst:* N. Boyko

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	55.3	63.1	51.8	62.6	62.0	60.7	59.2	55.0	53.3	52.1	52.0	51.8	55.3	10.0	65.3
	1	55.3	63.5	51.4	63.1	62.7	61.1	59.4	54.7	52.8	51.7	51.6	51.5	55.3	10.0	65.3
	2	55.6	68.6	51.1	68.0	67.0	64.3	61.5	54.7	52.9	51.5	51.3	51.2	55.6	10.0	65.6
	3	55.9	63.6	50.9	63.1	62.7	61.7	60.5	56.0	53.4	51.3	51.1	51.0	55.9	10.0	65.9
	4	57.0	68.8	50.7	68.0	67.1	64.6	62.3	57.0	54.2	51.3	51.0	50.8	57.0	10.0	67.0
	5	58.8	67.1	52.8	66.8	66.3	64.8	63.4	58.5	56.1	53.6	53.3	53.0	58.8	10.0	68.8
	6	58.5	67.1	52.3	66.6	65.7	63.9	62.9	58.7	56.0	53.1	52.8	52.4	58.5	10.0	68.5
Day	7	59.0	68.2	51.2	67.7	67.1	65.5	63.9	58.4	55.8	52.3	51.9	51.4	59.0	0.0	59.0
	8	60.5	73.9	52.4	73.4	72.7	70.4	68.2	60.5	56.3	53.5	52.9	52.5	60.5	0.0	60.5
	9	59.6	69.2	51.3	68.8	68.1	65.8	64.2	59.3	56.1	52.5	51.9	51.4	59.6	0.0	59.6
	10	60.7	69.8	55.0	69.4	68.8	66.8	65.0	60.5	57.5	55.7	55.4	55.1	60.7	0.0	60.7
	11	59.0	72.5	51.7	71.6	70.5	67.8	65.6	60.5	56.1	53.0	52.6	51.9	59.0	0.0	59.0
	12	58.6	67.8	51.7	67.4	66.7	64.9	63.1	58.1	55.3	52.6	52.2	51.9	58.6	0.0	58.6
	13	59.9	69.9	52.6	69.4	68.8	66.8	65.3	60.7	56.7	53.7	53.3	52.8	59.9	0.0	59.9
	14	61.1	70.9	52.5	70.4	69.9	67.9	66.2	60.3	56.7	53.4	53.0	52.7	61.1	0.0	61.1
	15	59.7	70.1	53.4	69.3	68.5	66.6	64.7	60.2	57.5	54.4	53.9	53.5	59.7	0.0	59.7
	16	62.5	72.4	55.2	71.8	70.8	68.5	66.7	62.0	59.5	56.2	55.8	55.4	62.5	0.0	62.5
	17	62.6	71.8	56.2	71.1	70.3	68.5	66.8	62.1	59.9	57.1	56.7	56.3	62.6	0.0	62.6
	18	61.9	71.6	55.7	71.2	70.6	68.3	66.9	61.9	59.5	56.7	56.3	55.9	61.9	0.0	61.9
	19	62.4	73.1	55.6	72.5	71.9	69.7	67.7	61.7	59.0	56.6	56.2	55.7	62.4	5.0	67.4
	20	60.5	70.7	55.0	70.2	69.6	68.0	66.4	61.4	58.3	55.9	55.5	55.2	60.5	5.0	65.5
	21	59.5	67.8	54.2	67.3	66.7	64.9	63.3	59.6	57.2	55.0	54.6	54.3	59.5	5.0	64.5
Night	22	59.1	68.1	53.1	67.6	67.1	64.9	62.9	58.9	56.5	53.8	53.5	53.1	59.1	10.0	69.1
	23	57.4	67.6	50.9	67.2	66.6	64.4	62.2	55.9	53.3	51.4	51.2	50.9	57.4	10.0	67.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	58.6	67.8	51.2	67.3	66.7	64.9	63.1	58.1	55.3	52.3	51.9	51.4
	Max	62.6	73.9	56.2	73.4	72.7	70.4	68.2	62.1	59.9	57.1	56.7	56.3
Energy Average		60.7	Average:		70.1	69.4	67.4	65.6	60.5	57.4	54.6	54.1	53.7
Night	Min	55.3	63.1	50.7	62.6	62.0	60.7	59.2	54.7	52.8	51.3	51.0	50.8
	Max	59.1	68.8	53.1	68.0	67.1	64.9	63.4	58.9	56.5	53.8	53.5	53.1
Energy Average		57.2	Average:		65.9	65.3	63.4	61.6	56.6	54.3	52.2	52.0	51.7

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
59.7	**60.7**	**57.2**

24-Hour Noise Level Measurement Summary

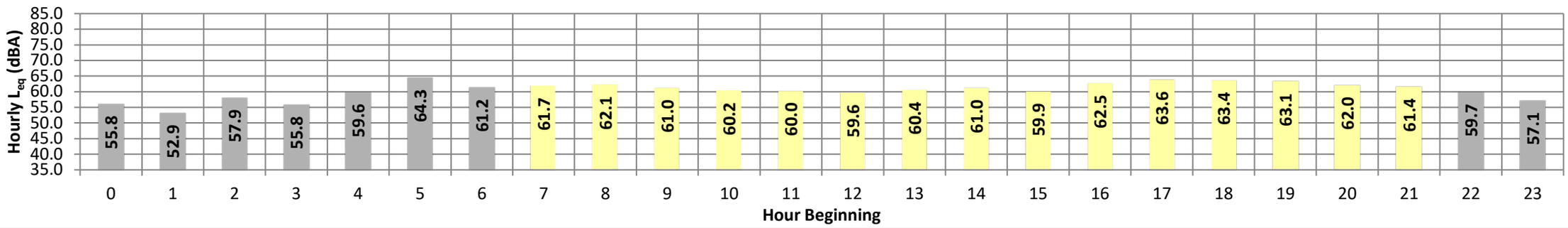
Date: Wednesday, June 9, 2021
Project: Valley Boulevard and Willow Avenue

Location: L3 - West of the Project site on Lilac Avenue near Joe Baca Middle School located at 1640 South Lilac Avenue.

Meter: Piccolo II

JN: 13681
Analyst: N. Boyko

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	55.8	66.4	50.1	65.9	65.0	61.7	59.2	54.6	52.8	50.8	50.5	50.2	55.8	10.0	65.8
	1	52.9	62.9	46.6	62.5	61.8	59.4	57.2	51.8	49.7	47.5	47.1	46.8	52.9	10.0	62.9
	2	57.9	70.6	47.9	70.2	69.3	64.7	61.3	53.4	51.0	48.9	48.5	48.1	57.9	10.0	67.9
	3	55.8	67.4	46.4	66.8	65.9	62.8	60.2	54.3	51.6	47.4	46.9	46.5	55.8	10.0	65.8
	4	59.6	71.1	47.2	70.8	70.1	67.2	64.7	57.6	52.6	48.3	47.7	47.4	59.6	10.0	69.6
	5	64.3	75.2	52.2	74.9	74.4	72.1	69.9	62.3	57.3	53.2	52.7	52.4	64.3	10.0	74.3
	6	61.2	76.8	50.3	76.4	75.8	73.1	70.9	63.2	57.3	51.2	50.8	50.4	61.2	10.0	71.2
Day	7	61.7	74.9	50.4	74.4	73.7	71.8	69.6	61.4	56.6	51.6	51.1	50.6	61.7	0.0	61.7
	8	62.1	74.4	52.9	73.9	73.1	69.2	67.2	61.9	57.4	53.7	53.4	53.1	62.1	0.0	62.1
	9	61.0	72.5	52.1	72.1	71.2	68.1	65.8	60.8	57.1	53.2	52.8	52.3	61.0	0.0	61.0
	10	60.2	74.4	50.0	73.9	72.9	69.2	66.3	58.9	54.2	50.9	50.5	50.1	60.2	0.0	60.2
	11	60.0	72.8	51.0	72.4	71.4	68.0	65.5	59.6	55.2	52.0	51.5	51.1	60.0	0.0	60.0
	12	59.6	71.4	49.9	71.0	70.4	67.9	65.5	59.5	54.8	50.8	50.4	50.0	59.6	0.0	59.6
	13	60.4	74.1	54.2	73.6	72.8	70.0	67.5	60.4	57.8	55.1	54.7	54.4	60.4	0.0	60.4
	14	61.0	72.3	54.1	71.5	70.2	67.3	65.2	60.1	57.1	54.9	54.6	54.2	61.0	0.0	61.0
	15	59.9	70.6	54.2	70.2	69.5	67.1	64.8	59.7	57.1	55.0	54.7	54.3	59.9	0.0	59.9
	16	62.5	72.5	57.9	72.0	71.0	68.1	66.3	62.3	60.4	58.6	58.3	58.0	62.5	0.0	62.5
	17	63.6	72.8	58.3	72.0	71.1	68.4	67.0	63.6	61.3	59.1	58.8	58.4	63.6	0.0	63.6
	18	63.4	71.7	58.8	71.2	70.6	68.3	67.1	63.6	61.3	59.5	59.2	58.8	63.4	0.0	63.4
	19	63.1	76.1	58.2	75.5	74.7	71.6	68.5	62.9	60.8	59.0	58.6	58.3	63.1	5.0	68.1
	20	62.0	72.3	55.9	71.9	71.2	68.3	66.2	61.3	58.8	56.8	56.4	56.0	62.0	5.0	67.0
	21	61.4	73.8	54.4	73.2	72.3	68.9	66.1	60.4	57.9	55.3	54.9	54.5	61.4	5.0	66.4
Night	22	59.7	70.8	50.7	70.5	69.9	67.1	64.4	59.0	55.3	51.7	51.3	50.9	59.7	10.0	69.7
	23	57.1	71.8	49.3	71.2	70.5	67.1	63.4	55.3	52.6	50.2	49.8	49.4	57.1	10.0	67.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	59.6	70.6	49.9	70.2	69.5	67.1	64.8	58.9	54.2	50.8	50.4	50.0
	Max	63.6	76.1	58.8	75.5	74.7	71.8	69.6	63.6	61.3	59.5	59.2	58.8
Energy Average		61.6	Average:		72.6	71.8	68.8	66.6	61.1	57.9	55.0	54.7	54.3
Night	Min	52.9	62.9	46.4	62.5	61.8	59.4	57.2	51.8	49.7	47.4	46.9	46.5
	Max	64.3	76.8	52.2	76.4	75.8	73.1	70.9	63.2	57.3	53.2	52.7	52.4
Energy Average		59.5	Average:		69.9	69.2	66.1	63.5	56.9	53.4	49.9	49.5	49.1

24-Hour	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
61.0	**61.6**	**59.5**

24-Hour Noise Level Measurement Summary

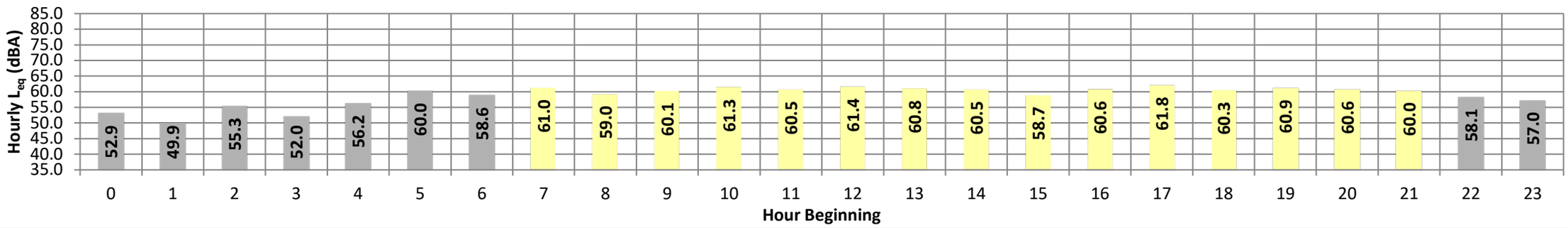
Date: Wednesday, June 9, 2021
Project: Valley Boulevard and Willow Avenue

Location: L4 - West of the Project site on Lilac Avenue near a single-family residence located at 1480 South Lilac Avenue.

Meter: Piccolo II

JN: 13681
Analyst: N. Boyko

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	52.9	65.0	45.8	64.6	63.7	59.8	56.2	49.9	47.8	46.4	46.2	45.9	52.9	10.0	62.9
	1	49.9	61.7	43.1	61.1	60.1	57.1	54.1	47.0	44.8	43.5	43.4	43.2	49.9	10.0	59.9
	2	55.3	71.1	45.5	70.3	69.4	66.0	62.1	55.0	48.6	46.1	45.9	45.6	55.3	10.0	65.3
	3	52.0	62.6	43.5	62.3	61.7	58.8	56.4	50.9	47.5	44.3	44.0	43.6	52.0	10.0	62.0
	4	56.2	68.1	45.5	67.6	66.8	63.9	61.0	53.6	49.7	46.4	46.0	45.6	56.2	10.0	66.2
	5	60.0	75.0	49.8	74.7	74.0	71.4	69.0	62.9	56.2	51.0	50.6	50.0	60.0	10.0	70.0
	6	58.6	75.3	49.3	74.9	74.3	71.7	68.1	58.4	53.4	50.2	49.8	49.4	58.6	10.0	68.6
Day	7	61.0	72.2	49.9	71.6	70.8	68.3	66.6	60.7	55.6	51.3	50.6	50.0	61.0	0.0	61.0
	8	59.0	74.2	47.8	73.7	72.8	68.8	66.0	59.0	53.8	48.8	48.3	47.9	59.0	0.0	59.0
	9	60.1	74.6	47.4	74.1	73.3	69.9	66.9	60.1	54.5	48.7	48.1	47.6	60.1	0.0	60.1
	10	61.3	73.8	48.2	73.4	72.7	70.2	68.3	61.6	55.7	49.8	49.0	48.4	61.3	0.0	61.3
	11	60.5	72.2	48.0	71.9	71.2	68.7	66.5	60.3	55.0	49.3	48.7	48.2	60.5	0.0	60.5
	12	61.4	74.4	49.2	73.9	73.0	69.5	67.6	62.4	57.2	50.5	50.0	49.4	61.4	0.0	61.4
	13	60.8	78.2	52.2	77.5	76.5	72.9	70.4	63.0	58.0	54.0	53.1	52.5	60.8	0.0	60.8
	14	60.5	75.6	51.1	74.8	73.8	69.2	66.9	60.7	55.9	51.9	51.5	51.2	60.5	0.0	60.5
	15	58.7	76.9	51.5	76.3	75.1	70.6	66.6	58.5	54.4	52.2	51.9	51.6	58.7	0.0	58.7
	16	60.6	71.6	53.4	71.1	70.6	68.5	66.0	60.0	56.7	54.2	53.8	53.5	60.6	0.0	60.6
	17	61.8	72.0	54.0	71.6	70.8	68.1	66.3	61.3	57.4	54.8	54.5	54.1	61.8	0.0	61.8
	18	60.3	70.4	53.9	70.0	69.1	67.2	66.1	60.9	57.6	54.7	54.4	54.0	60.3	0.0	60.3
	19	60.9	72.9	53.3	72.4	71.4	67.6	65.0	59.6	56.7	54.2	53.8	53.5	60.9	5.0	65.9
	20	60.6	71.5	55.2	71.0	70.5	68.0	66.0	60.7	58.0	55.9	55.6	55.3	60.6	5.0	65.6
	21	60.0	71.8	51.5	71.4	70.6	68.0	65.5	59.1	55.9	52.4	52.0	51.6	60.0	5.0	65.0
Night	22	58.1	69.0	48.2	68.7	68.1	65.3	63.0	56.6	53.0	49.4	48.8	48.3	58.1	10.0	68.1
	23	57.0	68.3	48.6	67.8	67.1	64.4	62.1	54.3	51.1	49.3	49.0	48.7	57.0	10.0	67.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	58.7	70.4	47.4	70.0	69.1	67.2	65.0	58.5	53.8	48.7	48.1	47.6
	Max	61.8	78.2	55.2	77.5	76.5	72.9	70.4	63.0	58.0	55.9	55.6	55.3
Energy Average		60.6	Average:		73.0	72.1	69.0	66.7	60.5	56.2	52.2	51.7	51.3
Night	Min	49.9	61.7	43.1	61.1	60.1	57.1	54.1	47.0	44.8	43.5	43.4	43.2
	Max	60.0	75.3	49.8	74.9	74.3	71.7	69.0	62.9	56.2	51.0	50.6	50.0
Energy Average		56.6	Average:		68.0	67.2	64.3	61.3	54.3	50.2	47.4	47.1	46.7

24-Hour	L_{eq} (dBA) Daytime (7am-10pm)	Nighttime (10pm-7am)
59.5	60.6	56.6

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Willow Av.
Road Segment: n/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,523	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	342	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	32.0	feet
Centerline Dist. to Observer:	32.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-6.12	2.84	-1.20	-4.51	0.000	0.000
Medium Trucks:	77.72	-23.50	2.90	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-24.38	2.89	-1.20	-5.72	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	61.3	59.6	53.5	62.1	62.7
Medium Trucks:	55.9	55.6	49.3	47.7	56.2	56.4
Heavy Trucks:	60.3	60.1	51.1	52.3	60.7	60.8
Vehicle Noise:	64.9	64.4	60.5	56.6	65.1	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	15	32	70	150
CNEL:	16	34	74	159

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,733	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,570	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.49	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.88	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.76	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	65.8	64.1	58.0	66.6	67.2
Medium Trucks:	60.4	60.1	53.7	52.2	60.6	60.9
Heavy Trucks:	64.8	64.6	55.5	56.8	65.1	65.3
Vehicle Noise:	69.3	68.9	65.0	61.0	69.5	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	260	560
CNEL:	59	128	276	595

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,904	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	3,399	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	76	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.85	0.34	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-13.53	0.37	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-14.41	0.37	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.5	68.8	67.0	61.0	69.6	70.2
Medium Trucks:	63.4	63.1	56.7	55.1	63.6	63.8
Heavy Trucks:	67.8	67.5	58.5	59.8	68.1	68.2
Vehicle Noise:	72.3	71.8	67.9	64.0	72.5	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	191	411	885
CNEL:	94	202	436	939

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Valley Bl.
Road Segment: e/o Willow Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,304	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,764	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.00	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.38	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.26	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.3	64.6	58.5	67.1	67.7
Medium Trucks:	60.9	60.6	54.2	52.7	61.1	61.4
Heavy Trucks:	65.3	65.1	56.0	57.3	65.6	65.8
Vehicle Noise:	69.8	69.4	65.5	61.6	70.1	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	61	130	281	605
CNEL:	64	138	298	643

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,536 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	1,176 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.76	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-18.14	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-19.02	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	59.1	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	63.5	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	68.1	67.6	63.7	59.8	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	46	100	214	462
CNEL:	49	106	228	490

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,156 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	3,494 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	76 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	95.52%
Medium Trucks:	84.8%	4.9%	10.3%	1.75%
Heavy Trucks:	86.5%	2.7%	10.8%	2.74%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.91	0.34	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-13.47	0.37	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-11.52	0.37	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	68.9	67.1	61.1	69.7	70.3
Medium Trucks:	63.4	63.1	56.7	55.2	63.7	63.9
Heavy Trucks:	70.6	70.4	61.4	62.6	71.0	71.1
Vehicle Noise:	73.6	73.2	68.4	65.4	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	108	233	502	1,081
CNEL:	114	245	527	1,136

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Willow Av.
Road Segment: n/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,995 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	378 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	32.0 feet
Centerline Dist. to Observer:	32.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	93.94%
Medium Trucks:	84.8%	4.9%	10.3%	1.66%
Heavy Trucks:	86.5%	2.7%	10.8%	4.39%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.82	2.84	-1.20	-4.51	0.000	0.000
Medium Trucks:	77.72	-23.34	2.90	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-19.12	2.89	-1.20	-5.72	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:	62.3	61.6	59.9	53.8	62.4	63.0
Medium Trucks:	56.1	55.8	49.4	47.9	56.3	56.6
Heavy Trucks:	65.6	65.4	56.3	57.6	65.9	66.0
Vehicle Noise:	67.6	67.2	61.7	59.4	67.8	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	107	230
CNEL:	24	52	111	240

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,823 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	1,576 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.80%
Medium Trucks:	84.8%	4.9%	10.3%	1.76%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.51	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.88	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.76	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	65.8	64.1	58.0	66.6	67.3
Medium Trucks:	60.4	60.1	53.7	52.2	60.6	60.9
Heavy Trucks:	64.8	64.6	55.5	56.8	65.1	65.3
Vehicle Noise:	69.3	68.9	65.0	61.1	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	260	561
CNEL:	60	128	276	595

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Valley Bl.
Road Segment: e/o Willow Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,602	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,862	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.72%
Heavy Trucks:	86.5%	2.7%	10.8%	3.87%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.13	0.72	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-16.27	0.75	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-12.75	0.74	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.2	66.5	64.7	58.6	67.3	67.9
Medium Trucks:	61.0	60.7	54.3	52.8	61.2	61.5
Heavy Trucks:	69.8	69.6	60.5	61.8	70.1	70.3
Vehicle Noise:	72.0	71.7	66.4	63.9	72.3	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	85	184	396	854
CNEL:	89	192	415	893

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Willow Av.
Road Segment: n/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,706	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	356	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	32.0	feet
Centerline Dist. to Observer:	32.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-5.95	2.84	-1.20	*-4.51*	0.000	0.000
Medium Trucks:	77.72	-23.33	2.90	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-24.20	2.89	-1.20	*-5.72*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.2	61.5	59.7	53.7	62.3	62.9
Medium Trucks:	56.1	55.8	49.4	47.9	56.3	56.6
Heavy Trucks:	60.5	60.3	51.2	52.5	60.8	61.0
Vehicle Noise:	65.0	64.6	60.7	56.7	65.2	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	15	33	72	154
CNEL:	16	35	76	164

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,581	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,179	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.79%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.75	0.72	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-18.14	0.75	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-19.02	0.74	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.3	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	59.1	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	63.5	63.3	54.3	55.5	63.9	64.0
Vehicle Noise:	68.1	67.6	63.7	59.8	68.3	68.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	46	100	215	462
CNEL:	49	106	228	491

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,718	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	3,537	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	76	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	4.02	0.34	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-13.36	0.37	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-14.24	0.37	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.7	69.0	67.2	61.2	69.8	70.4
Medium Trucks:	63.5	63.2	56.9	55.3	63.8	64.0
Heavy Trucks:	67.9	67.7	58.7	59.9	68.3	68.4
Vehicle Noise:	72.5	72.0	68.1	64.2	72.7	73.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	91	196	422	908
CNEL:	96	208	448	965

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,571	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,633	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.66	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.71	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.59	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	66.0	64.2	58.2	66.8	67.4
Medium Trucks:	60.5	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	64.9	64.7	55.7	56.9	65.3	65.4
Vehicle Noise:	69.5	69.0	65.1	61.2	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	124	267	575
CNEL:	61	132	283	610

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,164	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,224	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.59	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-17.97	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.85	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	64.7	63.0	56.9	65.5	66.2
Medium Trucks:	59.3	59.0	52.6	51.1	59.6	59.8
Heavy Trucks:	63.7	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	68.3	67.8	63.9	60.0	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	474
CNEL:	50	108	234	504

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA Without Project
Road Name: Valley Bl.
Road Segment: e/o Willow Av.

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,246	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,835	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.17	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.21	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.08	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	66.5	64.7	58.7	67.3	67.9
Medium Trucks:	61.1	60.8	54.4	52.9	61.3	61.5
Heavy Trucks:	65.5	65.2	56.2	57.5	65.8	65.9
Vehicle Noise:	70.0	69.5	65.6	61.7	70.2	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	134	288	622
CNEL:	66	142	306	660

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Willow Av.
Road Segment: n/o Valley Bl.

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,177	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	392	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	32.0	feet
Centerline Dist. to Observer:	32.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.04%
Medium Trucks:	84.8%	4.9%	10.3%	1.67%
Heavy Trucks:	86.5%	2.7%	10.8%	4.29%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-5.66	2.84	-1.20	-4.51	0.000	0.000
Medium Trucks:	77.72	-23.17	2.90	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-19.07	2.89	-1.20	-5.72	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	62.5	61.8	60.0	54.0	62.6	63.2
Medium Trucks:	56.2	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	65.6	65.4	56.4	57.6	66.0	66.1
Vehicle Noise:	67.7	67.3	61.9	59.5	67.9	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	108	233
CNEL:	24	52	113	243

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	47,970 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	3,631 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	76 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	95.57%
Medium Trucks:	84.8%	4.9%	10.3%	1.75%
Heavy Trucks:	86.5%	2.7%	10.8%	2.69%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.08	0.34	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-13.30	0.37	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-11.43	0.37	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.7	69.0	67.3	61.2	69.8	70.4
Medium Trucks:	63.6	63.3	56.9	55.4	63.8	64.1
Heavy Trucks:	70.7	70.5	61.5	62.7	71.1	71.2
Vehicle Noise:	73.7	73.3	68.6	65.5	74.0	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	110	237	512	1,102
CNEL:	116	250	538	1,159

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Valley Bl.
Road Segment: e/o Willow Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,543 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	1,934 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.50%
Medium Trucks:	84.8%	4.9%	10.3%	1.72%
Heavy Trucks:	86.5%	2.7%	10.8%	3.78%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.29	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.11	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-12.69	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.3	66.6	64.9	58.8	67.4	68.0
Medium Trucks:	61.2	60.9	54.5	53.0	61.4	61.6
Heavy Trucks:	69.8	69.6	60.6	61.8	70.2	70.3
Vehicle Noise:	72.1	71.8	66.5	64.0	72.4	72.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	87	187	403	868
CNEL:	91	196	421	908

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,661 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	1,640 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.80%
Medium Trucks:	84.8%	4.9%	10.3%	1.76%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.68	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.71	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.59	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.7	66.0	64.3	58.2	66.8	67.4
Medium Trucks:	60.5	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	64.9	64.7	55.7	56.9	65.3	65.4
Vehicle Noise:	69.5	69.0	65.2	61.2	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	124	267	576
CNEL:	61	132	284	611

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA With Project
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,209 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	1,227 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.79%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.58	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-17.97	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.85	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	64.8	63.0	56.9	65.6	66.2
Medium Trucks:	59.3	59.0	52.6	51.1	59.6	59.8
Heavy Trucks:	63.7	63.5	54.4	55.7	64.0	64.2
Vehicle Noise:	68.3	67.8	63.9	60.0	68.5	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	47	102	220	475
CNEL:	50	109	234	504

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Willow Av.
Road Segment: n/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,320	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	478	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	32.0	feet
Centerline Dist. to Observer:	32.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.67	2.84	-1.20	-4.51	0.000	0.000
Medium Trucks:	77.72	-22.04	2.90	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-22.92	2.89	-1.20	-5.72	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.5	62.8	61.0	55.0	63.6	64.2
Medium Trucks:	57.4	57.1	50.7	49.2	57.6	57.9
Heavy Trucks:	61.8	61.5	52.5	53.8	62.1	62.2
Vehicle Noise:	66.3	65.8	61.9	58.0	66.5	66.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	87	188
CNEL:	20	43	93	199

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,179	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,755	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.97	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.40	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.28	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.3	64.5	58.5	67.1	67.7
Medium Trucks:	60.9	60.6	54.2	52.7	61.1	61.3
Heavy Trucks:	65.3	65.0	56.0	57.3	65.6	65.7
Vehicle Noise:	69.8	69.4	65.5	61.5	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	280	603
CNEL:	64	138	297	640

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	50,492	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	3,822	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	76	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.36	0.34	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-13.02	0.37	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-13.90	0.37	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.0	69.3	67.6	61.5	70.1	70.7
Medium Trucks:	63.9	63.6	57.2	55.7	64.1	64.4
Heavy Trucks:	68.3	68.0	59.0	60.3	68.6	68.7
Vehicle Noise:	72.8	72.4	68.5	64.5	73.0	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	96	206	444	957
CNEL:	102	219	471	1,016

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Valley Bl.
Road Segment: e/o Willow Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,340	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,994	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.53	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.85	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-16.73	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.6	66.9	65.1	59.0	67.7	68.3
Medium Trucks:	61.4	61.1	54.8	53.2	61.7	61.9
Heavy Trucks:	65.8	65.6	56.6	57.8	66.2	66.3
Vehicle Noise:	70.4	69.9	66.0	62.1	70.6	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	305	657
CNEL:	70	150	324	697

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC Without Project
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,578	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,255	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.48	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-17.86	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.74	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	64.9	63.1	57.0	65.7	66.3
Medium Trucks:	59.4	59.1	52.7	51.2	59.7	59.9
Heavy Trucks:	63.8	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	68.4	67.9	64.0	60.1	68.6	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	48	104	224	482
CNEL:	51	110	238	512

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	51,744	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	3,917	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	76	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	95.65%
Medium Trucks:	84.8%	4.9%	10.3%	1.75%
Heavy Trucks:	86.5%	2.7%	10.8%	2.60%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.41	0.34	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-12.97	0.37	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-11.25	0.37	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.1	69.4	67.6	61.6	70.2	70.8
Medium Trucks:	63.9	63.6	57.3	55.7	64.2	64.4
Heavy Trucks:	70.9	70.7	61.7	62.9	71.3	71.4
Vehicle Noise:	74.0	73.6	68.9	65.7	74.2	74.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	115	247	532	1,146
CNEL:	121	260	560	1,206

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Willow Av.
Road Segment: n/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,791	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	514	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	32.0	feet
Centerline Dist. to Observer:	32.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.69%
Medium Trucks:	84.8%	4.9%	10.3%	1.69%
Heavy Trucks:	86.5%	2.7%	10.8%	3.61%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-4.45	2.84	-1.20	-4.51	0.000	0.000
Medium Trucks:	77.72	-21.93	2.90	-1.20	-4.86	0.000	0.000
Heavy Trucks:	82.99	-18.64	2.89	-1.20	-5.72	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	57.5	57.2	50.8	49.3	57.7	58.0
Heavy Trucks:	66.0	65.8	56.8	58.1	66.4	66.5
Vehicle Noise:	68.4	68.0	62.9	60.2	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	56	121	261
CNEL:	27	59	127	273

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	23,269	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,761	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.79%
Medium Trucks:	84.8%	4.9%	10.3%	1.76%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	0.99	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-16.40	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-17.28	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	66.3	64.6	58.5	67.1	67.7
Medium Trucks:	60.9	60.6	54.2	52.7	61.1	61.3
Heavy Trucks:	65.3	65.0	56.0	57.3	65.6	65.7
Vehicle Noise:	69.8	69.4	65.5	61.5	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	130	280	604
CNEL:	64	138	298	641

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Valley Bl.
Road Segment: e/o Willow Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,637	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	2,092	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.68%
Medium Trucks:	84.8%	4.9%	10.3%	1.72%
Heavy Trucks:	86.5%	2.7%	10.8%	3.60%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.64	0.72	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.75	0.75	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-12.56	0.74	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.7	67.0	65.2	59.2	67.8	68.4
Medium Trucks:	61.5	61.2	54.8	53.3	61.8	62.0
Heavy Trucks:	70.0	69.8	60.7	62.0	70.3	70.5
Vehicle Noise:	72.4	72.0	66.8	64.2	72.6	72.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	90	193	417	898
CNEL:	94	202	436	940

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Willow Av.
Road Segment: n/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,952	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	526	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	32.0	feet
Centerline Dist. to Observer:	32.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-4.26	2.84	-1.20	*-4.51*	0.000	0.000
Medium Trucks:	77.72	-21.63	2.90	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-22.51	2.89	-1.20	*-5.72*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.9	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	57.8	57.5	51.1	49.6	58.0	58.3
Heavy Trucks:	62.2	62.0	52.9	54.2	62.5	62.7
Vehicle Noise:	66.7	66.3	62.4	58.4	66.9	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	20	43	93	200
CNEL:	21	46	99	212

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC With Project
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,623	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,258	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.79%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.47	0.72	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-17.86	0.75	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-18.74	0.74	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.6	64.9	63.1	57.0	65.7	66.3
Medium Trucks:	59.4	59.1	52.7	51.2	59.7	59.9
Heavy Trucks:	63.8	63.6	54.6	55.8	64.2	64.3
Vehicle Noise:	68.4	67.9	64.0	60.1	68.6	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	48	104	224	483
CNEL:	51	110	238	513

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	55,541	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	4,204	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	76	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	4.77	0.34	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-12.61	0.37	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-13.49	0.37	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.4	69.7	68.0	61.9	70.5	71.1
Medium Trucks:	64.3	64.0	57.6	56.1	64.5	64.8
Heavy Trucks:	68.7	68.5	59.4	60.7	69.0	69.2
Vehicle Noise:	73.2	72.8	68.9	64.9	73.5	73.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	102	220	473	1,019
CNEL:	108	233	502	1,082

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,497	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,930	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.39	0.72	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.99	0.75	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-16.87	0.74	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.4	66.7	65.0	58.9	67.5	68.1
Medium Trucks:	61.3	61.0	54.6	53.1	61.5	61.8
Heavy Trucks:	65.7	65.5	56.4	57.7	66.0	66.2
Vehicle Noise:	70.2	69.8	65.9	61.9	70.4	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	64	138	298	643
CNEL:	68	147	317	682

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,236	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	1,380	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.07	0.72	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-17.44	0.75	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-18.32	0.74	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.0	65.3	63.5	57.4	66.1	66.7
Medium Trucks:	59.8	59.5	53.2	51.6	60.1	60.3
Heavy Trucks:	64.2	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	68.8	68.3	64.4	60.5	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	51	111	239	514
CNEL:	55	118	253	546

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Valley Bl.
Road Segment: e/o Willow Av.

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	28,974	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	2,193	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	82	feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	96.78%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.45%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.94	0.72	-1.20	*-4.69*	0.000	0.000
Medium Trucks:	77.72	-15.43	0.75	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-16.31	0.74	-1.20	*-5.34*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.0	67.3	65.5	59.5	68.1	68.7
Medium Trucks:	61.8	61.5	55.2	53.6	62.1	62.3
Heavy Trucks:	66.2	66.0	57.0	58.2	66.6	66.7
Vehicle Noise:	70.8	70.3	66.4	62.5	71.0	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	70	151	325	700
CNEL:	74	160	345	743

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP
Road Name: Willow Av.
Road Segment: n/o Valley Bl.

Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,423	vehicles
Peak Hour Percentage:	7.57%	
Peak Hour Volume:	562	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	32.0	feet
Centerline Dist. to Observer:	32.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	94.87%
Medium Trucks:	84.8%	4.9%	10.3%	1.70%
Heavy Trucks:	86.5%	2.7%	10.8%	3.43%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	31.828
Medium Trucks:	31.548
Heavy Trucks:	31.576

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-4.06	2.84	-1.20	*-4.51*	0.000	0.000
Medium Trucks:	77.72	-21.53	2.90	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-18.48	2.89	-1.20	*-5.72*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	63.4	61.6	55.6	64.2	64.8
Medium Trucks:	57.9	57.6	51.2	49.7	58.1	58.4
Heavy Trucks:	66.2	66.0	57.0	58.2	66.6	66.7
Vehicle Noise:	68.7	68.3	63.2	60.5	68.9	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	59	126	272
CNEL:	28	61	132	284

Tuesday, June 15, 2021

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP
Road Name: Riverside Av.
Road Segment: s/o Valley Bl.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	56,794 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	4,299 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	76 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	95.75%
Medium Trucks:	84.8%	4.9%	10.3%	1.75%
Heavy Trucks:	86.5%	2.7%	10.8%	2.50%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	46.701
Medium Trucks:	46.511
Heavy Trucks:	46.530

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	4.82	0.34	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-12.56	0.37	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-11.02	0.37	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	70.5	69.8	68.0	62.0	70.6	71.2
Medium Trucks:	64.3	64.0	57.7	56.1	64.6	64.8
Heavy Trucks:	71.1	70.9	61.9	63.1	71.5	71.6
Vehicle Noise:	74.3	73.9	69.3	66.1	74.5	74.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	120	259	559	1,204
CNEL:	127	273	588	1,268

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP
Road Name: Valley Bl.
Road Segment: e/o Willow Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,271 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	2,292 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	94.86%
Medium Trucks:	84.8%	4.9%	10.3%	1.73%
Heavy Trucks:	86.5%	2.7%	10.8%	3.41%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	2.05	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.35	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-12.39	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.1	67.4	65.6	59.6	68.2	68.8
Medium Trucks:	61.9	61.6	55.3	53.7	62.2	62.4
Heavy Trucks:	70.1	69.9	60.9	62.1	70.5	70.6
Vehicle Noise:	72.6	72.2	67.2	64.4	72.9	73.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	201	434	935
CNEL:	98	211	455	980

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP
Road Name: Valley Bl.
Road Segment: w/o Dwy. 1
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,587 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	1,937 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.79%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	1.40	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-15.99	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-16.87	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	66.7	65.0	58.9	67.5	68.1
Medium Trucks:	61.3	61.0	54.6	53.1	61.5	61.8
Heavy Trucks:	65.7	65.5	56.4	57.7	66.0	66.2
Vehicle Noise:	70.2	69.8	65.9	62.0	70.5	70.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	64	139	299	643
CNEL:	68	147	317	683

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP
Road Name: Valley Bl.
Road Segment: e/o Riverside Av.
Project Name: Birtcher Logistics Center R
Job Number: 13681

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,281 vehicles
Peak Hour Percentage:	7.57%
Peak Hour Volume:	1,384 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	82 feet

Site Data

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

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	96.79%
Medium Trucks:	84.8%	4.9%	10.3%	1.77%
Heavy Trucks:	86.5%	2.7%	10.8%	1.44%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	44.091
Medium Trucks:	43.890
Heavy Trucks:	43.909

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-0.06	0.72	-1.20	-4.69	0.000	0.000
Medium Trucks:	77.72	-17.44	0.75	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-18.32	0.74	-1.20	-5.34	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.0	65.3	63.5	57.5	66.1	66.7
Medium Trucks:	59.8	59.5	53.2	51.6	60.1	60.3
Heavy Trucks:	64.2	64.0	55.0	56.2	64.6	64.7
Vehicle Noise:	68.8	68.3	64.4	60.5	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	51	111	239	514
CNEL:	55	118	254	546

APPENDIX 9.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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13681 - Valley Boulevard and Willow Avenue

CadnaA Noise Prediction Model: 13681_05.cna
Date: 02.08.21
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	39.2	38.2	44.6	55.0	45.0	0.0				5.00	a	6220605.40	2337186.44	5.00
RECEIVERS		R2	26.8	25.5	32.0	55.0	45.0	0.0				5.00	a	6222523.80	2336729.84	5.00
RECEIVERS		R3	45.3	44.3	50.7	55.0	45.0	0.0				5.00	a	6220072.01	2334863.29	5.00
RECEIVERS		R4	45.6	44.6	51.0	55.0	45.0	0.0				5.00	a	6219562.66	2335451.86	5.00
RECEIVERS		R5	45.0	44.1	50.5	55.0	45.0	0.0				5.00	a	6219703.94	2336360.11	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARK24	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220527.90	2336610.94	5.00
POINTSOURCE		PARK23	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220602.31	2336609.48	5.00
POINTSOURCE		PARK22	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220570.21	2335106.76	5.00
POINTSOURCE		PARK21	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220654.83	2335103.84	5.00
POINTSOURCE		PARK20	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220756.96	2335102.38	5.00
POINTSOURCE		PARK19	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220838.66	2335100.93	5.00
POINTSOURCE		PARK18	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220948.08	2335100.93	5.00
POINTSOURCE		PARK17	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220476.84	2336527.78	5.00
POINTSOURCE		PARK16	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220476.84	2336463.59	5.00
POINTSOURCE		PARK15	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220478.30	2336384.80	5.00
POINTSOURCE		PARK14	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220476.84	2336316.23	5.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		PARK13	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220475.38	2336243.28	5.00
POINTSOURCE		PARK12	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220476.84	2336176.17	5.00
POINTSOURCE		PARK11	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220476.84	2336110.52	5.00
POINTSOURCE		PARK10	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220476.84	2336040.49	5.00
POINTSOURCE		PARK09	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220473.92	2335967.54	5.00
POINTSOURCE		PARK08	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220473.92	2335904.81	5.00
POINTSOURCE		PARK07	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220476.84	2335836.24	5.00
POINTSOURCE		PARK06	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220472.46	2335764.75	5.00
POINTSOURCE		PARK05	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220471.00	2335664.08	5.00
POINTSOURCE		PARK04	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220473.92	2335608.64	5.00
POINTSOURCE		PARK03	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220472.46	2335545.91	5.00
POINTSOURCE		PARK02	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220471.00	2335474.42	5.00
POINTSOURCE		PARK01	79.0	79.0	79.0	Lw	79		900.00	0.00	540.00	0.0	5.00	a	6220471.00	2335407.31	5.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89.0		150.00	0.00	90.00	0.0	5.00	a	6220469.54	2335340.19	5.00
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6220758.42	2336360.00	50.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6220984.55	2335200.13	50.00

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)
LINESOURCE		TRUCK01	93.2	93.2	93.2	65.0	65.0	65.0	Lw	93.2		900.00	0.00	540.00					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	8.00	a			6220501.66	2335049.51	8.00	0.00
					6220520.61	2336551.12	8.00	0.00
					6220716.11	2336552.58	8.00	0.00
					6221047.23	2336209.57	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
AREASOURCE		DOCK01	111.5	111.5	111.5	74.5	74.5	74.5	Lw	111.5		900.00	0.00	540.00	8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	8.00	a			6220614.56	2335330.89	8.00	0.00
					6220554.59	2335331.22	8.00	0.00
					6220564.30	2336245.39	8.00	0.00
					6220622.50	2336245.37	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIERTEMP		0						14.00	a		6220553.60	2335305.59	14.00	0.00
											6220524.22	2335304.51	14.00	0.00
BARRIERTEMP		0						14.00	a		6220483.95	2335306.21	14.00	0.00
											6220429.36	2335306.21	14.00	0.00
BARRIEREXISTING		0						5.00	a		6220078.58	2335480.14	5.00	0.00
											6219808.56	2335482.21	5.00	0.00
											6219808.74	2335463.38	5.00	0.00
BARRIEREXISTING		0						5.00	a		6219809.25	2335433.67	5.00	0.00
											6219807.18	2335342.80	5.00	0.00
											6219951.78	2335341.25	5.00	0.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		45.00	a	6220565.75	2336424.48	45.00	0.00
								6220795.89	2336421.20	45.00	0.00
								6221011.92	2336193.68	45.00	0.00
								6221009.63	2336191.38	45.00	0.00
								6221017.18	2336183.50	45.00	0.00
								6221016.19	2336170.70	45.00	0.00
								6221021.12	2336170.70	45.00	0.00
								6221010.28	2335145.05	45.00	0.00
								6220552.29	2335151.94	45.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6220553.60	2335305.59	45.00	0.00
								6220614.34	2335304.61	45.00	0.00
								6220622.73	2336271.81	45.00	0.00
								6220564.57	2336272.67	45.00	0.00
BUILDING		BUILDING00002	x	0		30.00	a	6220252.55	2335398.67	30.00	0.00
								6220398.69	2335397.03	30.00	0.00
								6220398.69	2335341.51	30.00	0.00
								6220301.54	2335346.41	30.00	0.00
								6220303.99	2335205.17	30.00	0.00
								6220250.92	2335205.17	30.00	0.00
BUILDING		BUILDING00003	x	0		45.00	a	6220096.83	2335630.44	45.00	0.00
								6220376.08	2335627.41	45.00	0.00
								6220375.32	2335582.89	45.00	0.00
								6220404.16	2335581.88	45.00	0.00
								6220404.16	2335519.40	45.00	0.00
								6220096.32	2335519.65	45.00	0.00
BUILDING		BUILDING00004	x	0		15.00	a	6219856.70	2336264.84	15.00	0.00
								6220352.36	2336262.24	15.00	0.00
								6220355.83	2336052.17	15.00	0.00
								6219855.83	2336058.25	15.00	0.00
BUILDING		BUILDING00005	x	0		30.00	a	6219818.48	2336863.08	30.00	0.00
								6219946.08	2336861.51	30.00	0.00
								6219944.52	2336800.06	30.00	0.00
								6220357.02	2336799.53	30.00	0.00
								6220359.63	2336454.74	30.00	0.00
								6219938.79	2336456.31	30.00	0.00
								6219939.31	2336442.24	30.00	0.00
								6219816.40	2336444.33	30.00	0.00
BUILDING		BUILDING00006	x	0		15.00	a	6220087.62	2335349.05	15.00	0.00
								6220129.55	2335348.79	15.00	0.00
								6220129.55	2335207.64	15.00	0.00
								6220086.32	2335208.42	15.00	0.00
BUILDING		BUILDING00007	x	0		20.00	a	6219988.85	2335754.66	20.00	0.00
								6220049.01	2335753.36	20.00	0.00
								6220048.48	2335699.45	20.00	0.00
								6220030.26	2335699.45	20.00	0.00
								6220030.52	2335680.44	20.00	0.00
								6219988.33	2335680.44	20.00	0.00
BUILDING		BUILDING00008	x	0		20.00	a	6219989.37	2335824.45	20.00	0.00
								6220071.66	2335824.19	20.00	0.00
								6220071.14	2335791.12	20.00	0.00
								6219987.81	2335790.86	20.00	0.00
BUILDING		BUILDING00009	x	0		15.00	a	6219870.88	2335819.77	15.00	0.00
								6219905.78	2335819.77	15.00	0.00
								6219906.82	2335790.86	15.00	0.00
								6219871.14	2335790.86	15.00	0.00
BUILDING		BUILDING00010	x	0		15.00	a	6219936.49	2335535.81	15.00	0.00
								6220001.34	2335534.90	15.00	0.00
								6220001.80	2335515.72	15.00	0.00
								6220012.31	2335515.26	15.00	0.00
								6220012.76	2335505.21	15.00	0.00
								6220004.08	2335504.76	15.00	0.00
								6220004.08	2335483.75	15.00	0.00
								6219950.65	2335483.75	15.00	0.00
								6219948.36	2335500.19	15.00	0.00
								6219935.57	2335502.02	15.00	0.00
BUILDING		BUILDING00011	x	0		15.00	a	6219878.48	2335560.02	15.00	0.00
								6219879.85	2335496.99	15.00	0.00
								6219826.87	2335494.71	15.00	0.00
								6219825.04	2335518.00	15.00	0.00
								6219838.75	2335517.54	15.00	0.00
								6219839.20	2335541.29	15.00	0.00
								6219843.31	2335540.84	15.00	0.00
								6219842.86	2335560.48	15.00	0.00
BUILDING		BUILDING00012	x	0		15.00	a	6219837.57	2335820.94	15.00	0.00
								6219866.22	2335821.16	15.00	0.00
								6219865.78	2335759.96	15.00	0.00
								6219904.63	2335759.96	15.00	0.00
								6219905.06	2335728.93	15.00	0.00
								6219861.44	2335731.53	15.00	0.00
								6219861.01	2335757.14	15.00	0.00
								6219855.80	2335756.92	15.00	0.00
								6219857.10	2335734.79	15.00	0.00
								6219827.37	2335734.14	15.00	0.00
								6219826.94	2335743.90	15.00	0.00
								6219819.34	2335744.34	15.00	0.00
								6219819.34	2335776.89	15.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6219828.89	2335777.54	15.00	0.00
								6219828.02	2335800.11	15.00	0.00
								6219837.14	2335800.33	15.00	0.00
BUILDING		BUILDING00013	x	0		15.00	a	6219951.92	2335339.36	15.00	0.00
								6220009.73	2335339.36	15.00	0.00
								6220009.21	2335366.44	15.00	0.00
								6220079.52	2335368.53	15.00	0.00
								6220077.96	2335297.69	15.00	0.00
								6219951.92	2335298.74	15.00	0.00

Ground Absorption(s)

Name	M.	ID	G	Coordinates	
				x	y
				(ft)	(ft)
GROUND		0	0.0	6220940.26	2335778.83
				6221011.55	2335775.12
				6221005.99	2335514.98
				6220937.48	2335511.28
GROUND		0	1.0	6220097.51	2334963.78
				6220409.73	2334959.41
				6220403.89	2334435.64
				6220087.30	2334425.43

APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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13681 - Valley Boulevard and Willow Avenue

CadnaA Noise Prediction Model: 13681_02_Construction.cna
Date: 16.06.21
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	65.2	65.2	71.9	55.0	45.0	0.0				5.00	a	6220605.40	2337186.44	5.00
RECEIVERS		R2	60.2	60.2	66.8	55.0	45.0	0.0				5.00	a	6222523.80	2336729.84	5.00
RECEIVERS		R3	66.6	66.6	73.3	55.0	45.0	0.0				5.00	a	6220044.72	2334879.67	5.00
RECEIVERS		R4	64.9	64.9	71.5	55.0	45.0	0.0				5.00	a	6219562.66	2335451.86	5.00
RECEIVERS		R5	65.5	65.5	72.2	55.0	45.0	0.0				5.00	a	6219703.94	2336360.11	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
SITEBOUNDARY		CONSTRUCTION	128.4	128.4	128.4	79.0	79.0	79.0	Lw''	79					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a			6220419.06	2336655.37	8.00	0.00
					6220686.67	2336649.29	8.00	0.00
					6220812.50	2336512.82	8.00	0.00
					6220787.03	2336512.44	8.00	0.00
					6221047.58	2336237.49	8.00	0.00
					6221033.35	2335078.57	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
					6220996.86	2335040.55	8.00	0.00
					6220405.14	2335051.26	8.00	0.00

APPENDIX 10.2:

CADNAA CONCRETE CRUSHING CONSTRUCTION NOISE MODEL INPUTS

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13681 - Valley Boulevard and Willow Avenue

CadnaA Noise Prediction Model: 13681_06_Concrete Crushing.cna
Date: 20.10.21
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	50.5	50.5	57.2	55.0	45.0	0.0				5.00	a	6220605.40	2337186.44	5.00
RECEIVERS		R2	48.8	48.8	55.5	55.0	45.0	0.0				5.00	a	6222523.80	2336729.84	5.00
RECEIVERS		R3	53.0	53.0	59.7	55.0	45.0	0.0				5.00	a	6220044.72	2334879.67	5.00
RECEIVERS		R4	51.5	51.5	58.1	55.0	45.0	0.0				5.00	a	6219562.66	2335451.86	5.00
RECEIVERS		R5	51.3	51.3	57.9	55.0	45.0	0.0				5.00	a	6219703.94	2336360.11	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
GROUND		CONSRETE CRUSHING	116.3	116.3	116.3	84.0	84.0	84.0	Lw''	84					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
GROUND	8.00	a			6220940.26	2335778.83	8.00	0.00
					6221011.55	2335775.12	8.00	0.00
					6221005.99	2335514.98	8.00	0.00
					6220937.48	2335511.28	8.00	0.00

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APPENDIX 10.3:

CADNAA NIGHTTIME CONCRETE POUR CONSTRUCTION NOISE MODEL INPUTS

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13681 - Valley Boulevard and Willow Avenue

CadnaA Noise Prediction Model: 13681_05_ConcretePour.cna
Date: 02.08.21
Analyst: S. Shami

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	52.5	52.5	59.2	55.0	45.0	0.0				5.00	a	6220605.40	2337186.44	5.00
RECEIVERS		R2	48.7	48.7	55.4	55.0	45.0	0.0				5.00	a	6222523.80	2336729.84	5.00
RECEIVERS		R3	51.2	51.2	57.8	55.0	45.0	0.0				5.00	a	6220072.01	2334863.29	5.00
RECEIVERS		R4	48.6	48.6	55.3	55.0	45.0	0.0				5.00	a	6219562.66	2335451.86	5.00
RECEIVERS		R5	49.5	49.5	56.2	55.0	45.0	0.0				5.00	a	6219703.94	2336360.11	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
BUILDING		Nighttime Concrete Pour	116.7	116.7	116.7	70.0	70.0	70.0	Lw"	70					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING	8.00	a			6220565.75	2336424.48	8.00	0.00
					6220795.89	2336421.20	8.00	0.00
					6221011.92	2336193.68	8.00	0.00
					6221009.63	2336191.38	8.00	0.00
					6221017.18	2336183.50	8.00	0.00
					6221016.19	2336170.70	8.00	0.00

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
					6221021.12	2336170.70	8.00	0.00
					6221010.28	2335145.05	8.00	0.00
					6220552.29	2335151.94	8.00	0.00
					6220553.60	2335305.59	8.00	0.00
					6220614.34	2335304.61	8.00	0.00
					6220622.73	2336271.81	8.00	0.00
					6220564.57	2336272.67	8.00	0.00

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
			left	right		horz.	vert.	Begin		End	x	y	z	Ground
					(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIEREXISTING		0						5.00	a		6220078.58	2335480.14	5.00	0.00
											6219808.56	2335482.21	5.00	0.00
											6219808.74	2335463.38	5.00	0.00
BARRIEREXISTING		0						5.00	a		6219809.25	2335433.67	5.00	0.00
											6219807.18	2335342.80	5.00	0.00
											6219951.78	2335341.25	5.00	0.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00002	x	0		30.00	a	6220252.55	2335398.67	30.00	0.00
								6220398.69	2335397.03	30.00	0.00
								6220398.69	2335341.51	30.00	0.00
								6220301.54	2335346.41	30.00	0.00
								6220303.99	2335205.17	30.00	0.00
								6220250.92	2335205.17	30.00	0.00
BUILDING		BUILDING00003	x	0		45.00	a	6220096.83	2335630.44	45.00	0.00
								6220376.08	2335627.41	45.00	0.00
								6220375.32	2335582.89	45.00	0.00
								6220404.16	2335581.88	45.00	0.00
								6220404.16	2335519.40	45.00	0.00
								6220096.32	2335519.65	45.00	0.00
BUILDING		BUILDING00004	x	0		15.00	a	6219856.70	2336264.84	15.00	0.00
								6220352.36	2336262.24	15.00	0.00
								6220355.83	2336052.17	15.00	0.00
								6219855.83	2336058.25	15.00	0.00
BUILDING		BUILDING00006	x	0		15.00	a	6220087.62	2335349.05	15.00	0.00
								6220129.55	2335348.79	15.00	0.00
								6220129.55	2335207.64	15.00	0.00
								6220086.32	2335208.42	15.00	0.00
BUILDING		BUILDING00007	x	0		20.00	a	6219988.85	2335754.66	20.00	0.00
								6220049.01	2335753.36	20.00	0.00
								6220048.48	2335699.45	20.00	0.00
								6220030.26	2335699.45	20.00	0.00
								6220030.52	2335680.44	20.00	0.00
								6219988.33	2335680.44	20.00	0.00
BUILDING		BUILDING00008	x	0		20.00	a	6219989.37	2335824.45	20.00	0.00
								6220071.66	2335824.19	20.00	0.00
								6220071.14	2335791.12	20.00	0.00
								6219987.81	2335790.86	20.00	0.00
BUILDING		BUILDING00009	x	0		15.00	a	6219870.88	2335819.77	15.00	0.00
								6219905.78	2335819.77	15.00	0.00
								6219906.82	2335790.86	15.00	0.00
								6219871.14	2335790.86	15.00	0.00
BUILDING		BUILDING00010	x	0		15.00	a	6219936.49	2335535.81	15.00	0.00
								6220001.34	2335534.90	15.00	0.00
								6220001.80	2335515.72	15.00	0.00
								6220012.31	2335515.26	15.00	0.00
								6220012.76	2335505.21	15.00	0.00
								6220004.08	2335504.76	15.00	0.00
								6220004.08	2335483.75	15.00	0.00
								6219950.65	2335483.75	15.00	0.00
								6219948.36	2335500.19	15.00	0.00
								6219935.57	2335502.02	15.00	0.00
BUILDING		BUILDING00011	x	0		15.00	a	6219878.48	2335560.02	15.00	0.00
								6219879.85	2335496.99	15.00	0.00
								6219826.87	2335494.71	15.00	0.00
								6219825.04	2335518.00	15.00	0.00
								6219838.75	2335517.54	15.00	0.00
								6219839.20	2335541.29	15.00	0.00
								6219843.31	2335540.84	15.00	0.00
								6219842.86	2335560.48	15.00	0.00

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00012	x	0		15.00	a	6219837.57	2335820.94	15.00	0.00
								6219866.22	2335821.16	15.00	0.00
								6219865.78	2335759.96	15.00	0.00
								6219904.63	2335759.96	15.00	0.00
								6219905.06	2335728.93	15.00	0.00
								6219861.44	2335731.53	15.00	0.00
								6219861.01	2335757.14	15.00	0.00
								6219855.80	2335756.92	15.00	0.00
								6219857.10	2335734.79	15.00	0.00
								6219827.37	2335734.14	15.00	0.00
								6219826.94	2335743.90	15.00	0.00
								6219819.34	2335744.34	15.00	0.00
								6219819.34	2335776.89	15.00	0.00
								6219828.89	2335777.54	15.00	0.00
								6219828.02	2335800.11	15.00	0.00
								6219837.14	2335800.33	15.00	0.00
BUILDING		BUILDING00013	x	0		15.00	a	6219951.92	2335339.36	15.00	0.00
								6220009.73	2335339.36	15.00	0.00
								6220009.21	2335366.44	15.00	0.00
								6220079.52	2335368.53	15.00	0.00
								6220077.96	2335297.69	15.00	0.00
								6219951.92	2335298.74	15.00	0.00
BUILDING		BUILDING00005	x	0		30.00	a	6219818.48	2336863.08	30.00	0.00
								6219946.08	2336861.51	30.00	0.00
								6219944.52	2336800.06	30.00	0.00
								6220357.02	2336799.53	30.00	0.00
								6220359.63	2336454.74	30.00	0.00
								6219938.79	2336456.31	30.00	0.00
								6219939.31	2336442.24	30.00	0.00
								6219816.40	2336444.33	30.00	0.00

Ground Absorption(s)

Name	M.	ID	G	Coordinates	
				x	y
				(ft)	(ft)
GROUND		0	1.0	6220097.51	2334963.78
				6220409.73	2334959.41
				6220403.89	2334435.64
				6220087.30	2334425.43

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