Appendix G
Noise Impact Analysis

Armtec Master Plan

NOISE IMPACT ANALYSIS

CITY OF COACHELLA

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
Leq	Equivalent continuous (average) sound level
Lmax	Maximum level measured over the time interval
Lmin	Minimum level measured over the time interval
MCL	Maximum contaminant levels
NIOSH	National Institute for Occupational Safety and Health
PPV	Peak particle velocity
Project	Armtec Master Plan
RCNM	Roadway Construction Noise Model
VdB	Vibration Decibels

EXECUTIVE SUMMARY

This noise study has been prepared to determine the noise exposure and the necessary noise mitigation measures for the proposed Armtec Master Plan Project. The Project is located on the southwest corner of Tyler Street and Avenue 53 in the City of Coachella. The Project is proposed to consist of the expansion of an existing defense technologies facility which currently manufactures combustible ordinance. The purpose of this noise analysis is to ensure that the proposed operational and construction activities within the Project study area are compatible with the existing and future noise environment. The potential noise impacts on the sensitive land uses near the A summary of findings for CEQA significance criteria is shown in Table ES-1.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Aircraft Noise	9	*Less Than Significant*	-
Operational Noise	10	*Less Than Significant*	-
Construction Noise	11	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the potential noise impacts related to the development of the proposed Armtec Master Plan ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, and evaluates the potential Project-related long-term operational and temporary noise impacts associated with the construction of the.

1.1 SITE LOCATION

The Project is located on the southwest corner of Tyler Street and Avenue 53 in the City of Coachella, as shown on Exhibit 1-A. To the east and north are residential uses and to the south and west are agricultural fields. The closest highway is Highway 111 located .28 miles to the east and the closest airport is the Jacqueline Cochran Regional Airport, located 1.3 miles to the south.

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of the expansion of an existing defense technologies facility which currently manufactures combustible ordinance and is split by the road Avenue 53. The Project includes the construction and operation of new warehouses totaling 30,000 square feet (SF), new production facilities totaling 18,000 SF, expanding existing warehouses by a total of 6,000 SF as well as two new storage facilities totaling 1,800 SF and a new truck staging area. The site plan is shown on Exhibit 1-B.

EXHIBIT 1-A: LOCATION MAP

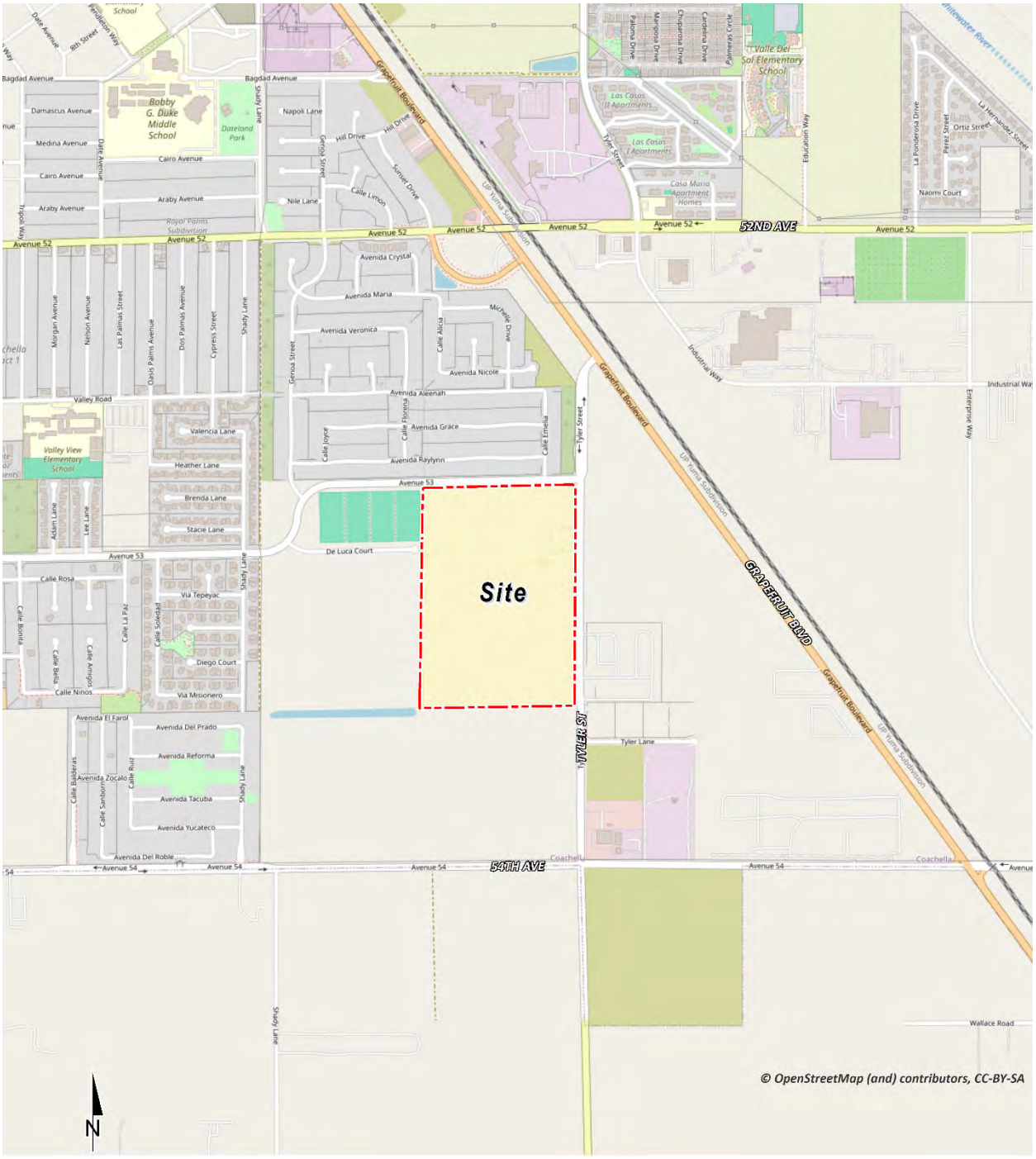

EXHIBIT 1-B: SITE PLAN

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2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (1) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is at roughly 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (2) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (Leq). 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 (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

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 Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA Leq 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 particular time, but rather represents the total sound exposure. The City of Coachella 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 manner in which 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.

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source.

2.3.3 ATMOSPHERIC EFFECTS

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

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby 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 FHWA does not consider the planting of vegetation to be a noise abatement measure.

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (3)

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. (4)

2.7 COMMUNITY RESPONSE TO NOISE

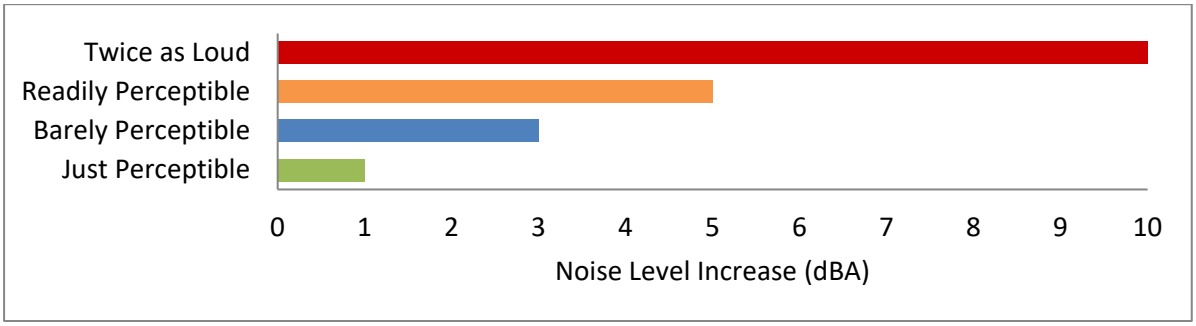
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

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

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another 25 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. (5) 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. (5)

Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA is considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (3)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 EXPOSURE TO HIGH NOISE LEVELS

The Occupational Safety and Health Administration (OSHA) sets legal limits on noise exposure in the workplace. The permissible exposure limit (PEL) for a worker over an eight-hour day is 90 dBA. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time. (6)

OSHA has implemented requirements to protect all workers in general industry (e.g., the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where workers are exposed to a time weighted average noise level of 85 dBA or higher over an eight-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment, and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA. This noise study does not evaluate the noise exposure of workers within a project or construction site based on CEQA requirements, and instead, evaluates Project-related operational and construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (7)

2.9 VIBRATION

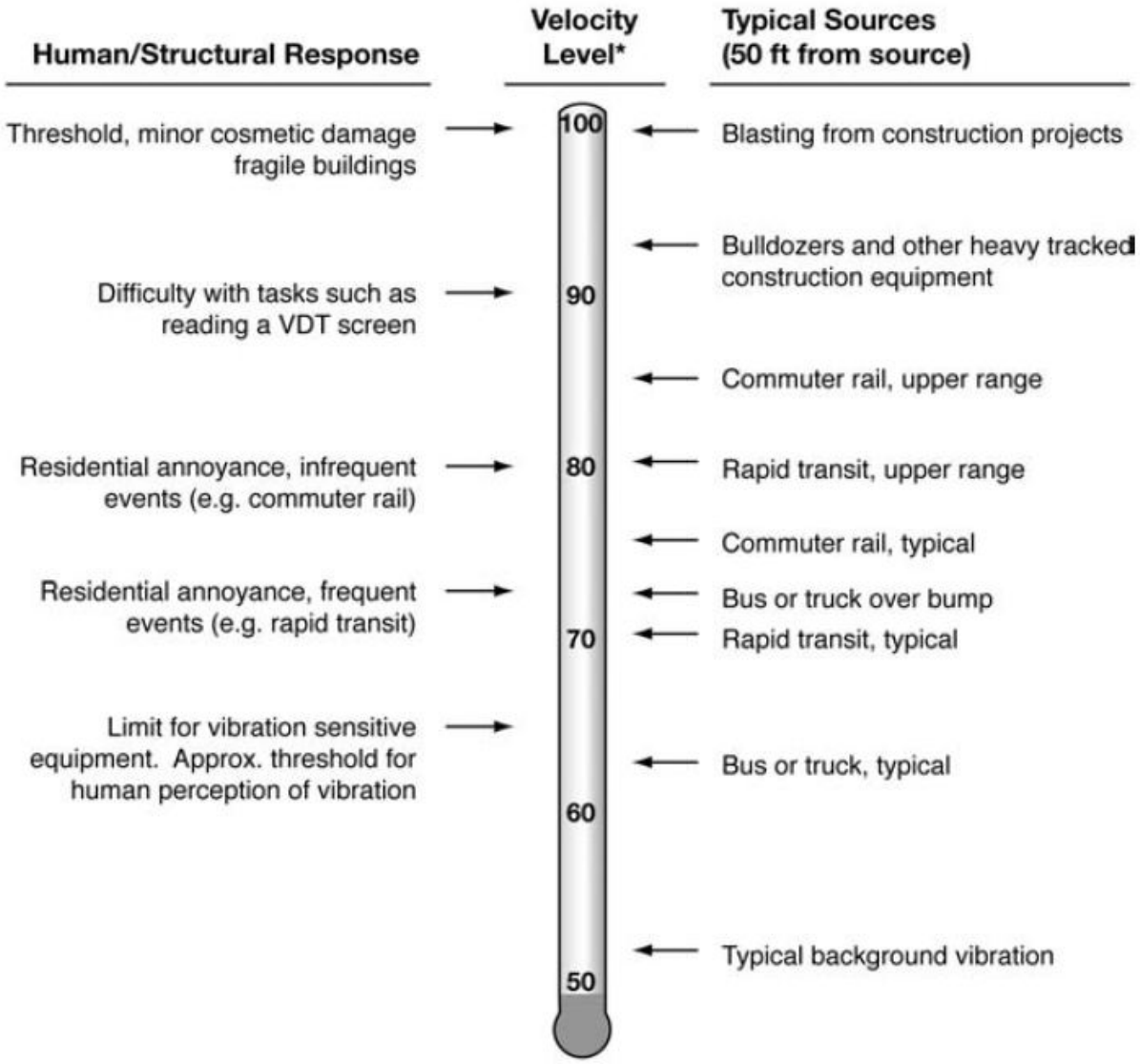
Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions.

As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

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

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

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



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

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

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3 REGULATORY SETTING

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

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

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

3.2 CITY OF COACHELLA GENERAL PLAN NOISE ELEMENT

The City of Coachella has adopted a Noise Element of the General Plan as *a tool for local planners to use in achieving and maintaining land uses that are compatible with environmental noise levels*. (10) The Noise Element identifies noise goals and policies to protect City of Coachella residents from excessive noise. The goals of the Noise Element are as follows:

Goal 1 Land Use Planning and Design. A community where noise compatibility between differing types of land uses is ensured through land use planning and design strategies.

Goal 2 Stationary Source Noise. A community where excessive noise from stationary sources is minimized.

Goal 3 Mobile Source Noise. A community where excessive noise from mobile sources is minimized.

To ensure noise-sensitive land uses are protected from high levels of noise (Goal 1), Exhibit 3-A identifies exterior noise level guidelines for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, Table 1 of the Noise Technical Appendix provides an exterior noise level standard of 65 dBA CNEL and an interior noise level standard of 45 dBA CNEL for new residential developments impacted by transportation noise. The Noise Element also requires the analysis of new developments, as necessary, to identify mitigation measures to reduce noise levels to those found in Exhibit 3-A.

EXHIBIT 3-A: LAND USE/NOISE COMPATIBILITY MATRIX

LAND USE CATEGORIES		CNEL						
CATEGORIES	USES	55	60	65	70	75	80	
RESIDENTIAL	Single Family, Duplex, Multiple Family							
RESIDENTIAL	Mobile Homes							
COMMERCIAL - Regional, District	Hotel, Motel, Transient Lodging							
COMMERCIAL - Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theater							
COMMERCIAL INDUSTRIAL	Office Building, Research and Development, Professional Offices, City Office Building							
COMMERCIAL - Recreation INSTITUTIONAL - Civic Center	Amphitheater, Concert Hall Auditorium, Meeting Hall							
COMMERCIAL - Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club							
COMMERCIAL - General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities							
INSTITUTIONAL - General	Hospital, Church, Library, School Classroom							
OPEN SPACE	Parks							
OPEN SPACE	Golf Couse, Cemeteries, Nature Centers, Wildlife Reserves, Wildlife Habitat							
AGRICULTURE	Agriculture							

INTERPRETATION

ZONE A (GREEN) CLEARLY COMPATIBLE	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
ZONE B (YELLOW) NORMALLY COMPATIBLE	New construction or development should be undertaken only after an analysis of the noise reduction requirements is made and needed noise insulation features included in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning will normally suffice.
ZONE C (ORANGE) NORMALLY INCOMPATIBLE	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
ZONE D (RED) CLEARLY INCOMPATIBLE	New construction or development should generally not be undertaken.

* Construction of new residential uses will not be allowed within the 65 dBA CNEL contour for airport noise.

Source: City of Coachella General Plan Noise Element, Figure 10-1.

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

Exhibit 3-A provides guidelines to evaluate the acceptability of the transportation-related noise level impacts. These guidelines are based on the Governor's Office of Planning and Research and are used to assess the long-term traffic noise impacts on land uses. According to the land use compatibility guidelines of the General Plan, the utility/institutional land use of the Project is considered *clearly compatible* with exterior noise levels approaching 70 dBA CNEL. For

comparison, noise-sensitive residential land uses are considered *clearly compatible* with exterior noise levels of 60 dBA CNEL. (10)

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Armtec Master Plan Project, operational source noise such as the roof top air conditioners and a truck staging/loading area are typically evaluated against standards established under a City's Municipal Code. For noise-sensitive residential properties, the City of Coachella Municipal Code, Section 7.04.030 (A), identifies exterior operational noise level limits for the daytime (6:00 a.m. to 10:00 p.m.) hours of 55 dBA Leq and 45 dBA Leq during the nighttime (10:00 p.m. to 6:00 a.m.) hours. The City of Coachella Municipal Code noise level standards are shown in Table 3-1 and provided in Appendix 3.1.

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Jurisdiction	Land Use	Time Period	Exterior Noise Level Standards (dBA Leq)[2]
Coachella[1]	Residential	Daytime (6:00 a.m. to 10:00 p.m.)	55
		Nighttime (10:00 p.m. to 6:00 a.m.)	45

[1] Source: City of Coachella Municipal Code, Section 7.04.030 (A).
[2] Leq represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

3.4 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the City has established limits to the hours of operation. Section 7.04.070 of the City's Municipal Code, provided in Appendix 3.1, indicates that construction activities shall be limited from October 1st through April 30th, Monday to Friday, between the hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. (11) However, neither the City of Coachella General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for

construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use (12 p. 179).

3.5 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration (12).

To analyze vibration impacts associated with the Project, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code if such standards exist. The City of Coachella does not identify specific construction vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (13 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

3.6 AIRCRAFT NOISE

The County of Riverside is responsible for the management and development of the Airport Land Use Compatibility Plan (ALUCP) for each public use and military airport in Riverside County. Each ALUCP identifies land use and noise level compatibility due to operations at airports as well as forecasted noise level contours based on future operations at each airport. These noise level contours and land use compatibility noise levels are used in determining whether a proposed land use is consistent with forecasted noise levels. The ALUCP for the Project site is the Jacqueline Cochran Regional Airport (JCRA) ALUCP. Exhibits 3-B and 3-C present the JCRA Compatibility Zones and the JCRA Compatibility Criteria, respectively. The Project is located in Zone D as shown on Exhibit 3-B

EXHIBIT 3-B: JCRA COMPATIBILITY ZONES

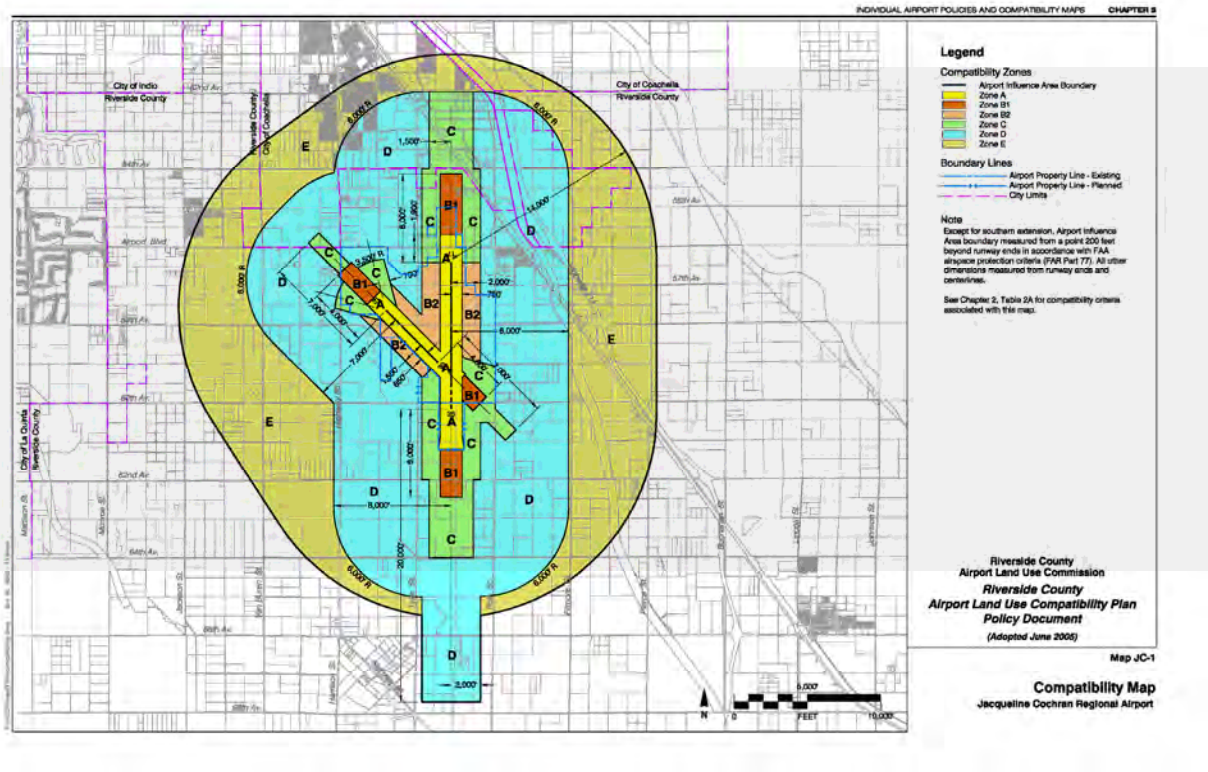

EXHIBIT 3-C: JCRA COMPATIBILITY CRITERIA

CITY OF COACHELLA:
GENERAL PLAN (1998), AND ZONING CODES

Residential Land Use

- *Compatibility Zone D*
  - Residential land use designations with densities ranging from 5.1 to 8.0 dwelling units per acre north of the airport [C1] potentially conflict with the high- and- low options for *Zone D*
- *Compatibility Zone E*
  - No inconsistencies noted

Other Policies

- *General Plan*
  - The Circulation Element "encourages implementation of the *Thermal Airport Master Plan* as it relates to safety, land use, and noise."
  - No acknowledgment of ALUC coordination
  - The General Plan should be amended to incorporate the current *ALUC Compatibility Plan* with respect to Jacqueline Cochran Regional Airport
  - Noise policy conditionally allows residential development up to 70 dB CNEL conflicts with *Compatibility Plan* limit of 60 dB CNEL
- Zoning Codes
  - Airport height limit zoning not established

Non-Residential Land Use

- *Compatibility Zone C*
  - Potential Conflict: *Zone C* intensity limits (75 people/acre) apply to area designated as Light Industrial/Warehousing north of airport [C2]
- *Compatibility Zone D*
  - Potential Conflict: *Zone D* intensity limits (100 people/acre) apply to areas designated as Light Industrial/Warehousing and Low-Intensity Commercial/Office northwest and northeast of airport [C3]
- *Compatibility Zone E*
  - No inconsistencies noted

Note: This is an initial land use consistency review prepared for the purpose of identifying areas where a conflict exists or potentially exists with ALUC compatibility zone criteria. This review is based upon available general plan documents and does not take into account existing land use. When a conflict between the general plan and compatibility criteria exists, it is not deemed inconsistent when the general plan is merely representing existing development. A more comprehensive analysis is necessary at the time a general plan land modification is presented to the ALUC for review.

Exhibit JC–10, continued

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14). For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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

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

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

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach *recognizes that there is no single noise increase that renders the noise impact significant.* (15) 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) (16) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}). The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (17 p. 9) and Caltrans (1).

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.5, the vibration impacts originating from the construction of the Project Armtec Master Planare appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.30 PPV (in/sec).

4.3 AIRPORT NOISE IMPACTS (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or air strips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project is located approximately 1.3 miles north of the Jacqueline Cochran Regional Airport (JCRA). As such, the Project site would potentially be exposed to excessive noise levels from airport operations, and therefore, further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed 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**
Offsite Noise	Noise-Sensitive	if ambient is < 60 dBA Leq[1]	≥ 5 dBA Leq Project increase	
		if ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA Leq Project increase	
		if ambient is > 65 dBA Leq[1]	≥ 1.5 dBA Leq Project increase	
Aircraft	All	Exterior Noise Level Standards[2]	See Exhibit 3-C	
Operational Noise	Noise-Sensitive	Exterior Noise Level Standards[3]	55 dBA Leq	45 dBA Leq
		if ambient is < 60 dBA Leq[1]	≥ 5 dBA Leq Project increase	
		if ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA Leq Project increase	
		if ambient is > 65 dBA Leq[1]	≥ 1.5 dBA Leq Project increase	
Construction Noise & Vibration	Permitted Construction Hours[4]	**October 1st to April 30th** 6:00 a.m. to 5:30 p.m. Mondays to Fridays	**May 1st to September 30th** 5:00 a.m. to 7:00 p.m. Mondays to Fridays	
		All Year: 8:00 a.m. to 5:00 p.m. Saturdays, Sundays, and holidays		
	Noise-Sensitive	Noise Level Threshold[5]	80 dBA Leq	n/a
		Vibration Level Threshold[6]	0.30 PPV (in/sec)	n/a

[1] Source: FICON, 1992.
[2] Source: Riverside County ALUCP, 2004
[3] Source: City of Coachella Municipal Code, Section 7.04.030 (A).
[4] Source: City of Coachella Municipal Code, Section 7.04.070.
[5] Source: Federal Transit Administration, Transit Noise Vibration Impact Assessment Manual.
[6] Source: U.S. Department of Transportation Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.
"Daytime" = 6:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 6:00 a.m.; "n/a" = No nighttime operation is anticipated at the Project site and no nighttime construction activity is permitted, and therefore, no nighttime noise level thresholds are identified.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, five 24-hour noise level measurements were taken at sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Thursday, June 13th, 2024. Appendix 5.1 includes study area photos.

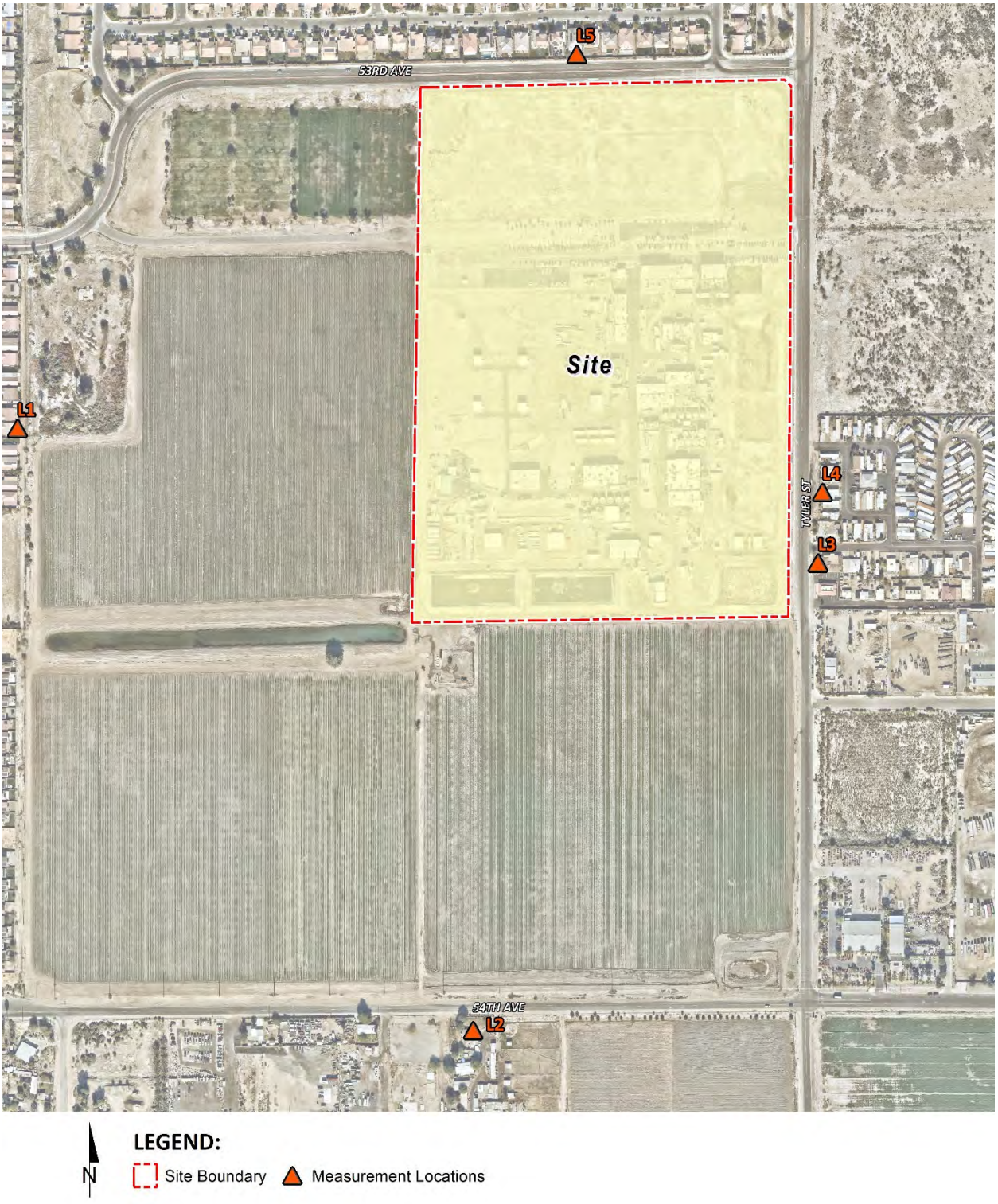
5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (18)

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. Based on recommendations found in the FTA *Transit Noise and Vibration Impact Assessment*, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (8) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS OVERVIEW



5.3 NOISE MEASUREMENT RESULTS

To describe the existing ambient noise environment, the noise measurements presented below focus on the average or equivalent sound levels (Leq). The equivalent sound level (Leq) 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 average hourly daytime (6:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 6:00 a.m.) noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below.

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

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network. This includes auto and heavy truck activities near the noise level measurement locations. The 24-hour existing noise level measurements shown in Table 5-1 present the worst-case existing unmitigated ambient noise conditions.

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

Measurement[1]	Location	Energy Average Hourly Noise Level (dBA Leq)[2]	
		Daytime	Nighttime
L1	Located west of the site near the residence at 53330 Shady Ln.	49.5	45.3
L2	Located south of the site near the residence at 85755 Avenue 54.	64.4	62.2
L3	Located east of the site near the residence at 53460 Tyler St.	64.4	64.0
L4	Located east of the site near the residences at 53450 Tyler St.	63.0	61.8
L5	Located north of the site near the residence at 85925 Avenida Raylynn.	65.5	63.6

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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 the City of Coachella *Land Use Compatibility* guidelines, all transportation-related noise levels are presented in terms of the 24-hour CNEL.

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. (19) 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. (20) 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. (21)

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 eight off-site study area roadway segments, the distance from the centerline to adjacent receiving land use based on the functional roadway classifications per the City of Coachella General Plan Circulation Element, and the posted vehicle speeds. The ADT volumes used in this study are presented in Table 6-2 are based on the *Armtec Master Plan Traffic Impact Analysis*, prepared by Urban Crossroads, Inc. (22) for the following traffic conditions:

- Existing 2024 Without Project Conditions
- Existing 2024 With Project Conditions
- Existing Plus Ambient Growth (EA) 2026 Without Project Conditions
- EA 2026 With Project Conditions
- Existing Plus Ambient Growth Plus Cumulative (EAC) 2026 Without Project Conditions
- EAC 2026 With Project Conditions

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Distance from Centerline to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Tyler St.	s/o Grapefruit Blvd.	Primary Arterial	40'	50
2	Tyler St.	s/o Avenue 53	Primary Arterial	40'	50
3	Tyler St.	s/o Armtec Entrance	Primary Arterial	40'	50
4	Palm St.	s/o Grapefruit Blvd.	Local	30'	40
5	Grapefruit Blvd.	w/o Tyler St.	Major Arterial	30'	50
6	Grapefruit Blvd.	w/o Palm St.	Major Arterial	30'	50
7	Grapefruit Blvd.	e/o Palm St.	Major Arterial	30'	50
8	Airport Blvd.	w/o Palm St.	Major Arterial	46'	45

[1] City of Coachella and City General Plan Circulation Element

[2] Distance to receiving land use is based upon the right-of-way distances.

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	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Tyler St.	s/o Grapefruit Blvd.	2,090	2,190	2,170	2,270	2,250	2,350
2	Tyler St.	s/o Avenue 53	1,700	1,810	1,770	1,880	1,830	1,940
3	Tyler St.	s/o Armtec Entrance	1,330	1,340	1,380	1,390	1,440	1,450
4	Palm St.	s/o Grapefruit Blvd.	1,510	1,540	1,580	1,610	2,170	2,200
5	Grapefruit Blvd.	w/o Tyler St.	7,970	8,000	8,290	8,320	8,410	8,440
6	Grapefruit Blvd.	w/o Palm St.	6,050	6,060	6,300	6,310	6,970	6,980
7	Grapefruit Blvd.	e/o Palm St.	3,100	3,110	3,220	3,230	3,610	3,620
8	Airport Blvd.	w/o Palm St.	3,420	3,460	3,560	3,600	3,730	3,770

[1] Armtec Master Plan Traffic Analysis, Urban Crossroads.

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of Project traffic distributions. Tables 6-3 and 6-4 provide the time of day (daytime, evening, and nighttime) vehicle splits and Table 6-5 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS (SECONDARY, COLLECTOR)

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

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

TABLE 6-4: TIME OF DAY VEHICLE SPLITS (MAJOR, ARTERIAL, URBAN ARTERIAL)

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

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

TABLE 6-5: TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

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

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

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7 OFF-SITE TRAFFIC NOISE IMPACTS

To assess the off-site traffic CNEL noise level impacts associated with development of the proposed Project, noise level contours were developed based on *Armtec Master Plan Traffic Impact Analysis.* (23) Noise level contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise level contours were developed for the following traffic scenarios:

- Existing 2024 Without Project Conditions
- Existing 2024 With Project Conditions
- Existing Plus Ambient Growth (EA) 2026 Without Project Conditions
- EA 2026 With Project Conditions
- Existing Plus Ambient Growth Plus Cumulative (EAC) 2026 Without Project Conditions
- EAC 2026 With Project Conditions

7.1 TRAFFIC NOISE LEVEL CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL 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 CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-6 present a summary of the exterior dBA CNEL traffic noise levels. Roadway segments are analyzed in each of the following timeframes: Existing with and without Project conditions, EA with and without Project conditions, EAC with and without Project conditions. Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING 2024 WITHOUT PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tyler St.	s/o Grapefruit Blvd.	70.2	41	88	190
2	Tyler St.	s/o Avenue 53	69.3	36	77	166
3	Tyler St.	s/o Armtec Entrance	68.2	30	65	141
4	Palm St.	s/o Grapefruit Blvd.	62.5	9	20	44
5	Grapefruit Blvd.	w/o Tyler St.	76.4	81	174	374
6	Grapefruit Blvd.	w/o Palm St.	75.2	67	145	312
7	Grapefruit Blvd.	e/o Palm St.	72.3	43	93	200
8	Airport Blvd.	w/o Palm St.	72.0	62	134	289

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING 2024 WITH PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tyler St.	s/o Grapefruit Blvd.	70.4	42	91	196
2	Tyler St.	s/o Avenue 53	69.5	37	80	173
3	Tyler St.	s/o Armtec Entrance	68.2	30	66	142
4	Palm St.	s/o Grapefruit Blvd.	62.6	10	21	45
5	Grapefruit Blvd.	w/o Tyler St.	76.5	81	174	375
6	Grapefruit Blvd.	w/o Palm St.	75.3	67	145	312
7	Grapefruit Blvd.	e/o Palm St.	72.4	43	93	200
8	Airport Blvd.	w/o Palm St.	72.0	63	135	292

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EA 2026 WITHOUT PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tyler St.	s/o Grapefruit Blvd.	70.3	42	91	195
2	Tyler St.	s/o Avenue 53	69.4	37	79	170
3	Tyler St.	s/o Armtec Entrance	68.4	31	67	144
4	Palm St.	s/o Grapefruit Blvd.	62.7	10	21	45
5	Grapefruit Blvd.	w/o Tyler St.	76.6	83	178	384
6	Grapefruit Blvd.	w/o Palm St.	75.4	69	149	320
7	Grapefruit Blvd.	e/o Palm St.	72.5	44	95	205
8	Airport Blvd.	w/o Palm St.	72.2	64	138	297

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EA 2026 WITH PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tyler St.	s/o Grapefruit Blvd.	70.5	43	93	201
2	Tyler St.	s/o Avenue 53	69.7	38	82	177
3	Tyler St.	s/o Armtec Entrance	68.4	31	67	145
4	Palm St.	s/o Grapefruit Blvd.	62.8	10	21	46
5	Grapefruit Blvd.	w/o Tyler St.	76.6	83	179	385
6	Grapefruit Blvd.	w/o Palm St.	75.4	69	149	320
7	Grapefruit Blvd.	e/o Palm St.	72.5	44	95	205
8	Airport Blvd.	w/o Palm St.	72.2	64	139	299

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: EAC 2026 WITHOUT PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tyler St.	s/o Grapefruit Blvd.	70.5	43	93	200
2	Tyler St.	s/o Avenue 53	69.6	38	81	174
3	Tyler St.	s/o Armtec Entrance	68.5	32	69	148
4	Palm St.	s/o Grapefruit Blvd.	64.1	12	26	56
5	Grapefruit Blvd.	w/o Tyler St.	76.7	84	180	388
6	Grapefruit Blvd.	w/o Palm St.	75.9	74	159	342
7	Grapefruit Blvd.	e/o Palm St.	73.0	48	103	221
8	Airport Blvd.	w/o Palm St.	72.4	66	142	307

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: EAC 2026 WITH PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tyler St.	s/o Grapefruit Blvd.	70.7	44	96	206
2	Tyler St.	s/o Avenue 53	69.8	39	84	181
3	Tyler St.	s/o Armtec Entrance	68.6	32	69	149
4	Palm St.	s/o Grapefruit Blvd.	64.1	12	26	57
5	Grapefruit Blvd.	w/o Tyler St.	76.7	84	181	389
6	Grapefruit Blvd.	w/o Palm St.	75.9	74	159	343
7	Grapefruit Blvd.	e/o Palm St.	73.0	48	103	221
8	Airport Blvd.	w/o Palm St.	72.4	67	143	309

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVELS

Table 7-1 presents the Existing 2024 without Project conditions, expected to range from 62.5 to 76.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing 2024 with Project conditions will range from 62.6 to 76.5 dBA CNEL. As shown in Table 7-7, the addition of the Project will generate a noise level increase of up to 0.2 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4.2 for off-site traffic noise impacts, the Project-related noise level increases are considered less than significant under Existing conditions at the land uses adjacent to roadways conveying Project traffic.

TABLE 7-7: EXISTING OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Tyler St.	s/o Grapefruit Blvd.	70.2	70.4	0.2	1.5	No
2	Tyler St.	s/o Avenue 53	69.3	69.5	0.2	1.5	No
3	Tyler St.	s/o Armtec Entrance	68.2	68.2	0.0	1.5	No
4	Palm St.	s/o Grapefruit Blvd.	62.5	62.6	0.1	3.0	No
5	Grapefruit Blvd.	w/o Tyler St.	76.4	76.5	0.1	1.5	No
6	Grapefruit Blvd.	w/o Palm St.	75.2	75.3	0.1	1.5	No
7	Grapefruit Blvd.	e/o Palm St.	72.3	72.4	0.1	1.5	No
8	Airport Blvd.	w/o Palm St.	72.0	72.0	0.0	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

7.3 EA 2026 TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the EA 2026 without Project conditions, expected to range from 62.7 to 76.6 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the EA 2026 with Project conditions will range from 62.8 to 76.6 dBA CNEL. As shown in Table 7-8, the addition of the Project will generate noise level increases of up to 0.3 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Section 4.2 for off-site traffic noise impacts, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases due to unmitigated EA 2026 Project-related traffic noise levels.

TABLE 7-8: EXISTING AND AMBIENT OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Tyler St.	s/o Grapefruit Blvd.	70.3	70.5	0.2	1.5	No
2	Tyler St.	s/o Avenue 53	69.4	69.7	0.3	1.5	No
3	Tyler St.	s/o Armtec Entrance	68.4	68.4	0.0	1.5	No
4	Palm St.	s/o Grapefruit Blvd.	62.7	62.8	0.1	3.0	No
5	Grapefruit Blvd.	w/o Tyler St.	76.6	76.6	0.0	1.5	No
6	Grapefruit Blvd.	w/o Palm St.	75.4	75.4	0.0	1.5	No
7	Grapefruit Blvd.	e/o Palm St.	72.5	72.5	0.0	1.5	No
8	Airport Blvd.	w/o Palm St.	72.2	72.2	0.0	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

7.4 EAC 2026 TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the EAC 2026 without Project conditions, expected to range from 64.1 to 76.7 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the EAC 2026 with Project conditions will range from 64.1 to 76.7 dBA CNEL. As shown in Table 7-9, the addition of the Project will generate noise level increases up to 0.2 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Section 4.4 for off-site traffic noise impacts, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases due to unmitigated EAC 2026 Project-related traffic noise levels.

TABLE 7-9: EXISTING, AMBIENT AND CUMULATIVE OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Tyler St.	s/o Grapefruit Blvd.	70.5	70.7	0.2	1.5	No
2	Tyler St.	s/o Avenue 53	69.6	69.8	0.2	1.5	No
3	Tyler St.	s/o Armtec Entrance	68.5	68.6	0.1	1.5	No
4	Palm St.	s/o Grapefruit Blvd.	64.1	64.1	0.0	3.0	No
5	Grapefruit Blvd.	w/o Tyler St.	76.7	76.7	0.0	1.5	No
6	Grapefruit Blvd.	w/o Palm St.	75.9	75.9	0.0	1.5	No
7	Grapefruit Blvd.	e/o Palm St.	73.0	73.0	0.0	1.5	No
8	Airport Blvd.	w/o Palm St.	72.4	72.4	0.0	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

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8 AIRCRAFT NOISE

The Jacqueline Cochran Regional Airport (JCRA) is located approximately 1.3 miles south of the Project site. The Project is within Zone D of the Riverside County ALUCP compatibility zones and, as can be seen in Exhibit 3-C, the ALUCP stipulates that so long as the density of the Project is restricted to 100 people/acre the potential conflict can be abated for non-residential uses within the zone. As shown in Exhibit 8-A, the Project lies outside of the 55 dBA CNEL contour for JCRA. This is below the compatibility standards of 55 dBA CNEL as shown on the significance criteria matrix in Table 4-1. Therefore, impacts due to aircraft noise would be *less than significant*.

EXHIBIT 8-A: JACQUELINE COCHRAN REGIONAL AIRPORT ALUCP NOISE LEVEL CONTOURS

9 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, 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, five receiver locations in the vicinity of the Project site were identified. 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 private residence at 53330 Shady Lane, approximately 1,363 feet west of the Project site. R1 is placed in the residence's outdoor living area (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

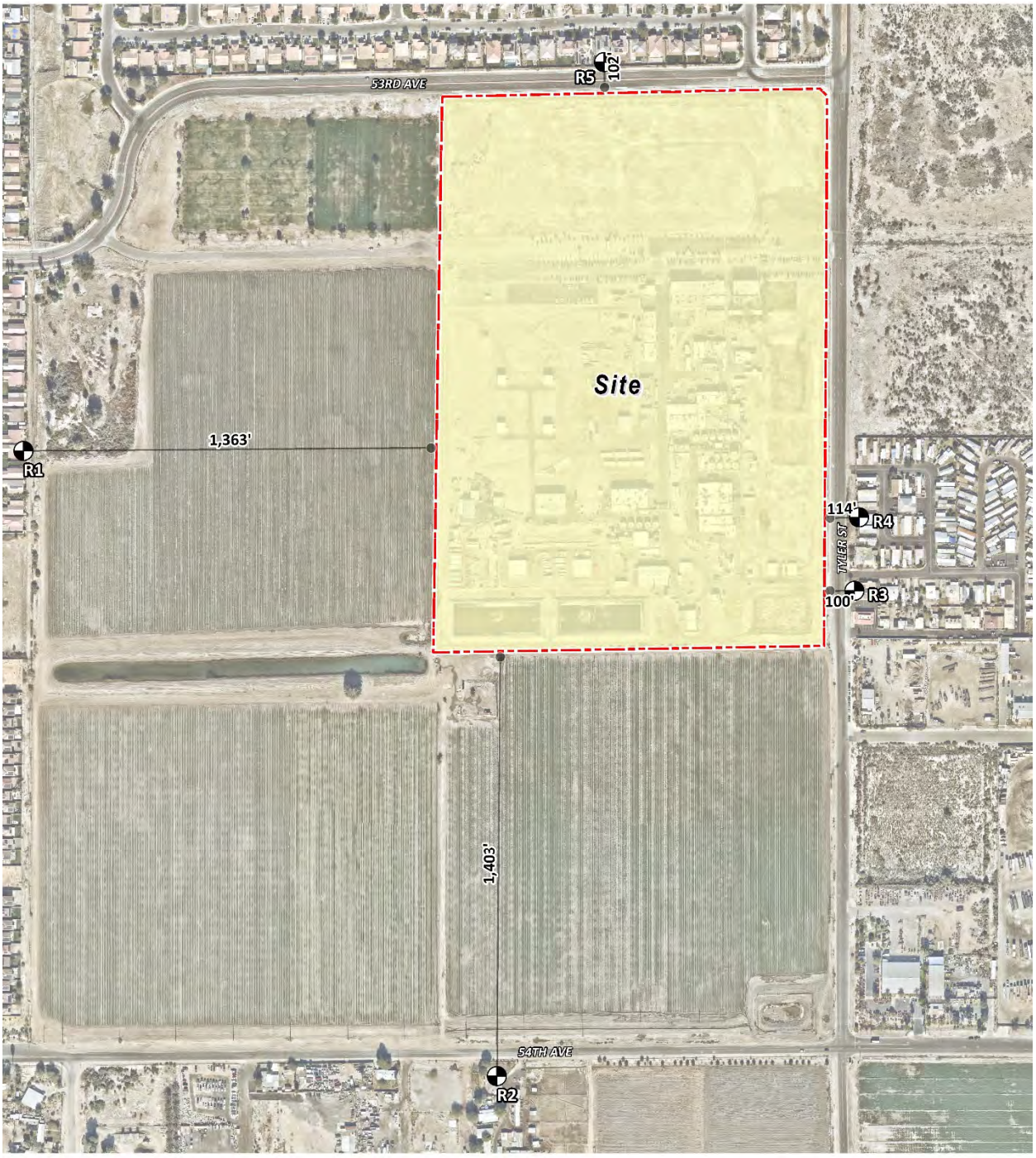
R2: Location R2 represents the private residence at 85755 Avenue 54, approximately 1,403 feet south of the Project site. Receiver R2 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the private residence at 53460 Tyler Street, approximately 100 feet east of the Project site. Receiver R3 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: Location R4 represents the existing noise sensitive residence at 53450 Tyler Street, approximately 114 feet east of the Project site. Receiver R4 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R5: Location R5 represents the existing noise sensitive residence at 85925 Avenida Raylynn, approximately 102 feet north of the Project site. Receiver R5 is placed in the outdoor living area (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

EXHIBIT 9-A: RECEIVER LOCATIONS



10 OPERATIONAL NOISE IMPACTS

This section analyzes potential impacts resulting from the activities associated with the operation of the Project, including roof top air conditioners and a truck staging/loading area.

10.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical daytime and nighttime activities at the Project site. The on-site Project-related noise sources are expected to include: roof top air conditioners and a truck staging/loading area.

10.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities or taken from manufacturer's specification sheets to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise levels shown in Table 10-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the roof top air conditioners and a truck staging/loading area all operating at the same time. These sources of noise activity will likely vary throughout the day.

10.2.1 MEASUREMENT PROCEDURES

Unless noted in the following descriptions, the reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, which was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (18)

EXHIBIT 10-A: OPERATIONAL NOISE LOCATIONS

TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Noise Source Height (Feet)	Min./Hour[1]		Reference Noise Level @50 feet (dBA L_{eq})	Sound Power Level (dBA)[2]
		Day	Night		
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Staging/Loading Activities	5'	60	0	71.8	103.7

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site.
[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source.
"Day" = 7:00 a.m. to 6:00 p.m.; "Evening" = 6:00 p.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

10.2.2 ROOF-TOP AIR CONDITIONING UNITS

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

10.2.3 TRUCK STAGING/LOADING ACTIVITIES

To represent the noise levels associated with truck staging/loading activities, Urban Crossroads collected a reference noise level measurement of a loaded semi-truck parking. The measured reference noise level at the uniform 50-foot reference distance is 71.8 dBA Leq for truck staging and loading. The truck staging and loading noise levels include opening/closing doors, engines revving, brakes engaging, transferring cargo, and engines idling. Noise associated with truck staging is expected to occur for the entire hour (60 minutes) during the daytime hours.

10.3 CADNAA NOISE PREDICTION MODEL

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

Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level

contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces.

10.4 OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, it is possible to estimate the Project operational stationary/area-source noise levels at each of the sensitive receiver locations. The daytime project stationary/area-source noise level calculations shown in Tables 10-2 through 10-4 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. With geometric spreading, sound levels attenuate (or decrease) at a rate of 6 dB for each doubling of distance from a point source (roof-top air conditioning units) and 4.5 dB for each doubling of distance from an area source (parking lot vehicle movements). Table 10-2 indicates that the hourly noise levels associated with the roof top air conditioners and a truck staging/loading area are expected to range from 41.0 to 48.4 dBA Leq at the nearby sensitive receiver locations for the daytime. Table 10-3 indicates a range of 17.2 to 37.2 dBA L_{eq} for the nighttime.

TABLE 10-2: DAYTIME PROJECT STATIONARY/AREA-SOURCE NOISE LEVELS (DBA L_{EQ})

Noise Source[1]	Daytime Noise Level (dBA L_{eq})				
	R1	R2	R3	R4	R5
Roof-Top Air Conditioning Units	19.6	21.7	36.8	39.6	24.2
Staging/Loading Activities	48.4	40.9	43.6	45.5	46.8
Total (All Noise Sources)	**48.4**	**41.0**	**44.4**	**46.5**	**46.8**

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

TABLE 10-3: NIGHTTIME PROJECT STATIONARY/AREA-SOURCE NOISE LEVEL (DBA L_{EQ})

Noise Source[1]	Daytime Noise Level (dBA L_{eq})				
	R1	R2	R3	R4	R5
Roof-Top Air Conditioning Units	17.1	19.3	34.4	37.2	21.8
Staging/Loading Activities	0.0	0.0	0.0	0.0	0.0
Total (All Noise Sources)	**17.2**	**19.4**	**34.4**	**37.2**	**21.8**

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

10.5 OPERATIONAL NOISE LEVEL COMPLIANCE

The operational noise levels related to the roof top air conditioners and a truck staging/loading area associated with the Project are considered exempt from the City of Coachella Municipal Code noise standards. However, to demonstrate compliance with CEQA Guidelines, this analysis evaluates the potential operational noise levels against the City of Coachella Municipal Code exterior noise standards at the closest noise-sensitive receiver locations.

Table 10-4 shows that the Project-related operational noise levels at the closest sensitive receiver locations will range from 17.2 to 48.4 dBA Leq and will satisfy the residential daytime 55 dBA Leq and nighttime 45 dBA Leq noise level standards of the City of Coachella Municipal Code. Appendix 10.1 includes the operational noise level calculations.

TABLE 10-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Threshold Exceeded?[4]	
	Day	Night	Day	Night	Day	Night
R1	48.4	17.2	55	45	No	No
R2	41.0	19.4	55	45	No	No
R3	44.4	34.4	55	45	No	No
R4	46.5	37.2	55	45	No	No
R5	46.8	21.8	55	45	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise level calculations included in Appendix 10.1.
[3] City of Coachella exterior noise level standards by land use, as shown in Table 3-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Day" = 7:00 a.m. to 6:00 p.m.; "Evening" = 6:00 p.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

The Project-related operational noise levels will still satisfy the City of Coachella Municipal Code noise level standards at nearby sensitive receiver locations, and therefore, the operational noise impacts will be *less than significant*. No exterior noise mitigation measures are required since there is not a significant noise impact.

10.6 PROJECT OPERATIONAL NOISE CONTRIBUTION

To describe the Project operational noise level contributions, the Project operational noise levels were combined with the existing ambient noise levels measurements for the off-site receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-related operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (1) 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-related operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level contributions. Noise levels that would be experienced at receiver locations when Project-source noise is added to the ambient daytime and nighttime conditions are presented in Tables 10-5 and 10-6, respectively.

As indicated in Table 10-5, the Project will contribute an operational noise level increase of up to 2.5 Leq during the daytime hours at the closest sensitive receiver locations. Table 10-6 shows that the nighttime Project-related operational noise level increases will approach less than 0.01 dBA Leq. Since the Project-related operational noise level contributions will satisfy the significance criteria discussed in Section 4, the increases at the sensitive receiver locations will be *less than significant*. On this basis, Project operational stationary-source noise would not result in a substantial temporary/periodic, or permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project and impacts in these regards will be *less than significant*.

TABLE 10-5: DAYTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS (DBA LEQ)

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	48.4	L1	49.5	52.0	2.5	5.0	No
R2	41.0	L2	64.4	64.4	0.0	3.0	No
R3	44.4	L3	64.4	64.4	0.0	3.0	No
R4	46.5	L4	63.0	63.1	0.1	3.0	No
R5	46.8	L5	65.5	65.6	0.1	1.5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project operational noise levels as shown in Table 10-5.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

TABLE 10-6: NIGHTTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS (DBA LEQ)

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	17.2	L1	45.3	45.3	0.0	5.0	No
R2	19.4	L2	62.2	62.2	0.0	3.0	No
R3	34.4	L3	64.0	64.0	0.0	3.0	No
R4	37.2	L4	61.8	61.8	0.0	3.0	No
R5	21.8	L5	63.6	63.6	0.0	3.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project operational noise levels as shown in Table 10-5.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

11 CONSTRUCTION NOISE IMPACTS

This section analyzes potential impacts resulting from the temporary activities associated with the construction of the Project. Exhibit 11-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 8. To control noise impacts associated with the construction of the Project, the City has established limits to the hours of operation. Section 7.04.070 of the City's Municipal Code, provided in Appendix 3.1, indicates that construction activities shall be limited from October 1st through April 30th, Monday to Friday, between the hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. (11)

11.1 CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics - some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

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

11.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels published in the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (24) The RCNM equipment database provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

EXHIBIT 11-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS

11.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. For construction noise assessment, construction equipment can be considered to operate in two modes: stationary and mobile. As defined, stationary equipment operates in a single location for one or more days at a time, with either fixed-power operation (e.g., pumps, generators, and compressors) or variable-power operation (e.g., pile drivers, rock drills, and pavement breakers). Mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders (FTA 2018). The FTA and FHWA recommend noise impacts from stationary equipment be assessed from the center of the equipment location, while noise impacts from mobile construction equipment should be assessed from the center of the equipment activity area (e.g., construction site). Thus, to assess a more realistic and reasonable worst-case construction scenario while accounting for the dynamic nature of construction activities, this Project construction noise analysis models the equipment combination with the highest reference combined level as a moving point within the construction area (Project site boundary).

TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})[2]	Combined Sound Power Level (PWL)[3]
Site Preparation	Crawler Tractors	78.0	80.0	111.6
	Hauling Trucks	72.0		
	Rubber Tired Dozers	75.0		
Grading	Graders	81.0	83.0	114.6
	Excavators	77.0		
	Compactors	76.0		
Building Construction	Cranes	73.0	81.0	112.6
	Tractors	80.0		
	Welders	70.0		
Paving	Pavers	74.0	83.0	114.6
	Paving Equipment	82.0		
	Rollers	73.0		
Architectural Coating	Cranes	73.0	77.0	108.6
	Air Compressors	74.0		
	Generator Sets	70.0		

[1] 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.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calibrated using the CadnaA noise model at the reference distance to the noise source.

Construction impacts are based on the highest noise level calculated at each receiver location. As shown in Table 11-2, the construction noise levels are expected to range from 41.5 to 58.6 dBA L_{eq} at the nearby receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	45.6	48.6	46.6	48.6	42.6	48.6
R2	44.5	47.5	45.5	47.5	41.5	47.5
R3	55.1	58.1	56.1	58.1	52.1	58.1
R4	55.3	58.3	56.3	58.3	52.3	58.3
R5	55.6	58.6	56.6	58.6	52.6	58.6

[1] Noise receiver locations are shown on Exhibit 11-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 11.1.

11.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown in Table 11-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 11-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	48.6	80	No
R2	47.5	80	No
R3	58.1	80	No
R4	58.3	80	No
R5	58.6	80	No

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown in Table 10-2.
[3] Construction noise level thresholds as shown in Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 CONSTRUCTION VIBRATION ANALYSIS

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

TABLE 11-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small Bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large Bulldozer	0.089
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 11-5 presents the expected Project-related vibration levels at the nearby receiver building façade locations. At distances ranging from 100 to 1,403 feet from the building façade to the Project construction activities, construction vibration velocity levels are estimated to range from less than 0.01 up to 0.03 (in/sec). Based on the maximum acceptable continuous vibration threshold of 0.30 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site. Moreover, the vibration levels reported at the sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

TABLE 11-5: PROJECT CONSTRUCTION VIBRATION LEVELS

Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]						Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small Bulldozer	Jackhammer	Loaded Trucks	Large Bulldozer	Vibratory Roller	Highest Vibration Level		
R1	1,363'	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R2	1,403'	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R3	100'	0.00	0.00	0.01	0.01	0.03	0.03	0.30	No
R4	114'	0.00	0.00	0.01	0.01	0.02	0.02	0.30	No
R5	102'	0.00	0.00	0.01	0.01	0.03	0.03	0.30	No

[1] Receiver locations are shown on Exhibit 11-A.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 11-4).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

12 REFERENCES

1. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
2. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requiste to Protect Public Health and Welfare with an Adequate Margin of Safety.* March, 1974. EPA/ONAC 550/9/74-004.
3. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* June, 1995.
4. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
5. **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.
6. **Occupational Safety and Health Administration.** *Standard 29 CRF, Part 1910.*
7. **Center for Disease Control and Prevention.** About Hearing Loss. [Online] [Cited: 04 15, 2016.] http://www.cdc.gov/healthyschools/noise/signs.htm.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* May 2006. FTA-VA-90-1003-06.
9. **Office of Planning and Research.** *State of California General Plan Guidlines 2003.* October 2003.
10. **City of Coachella.** *General Plan Noise Element.* April 2015.
11. —. *Municipal Code, Title 7 Noise Control.*
12. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
13. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* April 2020.
14. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
15. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
16. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
17. **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.
18. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
19. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
20. **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.

21. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.

22. **Urban Crossroads, Inc.** *Desert Island Hotel Focused Traffic Analysis.* 2022.

23. **Urban Crossroads.** *Armtec Master Plan Traffic Analysis.* 2024.

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

13 CERTIFICATION

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

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

EDUCATION

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:

CITY OF COACHELLA MUNICIPAL CODE

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Title 7 - NOISE CONTROL

Chapters:

Chapter 7.04 - NOISE CONTROL[1]

Sections:

Footnotes:
--- (1) ---
Editor's note—Ord. No. 1022, adopted Nov. 17, 2010, amended ch. 7.04 in its entirety to read as herein set out. Former ch. 7.04 pertained to similar subject matter, consisted of §§ 7.04.010—7.04.140, and derived from Ord. 940.

7.24.010 - Purpose.

The city council finds and declares that:

A. Inadequately controlled noise presents a growing danger to the health and welfare of the residents of the city of Coachella;
B. The making and creation of excessive, unnecessary or unusually loud noises within the limits of the city of Coachella is a condition that has existed for some time, however, the extent and volume of such noises is increasing;
C. The making, creation or maintenance of such excessive, unnecessary, unnatural or unusually loud noises that are prolonged, unusual and unnatural in their time, place and use affect and are a detriment to public health, comfort, convenience, safety, welfare and prosperity of the residents of the city of Coachella;
D. Every person is entitled to an environment in which the noise is not detrimental to his life, health, or enjoyment of property; and
E. The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted, is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of the residents of the city of Coachella.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.020 - Definitions.

[As used in this chapter, the following terms have the meanings given:]

"A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level to read is designated db(A) or dBA.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

"Amplified music" means instrumental and/or vocal music amplified through electronic means.

"Average sound level" means a sound level typical of the sound levels at a certain place during a given period of time; also, means an equivalent continuous sound level.

"Commercial establishments" includes, but is not limited to, any nightclub, restaurant, sports bar, industrial, retail or business establishment or combination thereof.

"Construction equipment" means any tools, machinery or equipment used in connection with construction operations, including all types of "special construction" equipment as defined in the pertinent sections of the 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.

"Cumulative period" means an additive period of time composed of individual time segments which may be continuous or interrupted.

"Decibel" means a unit measure of sound level noise.

"Disturbance" means any disturbance of the peace as defined by California Penal Code Section 415 or as otherwise defined herein.

"Disturbing, excessive or offensive noise" means any sound or noise from any source in excess of the sound level or noise level set forth in Section 7.04.030.

"Emergency machinery," "vehicle" or "work" means any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

"Fixed noise source" means a stationary device which creates sounds which are fixed or motionless including, but not limited to, industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

"Gathering" means any convergence of five or more persons.

"Impact noise" means the noise produced by the collision of one mass in motion with a second mass which may be either in motion or in rest.

"Noise level" means the same as "sound level." The terms may be used interchangeably herein.

"Peace officer" means a duly appointed officer of the city, as defined in California Penal Code, Sections 830, et seq.

"Person" means a person, firm, association, copartnership, joint venture, corporation or any entity, public or private in nature.

"Portable powered blower" means any mechanically powered device, regardless of the source of power, which is not stationary, and used for the purpose of blowing leaves, dirt or other debris off sidewalks, lawns or other surfaces.

"Premises" means any real property or location at which a gathering may be held.

"Sound level" (noise level) in decibels is the quantity measured using the frequency weighting of A of a sound level meter as defined herein.

"Sound level meter" means an instrument meeting American National Standard Institute's Standard SL. 4-1974 for type 1 or type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.030 - Sound level limits as related to fixed noise sources.

A. Regardless of whether an objective measurement by sound level meter is involved, it shall be unlawful for any person to make, continue, or cause to be made or continued, within the city limits any disturbing excessive or offensive noise or vibration which causes discomfort or annoyance to any reasonable person of normal sensitivity residing in the area or that is plainly audible at a distance greater than fifty (50) feet from the sources point for any purpose. The following ten-minute average sound level limits, unless otherwise specifically indicated, shall apply as indicated in the following table as it relates to a fixed noise source or leaf blowers pursuant to Section 7.04.075.

Zone	Time	Applicable Ten-Minute Average Decibel Limit (A-weighted)
Residential—All zones	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	55 45

Commercial—All zones	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	65 55

B. If the measured ambient noise level exceeds the applicable limit as noted in the table in subsection (A) of this section, the allowable average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation sources are not operating.

C. The sound level limit between two zoning districts shall be measured at the higher allowable district.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.040 - Prohibited noise generally.

A. It is unlawful for any person or property owner within the city of Coachella to make, cause, or continue to make or cause, loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities.

B. The factors, standards, and conditions that may be considered in determining whether a violation of the provisions of this section has been committed, include, but are not limited to, the following:

1. The level of the noise;
2. The level and intensity of the background (ambient) noise, if any;
3. The proximity of the noise to residential or commercial sleeping areas;
4. The nature, density and zoning of the area within which the noise emanates;
5. The density of inhabitation of the area within which the noise emanates;
6. The time of day and night the noise occurs;
7. The duration of the noise;
8. Whether the nature of the noise is natural or unnatural;
9. Whether the noise is constant, recurrent or intermittent; and
10. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.050 - Disturbing, excessive, offensive noises—Declaration of certain acts constituting.

The following activities, are declared to be deemed disturbing, excessive or offensive noises and any of the following shall constitute prima facie evidence of a violation:

A.

Horns, Signaling Devices, Muffler Systems, Car Alarms, Etc. Unnecessary use or operation of horns, signaling devices, uncontrolled muffler noises, car alarms on vehicles of all types, including motorcycles, and other equipment.

1. The operation of any such sound production or reproduction device, radio receiving set, musical instrument, drum, phonograph, television set, machine, loudspeaker and sound amplifier or similar machine or device in such a manner as to be plainly audible at a distance of fifty (50) feet or more from the building, structure or vehicle in which located, or from the source point.
2. The operation of any sound amplifier, which is part of, or connected to, any radio, stereo receiver, compact disc player, cassette tape player, or other similar device when operated in such a manner as to be plainly audible at a distance of fifty (50) feet from the source point or when operated in such a manner as to cause a person to be aware of vibration at a distance of fifty (50) feet or more from the source point.

B. Uses Restricted. The use, operation, or permitting to be played, used or operated, any sound production or reproduction device, radio receiving set, musical instrument, drums, phonograph, television set, loudspeakers and sound amplifiers or other machine or device for the producing or reproducing of sound in such a manner as to disturb the peace, quiet, and comfort of any reasonable person of normal sensitiveness.

C. Prima Facie Violations. Any of the following shall constitute evidence of a prima facie violation of this section:

1. The operation of any such sound production or reproduction device, radio receiving set, musical instrument, drum, phonograph, television set, machine, loudspeaker and sound amplifier or similar machine or device in such a manner as to be plainly audible at a distance of fifty (50) feet from the building, structure or vehicle in which located, or from the source point.
2. The operation of any sound amplifier, which is part of, or connected to, any radio, stereo receiver, compact disc player, cassette tape player, or other similar device when operated in such a manner as to be plainly audible at a distance of fifty (50) feet from the source point or when operated in such a manner as to cause a person to be aware of vibration at a distance of fifty (50) feet from the source point.

D. Enforcement of Prima Facie Violations. Any peace office, as defined in California Penal Code, Sections 830, et seq., and/or the city manager or his or her designees, who are authorized to enforce the provisions of this chapter and who encounters evidence of a prima facie violation of this section whereby the component(s) amplifying or transmitting the sound in such a manner as to disturb the peace, quiet, or comfort of any reasonable person of normal sensitivity in any area of the city shall be empowered to issue a citation and/or to confiscate and impound as evidence, any or all of the components amplifying or transmitting the sound.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.060 - Special provisions—Exemptions.

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

A. School bands, school athletic and school entertainment events;

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

C. Activities conducted in public parks and public playgrounds;

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

E. 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;

F. Mobile noise sounds associated with agricultural operations provided such operations do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturdays, or at any time on Sunday or a federal holiday;

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

H. Carillon chimes between the hours of 8:00 a.m. to 7:00 p.m.;

I. For noise sources associated with property maintenance, refer to Section 7.04.075, "property maintenance activities";

J. For noise sources associated with construction activities, refer to Section 7.04.070, "construction activities"; and

K. The provisions of this regulation shall not preclude the 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 those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.070 - Construction activities.

No person shall perform, nor shall any person be employed, nor shall any person cause any other person to be employed to work for which a building permit is required by the city in any work of construction, erection, demolition, alteration, repair, addition to or improvement of any building, structure, road or improvement to realty except between the hours as set forth as follows:

October 1st through April 30th

Monday—Friday: 6:00 a.m. to 5:30 p.m.

Saturday: 8:00 a.m. to 5:00 p.m.

Sunday: 8:00 a.m. to 5:00 p.m.

Holidays: 8:00 a.m. to 5:00 p.m.

May 1st through September 30th

Monday—Friday: 5:00 a.m. to 7:00 p.m.

Saturday: 8:00 a.m. to 5:00 p.m.

Sunday: 8:00 a.m. to 5:00 p.m.

Holidays: 8:00 a.m. to 5:00 p.m.

Emergency work and/or unusual conditions may cause work to be permitted with the consent of the city manager, or his or her designee, upon recommendation of the building director or the city engineer.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.075 - Property maintenance activities.

A. Noise sources associated with property maintenance activity and all portable blowers, lawnmowers, edgers or similar devices shall be prohibited except during the following hours:

October 1st through April 30th

Monday—Sunday: 9:00 a.m. to 5:30 p.m.

Holidays: Not allowed.

May 1st through September 30th

Monday—Friday: 8:00 a.m. to 5:30 p.m.

Saturday and Sunday: 9:00 a.m. to 5:30 p.m.

Holidays: Not allowed.

Notwithstanding the hours of permitted operations, such equipment that constitutes a public nuisance may be abated as otherwise provided in this Code.

B. No person shall willfully make or continue, or willfully cause to be made or continued, any noise from any portable powered blower at a level which exceeds seventy (70) decibels dBA measured at the midpoint of a wall area twenty (20) feet long and ten (10) feet high and at the horizontal distance fifty (50) feet away from the midpoint of the wall, or not more than seventy-six (76) decibels dBA at a horizontal distance of twenty-four (24) feet using a sound level meter.

C. No portable powered blower shall be operated in a manner which will permit dirt, dust, debris, leaves, grass clippings, cuttings, or trimmings from trees or shrubs to be blown or deposited onto neighboring property or public right-of-way. All waste shall be removed and disposed of in a sanitary manner by the use or property occupant.

D. Leaf blowers shall not be operated within a horizontal distance of ten (10) feet of any operable window, door, or mechanical air intake opening or duct.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.080 - Schools, hospitals and churches—Special provisions.

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use, to exceed the noise limits, as specified in subsection (A) of Section 7.04.030, prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably disturbs or annoys patients in the hospital.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.090 - Air conditioning, refrigeration and pool equipment.

The noise standards enumerated in Section 7.04.030 shall be increased by eight dBA when the alleged offensive noise source is an air conditioning or refrigeration system or associated equipment which was installed prior to the effective date of the ordinance codified in this chapter. Installation of new equipment must be certified to be within the provisions of this chapter. Installation of new equipment must be certified to be within the provisions of this chapter for night and day operation noise level.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.100 - Noise level measurement.

A. The location selected for measuring exterior noise levels between residential properties shall be at the property line of the affected residential property. Affected residential property shall be the address from which the complaint was received. Interior noise measurement shall be made within the affected residential unit. The measurement shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source.

The location selected for measuring exterior noise levels between nonresidential properties shall be at the property line of the affected property.

B. The location selected for measuring exterior noise levels between two zoning districts shall be at the boundary of the two districts.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.110 - Interference with authorized personnel is prohibited.

No person shall interfere with, oppose or resist any authorized person charged with enforcement of this chapter while such person is engaged in the performance of his duty.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.120 - Pre-existing noise source—Time extension.

Those commercial and/or industrial noise sources in existence prior to the date of adoption of the ordinance codified in this chapter, which noise sources are an integral part of a building, structure or similar fixed and permanent installation if in compliance with local zoning structures, shall be granted a three-year period from the date of adoption with which to comply with the provisions of the chapter. If, at the end of the three-year period, it can be shown that compliance with the provisions herein constitutes a hardship in terms of technical and economic feasibility, the time to comply may be extended on an annual basis until such time as compliance may be affected.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.130 - Violation—Infractions.

Any person violating any of the provisions of this chapter shall be deemed guilty of an infraction.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.140 - Continuing or subsequent violations—Misdemeanor.

Any person having been convicted of a violation of any provisions of this chapter who thereafter commits a violation of the same provisions of this chapter shall be guilty of a misdemeanor.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.150 - Severability.

If any provision of this chapter is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the remaining provisions of this chapter shall not be invalidated.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

Chapter 7.05 - MULTIPLE RESPONSES TO LOUD OR UNRULY PARTIES, GATHERINGS OR OTHER SIMILAR EVENTS

7.05.010 - Declaration of findings and policy.

It is hereby found and declared that:

A. Due to inadequate supervision, some large gatherings of people, such as parties, frequently become loud and unruly to the point that they constitute a threat to the peace, health, safety, or general welfare of the public as a result of conduct such as one or more of the following: excessive noise, excessive traffic, obstruction of public streets or crowds who have spilled over into public streets, public drunkenness, the service of alcohol to minors, fights, disturbances of the peace, and litter.

B. The city of Coachella is required to make multiple responses to such unruly gatherings in order to restore and maintain the peace and protect public safety. Such gatherings are a burden on scarce city resources and can result in police responses to regular and emergency calls being delayed and police protection to the rest of the city being reduced.

C. In order to discourage the occurrence of repeated loud and unruly gatherings, the persons responsible for the public nuisance created by these gatherings should be fined.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.020 - Loud or unruly gatherings—Public nuisance.

It shall be unlawful and a public nuisance to conduct a gathering of ten (10) or more persons on any private property in a manner which constitutes a substantial disturbance of the quiet enjoyment of private or public property in a significant segment of a neighborhood, as a result of conduct constituting a violation of law. Illustrative of such unlawful conduct is excessive noise or traffic, obstruction of public streets by crowds or vehicles, public drunkenness, the service of alcohol to minors, fights, disturbances of the peace, litter. A gathering constituting a public nuisance may be abated by the city by all reasonable means including, but not limited to, an order requiring the gathering to be disbanded and citation and/or arrest of any law violators under any applicable local laws and state statutes.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.030 - Notice of unruly gatherings—Posting, mail.

A. When the city intervenes at a gathering which constitutes a public nuisance under this chapter, the premises at which such nuisance occurred shall be posted with a notice substantially in the form attached hereto as Exhibit "A" stating that a public nuisance under this chapter was caused by a gathering at the premises, the date and time of the police intervention, and that any subsequent or second police intervention with respect to a nuisance under this chapter at said premises, including a second intervention that same day or night, within sixty (60) days of the first intervention, shall result in the joint and several liability of any guests causing the public nuisance, persons who are residents or in control of the property at which the public nuisance occurred, persons who sponsored the gathering constituting the public nuisance, and owners of the premises as more fully set forth in Sections

7.05.040—7.05.060, below. The residents and persons in control of such property, and the sponsors of the event, shall be responsible for ensuring that such notice is not removed or defaced and shall be liable for a civil penalty of one hundred dollars ($100.00) in addition to any other penalties which may be due under this chapter, if such notice is removed or defaced, provided, however, that the residents of the premises or sponsor of the event, if present, shall be consulted as to the location in which such notice is posted in order to achieve both the security of the notice and its prominent display. The notice shall remain posted for the entire 60-day period.

B. Notice of the police intervention shall also be mailed to any property owner at the address shown on the city's property tax assessment records and shall advise the property owner that any subsequent gathering resulting in a public nuisance within sixty (60) days on the same premises necessitating city intervention shall result in liability of the property owner for all penalties associated with such intervention as more particularly set forth below.

EXHIBIT A
IMPORTANT NOTICE REGARDING
PUBLIC NUISANCE

NOTICE IS HEREBY GIVEN THAT, pursuant to Coachella Municipal Code (CMC) Chapter 7.05, on:

Date: _____/_____/_____, 20_____, at _____ a.m./p.m.

The Coachella Police Department found that a gathering, at the below-listed premises caused a public nuisance as defined by CMC Chapter 7.05 (e.g., disturbance of the peace, threat to public safety, etc.):

Address: _____, Coachella, California.

WARNING

IF THE POLICE RESPOND TO ANOTHER DISTURBANCE CONSTITUTING A NUISANCE (AS DEFINED BY CMC CHAPTER 7.05) AT THE ABOVE PREMISES WITHIN 60 DAYS OF THIS NOTICE, INCLUDING BUT NOT LIMITED TO A DISTURBANCE LATER TODAY OR TONIGHT, A SUBSEQUENT RESPONSE FEE WILL BE IMPOSED UPON:

1. ALL GUESTS CAUSING THE NUISANCE;
2. ALL SPONSORS OF THE GATHERING;
3. ALL RESIDENTS OF THE PREMISES;
4. ALL PERSONS IN CONTROL OF THE PREMISES; AND
5. ALL OWNERS OF THE PREMISES THAT RESIDE ON OR ADJACENT TO THE PREMISES, OR ARE PRESENT AT THE PREMISES WHEN THIS NOTICE IS FIRST POSTED.

Property owners who do not reside on or adjacent to the above premises, and who are not present when this Notice is first posted, are also jointly and severally liable for said fee, if the next disturbance occurs after two weeks after this Notice is mailed to said owner.

THIS NOTICE MUST REMAIN POSTED ON THE PREMISES FOR 60 DAYS

$100 FINE FOR UNAUTHORIZED REMOVAL OF THIS NOTICE

_____

(Name and Signature of the Officer Issuing This Notice)

_____

(Officer's Phone Number)

Date: _____

Case Number: _____

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.040 - Persons liable for subsequent response to a gathering constituting a public nuisance.

If the city is required to intervene as to a gathering constituting a public nuisance on the same premises more than once in any 60-day period, including a second intervention during the same day or night as the first intervention, the following persons shall be jointly and severally liable for civil penalties as set forth in Section 7.05.050, below, in addition to liability for any injuries to city personnel or damage to city property.

A. The person or persons who own the premises where the gathering constituting a public nuisance took place if any of the following are the case:
   (1) Said owner resides on or adjacent to the premises;
   (2) Said owner was present when the notice described in Exhibit "A" was first posted; or
   (3) The notice described in Exhibit "A" was mailed to said owner and fourteen (14) days have elapsed since the date of said mailing.

For purposes of this subsection, where a gathering takes place within the confines of a single unit in a building owned by a housing cooperative, the owner of the property shall be deemed to be the owner of the single unit and not the members of the housing cooperative in general. Where the gathering took place in the common area of a building owned by a housing cooperative, only the members of the cooperative owning units in the building where the gathering took place shall be deemed the owners of the property for purposes of this subsection. Other members of the housing cooperative may still be liable if they fall within the categories of person made liable by Section 7.05.040, subsections (B), (C), or (D), below.

B. The person or persons residing on or otherwise in control of the property where such gathering took place.
C. The person or persons who organized or sponsored such gathering.
D. All persons attending such gathering who engaged in any activity resulting in the public nuisance.

E. Nothing in this section shall be construed to impose liability on the resident or owners of the premises or sponsor of the gathering, for the conduct of persons who are present without the express or implied consent of the resident or sponsor, as long as the resident and sponsor have taken all steps reasonably necessary to exclude such uninvited participants from the premises. Where an invited guest engages in conduct which the sponsor or resident could not reasonably foresee and the conduct is an isolated instance of a guest at the event violating the law which the sponsor is unable to reasonably control without the intervention of the police, the unlawful conduct of the individual guest shall not be attributable to the sponsor, owner, or resident for the purposes of determining whether the event constitutes a public nuisance under this section.

F. There shall be no liability for civil penalties under this chapter for a subsequent intervention during the same day or night as the prior intervention, unless a reasonable time has been provided to abate the public nuisance, taking into account the size of the gathering, the time of day, and other relevant factors.

G. There shall be no liability for civil penalties under this chapter for a second response during the same day or night as the first response when a person who would otherwise be liable under subsection (A) seeks assistance from the police department to abate a public nuisance under this chapter, and the person cooperates fully with the police while taking reasonable action to abate the public nuisance.

H. If the city is required to intervene at a gathering constituting a public nuisance on the same premises more than once in any 60-day period, excluding a second intervention during the same day or night as the first intervention, the 60-day period shall be extended by another sixty (60) days from the date of the second intervention.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.050 - Recovery of subsequent response fee.

A. After given proper notice pursuant to Section 7.05.030 and a reasonable opportunity to abate a gathering constituting a public nuisance, a subsequent response fee shall be assessed against all persons liable for the city's intervention. The subsequent response fee shall include:

1. The actual cost to the city of law enforcement services incurred as a result of a subsequent response;
2. The actual cost of any medical treatment required by a police officer for injuries sustained during a subsequent response; and
3. The cost of repairing or replacing any city equipment or property damaged or destroyed during a subsequent response.

B. Except as provided in subsection (A) of this section, the subsequent response fee shall not exceed one thousand dollars ($1,000.00) for any subsequent response.

C.

The remedies set forth in this chapter shall be in addition to any other penalties imposed by law for particular violations of law committed during the course of an event which is a public nuisance under this chapter, provided however, that if the only violation of law which constituted the public nuisance under this chapter is excessive noise, the remedies provided under this chapter shall be exclusive of any other remedies provided by law to the city for such excessive noise.

D. The city shall bill all persons liable for subsequent response fees by mail by sending a letter in substantially the form attached hereto as Exhibit "B." Payment of the fees shall be due within thirty (30) days of the date the bill is deposited in the mail. If full payment is not received within the required time for payment, the bill will be delinquent, and all persons liable for the fees shall be charged interest at the maximum legal rate from the date the payment period expires and a further civil penalty in the amount of one hundred dollars ($100.00).

EXHIBIT B

Date:

To:

Dear:

The City of Coachella was required to abate the public nuisance caused by a gathering of 10 or more persons at (location of property), which substantially disrupted the quiet enjoyment of property in a significant segment of the adjacent neighborhood. This is the (second/third/fourth, etc.) such public nuisance at this property within the last 60 days, and thus, a fee of _____/_____/_____ is imposed on you. If you fail to remit this fine to the City of Coachella by (30 days from the date of this notification) you will be liable for an additional $100 penalty, plus interest. The payment should be remitted to the address listed below. Your liability is based on the fact that you were:

[ ] An owner of the property to whom was sent prior notice of a public nuisance at the property within the previous 60 days; and/or

[ ] An owner of the property who resided on or adjacent to the property when the public nuisance took place; and/or

[ ] An owner of the property who was present when a Notice of a public nuisance was first posted at the property; and/or

[ ] A person who resided on or was otherwise in control of the property when the public nuisance took place there; and/or

[ ] A person who organized or sponsored the event that created the public nuisance at such property; and/or

[ ] A person who attended the event constituting the public nuisance at such property and engaged in the conduct which resulted in the public nuisance.

If you believe that you are not liable you may defend this claim in the civil action which the City of Coachella will file against you upon your failure to remit the fee. You should be aware, however, that if you fail to prevail in that action you will be liable for the additional penalty of $100 and interest on the total fee.

Sincerely yours,

(Name, title, address and phone number of signatory)

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.060 - Collection of delinquent costs for a subsequent city response.

The penalties assessed as a result of a subsequent city response to a loud or unruly gathering shall constitute a debt of all persons liable for the penalties in favor of the city and may be collected in any manner authorized by law and are recoverable in a civil action filed by the city in a court of competent jurisdiction. The remedies provided by this chapter are in addition to all other civil and criminal remedies available to the city with respect to the unlawful conduct constituting the public nuisance which gave rise to the need for the city response under this chapter.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

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APPENDIX 5.1:

STUDY AREA PHOTOS

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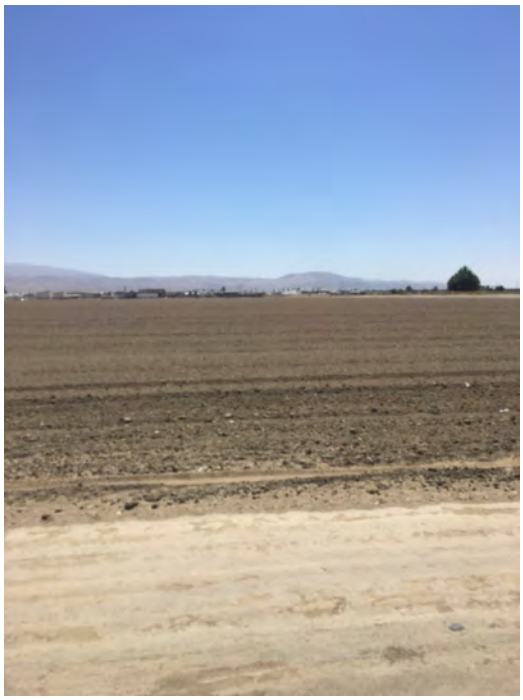
15967_L1_East



15967_L1_North

15967_L1_South

15967_L1_West

15967_L2_East

15967_L2_North

15967_L2_South

15967_L2_West

15967_L3_East

15967_L3_North

15967_L3_South

15967_L3_West

15967_L4_East

15967_L4_North

15967_L4_South

15967_L4_West

15967_L5_East

15967_L5_North

15967_L5_South

15967_L5_West

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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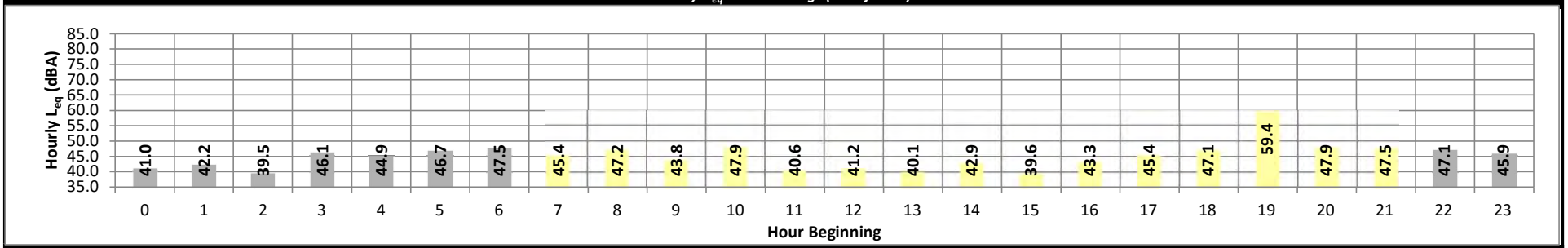
24-Hour Noise Level Measurement Summary

Date: Thursday, June 13, 2024 *Location:* L1 - Located west of the site near the residence at 53330 *Meter:* Piccolo II *JN:* 15967

Project: Armtec Master Plan *Source:* Shady Ln. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	41.0	44.3	39.1	43.8	43.5	42.8	42.5	41.4	40.7	39.6	39.4	39.2	41.0	10.0	51.0
	1	42.2	45.5	39.4	45.2	44.8	44.3	44.0	42.9	42.1	40.0	39.9	39.5	42.2	10.0	52.2
	2	39.5	47.1	36.6	46.8	46.3	44.3	42.8	38.9	38.0	37.1	36.9	36.7	39.5	10.0	49.5
	3	46.1	48.6	43.2	48.4	48.2	47.8	47.6	46.8	46.1	44.0	43.7	43.3	46.1	10.0	56.1
	4	44.9	47.5	43.1	47.2	47.0	46.5	46.2	45.3	44.6	43.7	43.5	43.2	44.9	10.0	54.9
	5	46.7	50.4	44.9	49.9	49.5	48.6	48.2	47.1	46.3	45.4	45.2	45.0	46.7	10.0	56.7
	6	47.5	51.9	45.3	51.4	50.9	50.3	49.9	47.9	46.9	45.8	45.6	45.4	47.5	10.0	57.5
Day	7	45.4	51.2	41.5	50.8	50.5	49.8	49.0	45.7	43.8	42.2	41.9	41.6	45.4	0.0	45.4
	8	47.2	56.6	38.1	55.6	54.8	53.2	52.3	47.8	42.5	38.9	38.6	38.3	47.2	0.0	47.2
	9	43.8	51.2	36.6	50.8	50.4	49.3	48.5	44.1	41.3	37.8	37.3	36.8	43.8	0.0	43.8
	10	47.9	56.4	37.5	55.9	55.4	54.3	53.4	48.5	43.3	38.6	38.1	37.7	47.9	0.0	47.9
	11	40.6	46.9	36.5	46.5	46.1	45.0	43.9	41.3	39.1	37.2	37.0	36.7	40.6	0.0	40.6
	12	41.2	48.0	37.6	47.4	46.6	44.9	44.1	41.7	40.1	38.3	38.0	37.7	41.2	0.0	41.2
	13	40.1	45.2	37.1	44.7	44.1	42.9	42.3	40.6	39.5	37.9	37.5	37.2	40.1	0.0	40.1
	14	42.9	49.0	38.4	48.4	47.9	46.9	46.3	44.0	41.5	39.3	38.9	38.6	42.9	0.0	42.9
	15	39.6	45.6	36.9	45.0	44.2	43.2	42.6	39.8	38.6	37.5	37.3	37.0	39.6	0.0	39.6
	16	43.3	49.6	39.5	49.1	48.4	47.2	46.4	44.0	42.2	40.2	40.0	39.7	43.3	0.0	43.3
	17	45.4	50.3	42.4	49.5	49.0	48.0	47.5	46.0	44.8	43.2	42.9	42.5	45.4	0.0	45.4
	18	47.1	51.3	44.0	51.0	50.6	49.9	49.4	47.8	46.5	44.9	44.5	44.2	47.1	0.0	47.1
	19	59.4	73.9	43.5	73.4	72.1	66.8	61.6	49.0	46.1	44.2	43.9	43.6	59.4	5.0	64.4
	20	47.9	53.6	44.8	53.1	52.4	50.8	49.9	48.4	47.2	45.5	45.2	44.9	47.9	5.0	52.9
	21	47.5	52.6	44.3	52.1	51.5	50.4	49.8	48.2	46.9	45.1	44.8	44.4	47.5	5.0	52.5
Night	22	47.1	52.8	44.0	52.4	52.1	50.6	49.5	47.5	46.3	44.7	44.4	44.1	47.1	10.0	57.1
	23	45.9	50.9	42.6	50.5	50.0	49.0	48.4	46.5	45.1	43.3	43.0	42.7	45.9	10.0	55.9

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	39.6	45.2	36.5	44.7	44.1	42.9	42.3	39.8	38.6	37.2	37.0	36.7
	Max	59.4	73.9	44.8	73.4	72.1	66.8	61.6	49.0	47.2	45.5	45.2	44.9
Energy Average		49.5	Average:		51.6	50.9	49.5	48.5	45.1	42.9	40.7	40.4	40.0
Night	Min	39.5	44.3	36.6	43.8	43.5	42.8	42.5	38.9	38.0	37.1	36.9	36.7
	Max	47.5	52.8	45.3	52.4	52.1	50.6	49.9	47.9	46.9	45.8	45.6	45.4
Energy Average		45.3	Average:		48.4	48.0	47.1	46.5	44.9	44.0	42.6	42.4	42.1

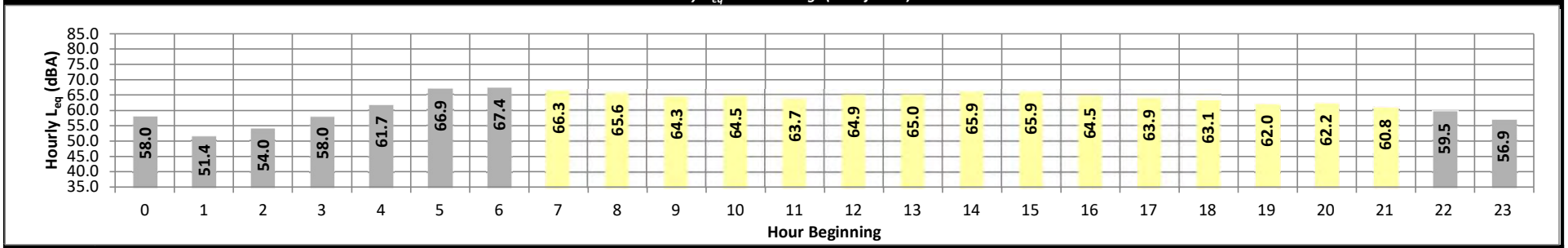
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
54.3	**49.5**	**45.3**

24-Hour Noise Level Measurement Summary

Date: Thursday, June 13, 2024 *Location:* L2 - Located south of the site near the residence at 85755 *Meter:* Piccolo II *JN:* 15967

Project: Armtec Master Plan *Source:* Avenue 54 *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	*Hour*	*L_{eq}*	*L_{max}*	*L_{min}*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*	*L_{eq}*	*Adj.*	*Adj. L_{eq}*
Night	0	58.0	70.0	41.0	69.7	69.1	66.4	63.2	54.2	44.3	41.6	41.4	41.1	58.0	10.0	68.0
	1	51.4	62.8	41.3	62.6	62.1	59.7	57.0	47.1	43.9	42.1	41.9	41.5	51.4	10.0	61.4
	2	54.0	66.5	40.0	66.3	65.8	62.5	59.2	45.9	41.9	40.7	40.5	40.2	54.0	10.0	64.0
	3	58.0	70.7	44.3	70.4	69.6	66.3	62.9	50.7	46.7	45.1	44.8	44.5	58.0	10.0	68.0
	4	61.7	72.3	47.5	72.0	71.5	69.2	67.5	60.3	53.7	48.8	48.3	47.8	61.7	10.0	71.7
	5	66.9	77.0	53.7	76.6	75.7	73.8	72.4	67.0	61.0	55.6	54.9	54.0	66.9	10.0	76.9
	6	67.4	77.2	52.1	76.8	76.3	74.1	72.7	67.8	61.6	53.8	52.9	52.3	67.4	10.0	77.4
Day	7	66.3	76.1	48.2	75.8	75.2	73.4	71.9	66.6	60.1	50.5	49.2	48.4	66.3	0.0	66.3
	8	65.6	77.6	44.5	77.1	76.0	72.6	70.7	64.5	56.3	46.7	45.7	44.8	65.6	0.0	65.6
	9	64.3	75.5	43.1	75.2	74.5	71.7	69.9	63.0	55.4	46.3	44.6	43.5	64.3	0.0	64.3
	10	64.5	74.9	44.6	74.6	74.0	71.9	70.2	64.1	56.2	47.0	46.0	44.9	64.5	0.0	64.5
	11	63.7	74.5	41.5	74.2	73.6	71.2	69.4	62.9	53.6	43.5	42.8	41.9	63.7	0.0	63.7
	12	64.9	75.7	44.2	75.4	74.8	72.2	70.5	64.2	56.3	46.6	45.6	44.5	64.9	0.0	64.9
	13	65.0	75.9	44.3	75.6	75.0	72.2	70.3	64.4	56.1	46.2	45.2	44.5	65.0	0.0	65.0
	14	65.9	76.6	45.8	76.1	75.1	72.4	70.8	66.4	60.0	48.5	47.1	46.1	65.9	0.0	65.9
	15	65.9	75.8	43.2	75.6	75.0	72.6	70.9	66.6	60.4	46.7	44.8	43.5	65.9	0.0	65.9
	16	64.5	74.2	45.6	73.9	73.2	71.1	70.1	65.1	58.6	48.0	46.8	45.9	64.5	0.0	64.5
	17	63.9	74.8	50.0	74.3	73.4	70.6	68.8	63.7	58.8	52.5	51.4	50.4	63.9	0.0	63.9
	18	63.1	73.5	51.4	73.0	72.2	69.3	67.4	63.1	59.3	53.8	52.9	51.8	63.1	0.0	63.1
	19	62.0	73.5	49.5	72.9	71.8	68.5	66.7	61.0	56.7	51.7	50.8	49.8	62.0	5.0	67.0
	20	62.2	72.6	51.4	72.1	71.2	68.5	66.6	62.1	58.4	53.5	52.7	51.6	62.2	5.0	67.2
	21	60.8	70.6	50.5	70.3	69.6	67.3	65.4	60.7	57.1	52.6	51.7	50.7	60.8	5.0	65.8
Night	22	59.5	70.1	48.7	69.8	69.3	67.0	64.9	58.0	54.2	50.3	49.6	48.9	59.5	10.0	69.5
	23	56.9	68.1	46.8	67.8	67.1	64.2	61.8	54.8	51.3	48.0	47.5	46.9	56.9	10.0	66.9

Timeframe	*Hour*	*L_{eq}*	*L_{max}*	*L_{min}*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	60.8	70.6	41.5	70.3	69.6	67.3	65.4	60.7	53.6	43.5	42.8	41.9
	Max	66.3	77.6	51.4	77.1	76.0	73.4	71.9	66.6	60.4	53.8	52.9	51.8
Energy Average		64.4	Average:		74.4	73.6	71.0	69.3	63.9	57.5	48.9	47.8	46.8
Night	Min	51.4	62.8	40.0	62.6	62.1	59.7	57.0	45.9	41.9	40.7	40.5	40.2
	Max	67.4	77.2	53.7	76.8	76.3	74.1	72.7	67.8	61.6	55.6	54.9	54.0
Energy Average		62.2	Average:		70.2	69.6	67.0	64.6	56.2	51.0	47.3	46.9	46.4

24-Hour CNEL	*Leq (dBA) Daytime (7am-10pm)*	*Leq (dBA) Nighttime (10pm-7am)*
69.2	**64.4**	**62.2**

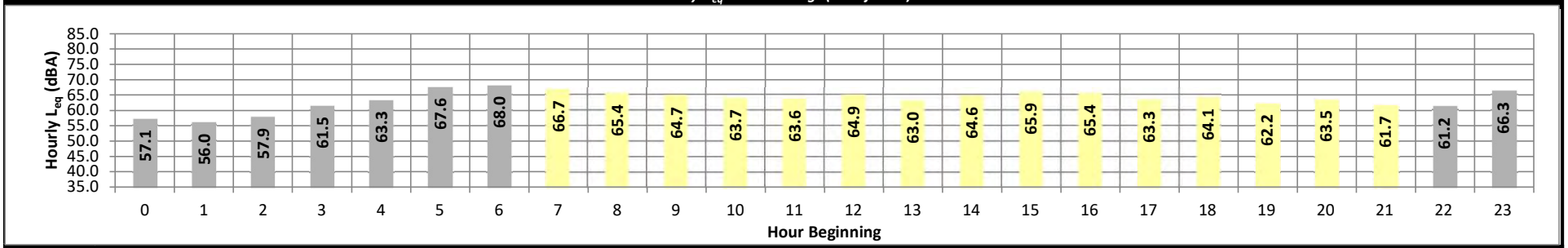
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Thursday, June 13, 2024 *Location:* L3 - Located east of the site near the residence at 53460 Tyler *Meter:* Piccolo II *JN:* 15967

Project: Armtec Master Plan *Source:* St. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	57.1	68.0	52.0	67.6	66.8	63.8	61.4	54.4	53.0	52.4	52.3	52.1	57.1	10.0	67.1
	1	56.0	66.5	51.7	66.0	65.1	62.4	59.9	53.8	52.6	52.0	51.9	51.8	56.0	10.0	66.0
	2	57.9	69.6	52.6	69.2	68.1	64.7	61.5	54.7	53.7	52.9	52.8	52.6	57.9	10.0	67.9
	3	61.5	72.4	57.2	72.1	71.1	67.9	65.0	59.2	58.4	57.6	57.4	57.2	61.5	10.0	71.5
	4	63.3	74.2	57.7	73.7	72.7	69.6	67.4	61.8	59.5	58.1	57.9	57.8	63.3	10.0	73.3
	5	67.6	78.1	59.7	77.5	76.5	73.8	72.2	67.1	63.1	60.4	60.1	59.8	67.6	10.0	77.6
	6	68.0	78.4	60.1	77.9	77.1	74.6	72.9	67.5	63.0	60.6	60.3	60.1	68.0	10.0	78.0
Day	7	66.7	76.6	59.4	76.1	75.2	73.1	71.6	66.5	62.2	59.9	59.7	59.5	66.7	0.0	66.7
	8	65.4	75.8	58.4	75.4	74.6	72.3	70.4	64.2	60.5	58.9	58.7	58.5	65.4	0.0	65.4
	9	64.7	75.3	57.6	74.9	74.0	71.2	69.4	63.6	59.9	58.1	57.9	57.7	64.7	0.0	64.7
	10	63.7	74.5	55.4	74.1	73.2	70.7	69.1	62.2	57.7	55.9	55.7	55.5	63.7	0.0	63.7
	11	63.6	75.0	53.2	74.5	73.6	71.0	69.2	61.5	55.8	53.9	53.6	53.3	63.6	0.0	63.6
	12	64.9	77.3	51.9	76.8	75.8	72.4	70.0	61.7	55.4	52.6	52.3	52.0	64.9	0.0	64.9
	13	63.0	74.1	50.8	73.7	72.7	70.3	68.8	61.6	54.5	51.5	51.2	50.9	63.0	0.0	63.0
	14	64.6	75.0	48.8	74.5	73.6	71.2	69.8	65.0	58.7	50.1	49.4	48.9	64.6	0.0	64.6
	15	65.9	76.6	48.5	76.2	75.5	73.2	71.4	65.5	58.3	50.0	49.3	48.7	65.9	0.0	65.9
	16	65.4	76.1	53.8	75.5	74.6	71.9	70.4	65.3	59.9	54.8	54.3	54.0	65.4	0.0	65.4
	17	63.3	72.8	55.0	72.3	71.5	69.4	68.0	63.4	59.4	55.9	55.5	55.1	63.3	0.0	63.3
	18	64.1	74.5	55.1	74.0	73.1	70.6	68.7	63.7	60.0	56.3	55.8	55.2	64.1	0.0	64.1
	19	62.2	72.2	54.0	71.6	70.6	68.3	66.9	62.0	58.5	55.2	54.7	54.2	62.2	5.0	67.2
	20	63.5	74.3	54.2	73.8	73.1	69.7	67.6	62.7	59.5	55.7	55.0	54.3	63.5	5.0	68.5
	21	61.7	70.4	54.7	69.9	69.1	67.2	66.0	62.1	59.2	55.9	55.4	54.8	61.7	5.0	66.7
Night	22	61.2	70.9	54.5	70.4	69.7	67.4	65.8	60.1	57.4	55.3	54.9	54.6	61.2	10.0	71.2
	23	66.3	79.9	52.5	79.3	77.8	75.5	68.2	59.2	55.1	53.2	52.9	52.6	66.3	10.0	76.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	61.7	70.4	48.5	69.9	69.1	67.2	66.0	61.5	54.5	50.0	49.3	48.7
	Max	66.7	77.3	59.4	76.8	75.8	73.2	71.6	66.5	62.2	59.9	59.7	59.5
Energy Average		64.4	Average:		74.2	73.3	70.8	69.1	63.4	58.6	55.0	54.6	54.2
Night	Min	56.0	66.5	51.7	66.0	65.1	62.4	59.9	53.8	52.6	52.0	51.9	51.8
	Max	68.0	79.9	60.1	79.3	77.8	75.5	72.9	67.5	63.1	60.6	60.3	60.1
Energy Average		64.0	Average:		72.6	71.7	68.9	66.0	59.8	57.3	55.8	55.6	55.4

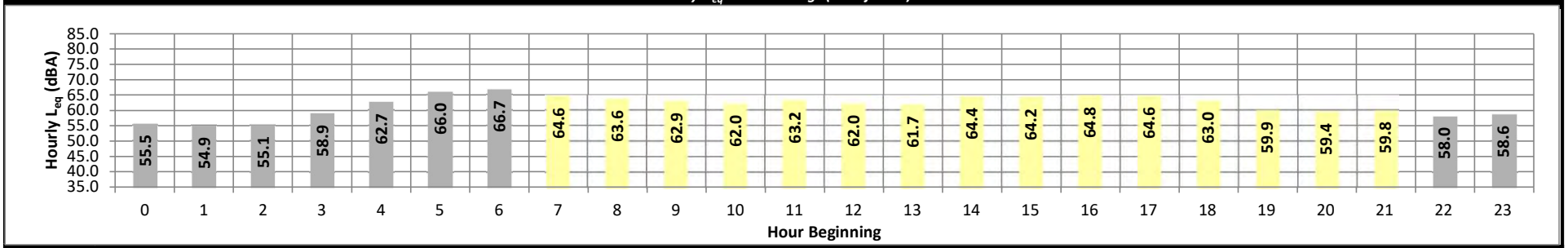
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
70.7	**64.4**	**64.0**

24-Hour Noise Level Measurement Summary

Date: Thursday, June 13, 2024 *Location:* L4 - Located east of the site near the residences at 53450 Tyler *Meter:* Piccolo II *JN:* 15967

Project: Armtec Master Plan *Source:* St. *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	55.5	67.4	47.1	67.0	66.3	63.1	60.1	52.0	49.1	47.8	47.6	47.2	55.5	10.0	65.5
	1	54.9	66.0	47.2	65.7	65.0	62.2	60.0	52.0	49.2	47.6	47.5	47.3	54.9	10.0	64.9
	2	55.1	67.4	46.4	67.1	66.3	62.8	59.5	50.3	48.0	46.9	46.7	46.5	55.1	10.0	65.1
	3	58.9	70.3	52.5	69.9	68.8	65.1	62.2	57.3	55.0	53.0	52.8	52.6	58.9	10.0	68.9
	4	62.7	73.6	53.9	73.3	72.5	69.6	67.4	61.1	57.6	54.6	54.3	54.0	62.7	10.0	72.7
	5	66.0	76.1	55.9	75.6	74.8	72.5	71.1	65.8	61.4	56.8	56.3	56.0	66.0	10.0	76.0
	6	66.7	77.0	56.2	76.6	75.8	73.3	71.8	66.5	61.7	57.1	56.7	56.3	66.7	10.0	76.7
Day	7	64.6	74.7	52.3	74.3	73.5	71.5	70.1	64.5	58.1	53.1	52.7	52.4	64.6	0.0	64.6
	8	63.6	74.3	50.2	74.0	73.2	70.9	69.3	62.5	55.8	51.1	50.7	50.3	63.6	0.0	63.6
	9	62.9	74.4	49.8	73.9	73.0	69.7	68.0	61.9	55.8	50.9	50.4	49.9	62.9	0.0	62.9
	10	62.0	72.8	48.5	72.4	71.6	69.3	67.8	61.1	54.2	49.4	49.0	48.6	62.0	0.0	62.0
	11	63.2	74.8	48.7	74.5	73.7	71.0	68.7	60.6	53.6	49.6	49.2	48.8	63.2	0.0	63.2
	12	62.0	73.1	49.3	72.7	71.8	69.4	67.5	60.9	53.9	50.0	49.7	49.4	62.0	0.0	62.0
	13	61.7	72.9	46.6	72.5	71.6	69.2	67.5	60.4	51.8	47.5	47.1	46.7	61.7	0.0	61.7
	14	64.4	75.3	46.2	74.9	74.0	71.1	69.4	64.4	57.5	48.2	47.2	46.4	64.4	0.0	64.4
	15	64.2	74.4	46.8	73.9	73.2	71.0	69.6	64.6	57.6	48.4	47.5	47.0	64.2	0.0	64.2
	16	64.8	74.7	49.0	74.3	73.6	71.1	69.8	65.5	59.4	50.7	49.9	49.2	64.8	0.0	64.8
	17	64.6	73.6	51.7	73.3	72.7	70.9	69.9	65.4	59.9	53.7	53.0	52.0	64.6	0.0	64.6
	18	63.0	74.1	51.6	73.4	72.3	69.4	67.9	62.5	57.5	52.8	52.3	51.7	63.0	0.0	63.0
	19	59.9	71.4	48.2	70.8	69.8	66.8	65.0	58.6	53.8	49.2	48.8	48.3	59.9	5.0	64.9
	20	59.4	70.8	49.5	70.3	69.1	65.9	64.1	58.4	53.8	50.5	50.1	49.7	59.4	5.0	64.4
	21	59.8	71.6	50.2	71.2	70.2	66.7	64.1	58.0	54.2	51.2	50.8	50.3	59.8	5.0	64.8
Night	22	58.0	70.2	49.4	69.6	68.5	64.5	62.0	55.4	52.5	50.4	50.0	49.6	58.0	10.0	68.0
	23	58.6	71.0	48.3	70.3	69.2	65.9	64.2	55.2	51.2	49.1	48.8	48.5	58.6	10.0	68.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	59.4	70.8	46.2	70.3	69.1	65.9	64.1	58.0	51.8	47.5	47.1	46.4
	Max	64.8	75.3	52.3	74.9	74.0	71.5	70.1	65.5	59.9	53.7	53.0	52.4
Energy Average		63.0	Average:		73.1	72.2	69.6	67.9	62.0	55.8	50.4	49.9	49.4
Night	Min	54.9	66.0	46.4	65.7	65.0	62.2	59.5	50.3	48.0	46.9	46.7	46.5
	Max	66.7	77.0	56.2	76.6	75.8	73.3	71.8	66.5	61.7	57.1	56.7	56.3
Energy Average		61.8	Average:		70.6	69.7	66.6	64.3	57.3	54.0	51.5	51.2	50.9

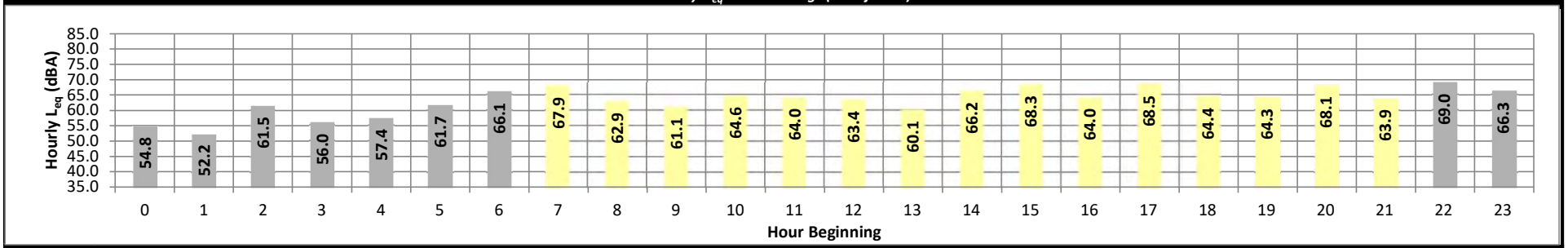
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
68.6	**63.0**	**61.8**

24-Hour Noise Level Measurement Summary

Date: Thursday, June 13, 2024 *Location:* L5 - Located north of the site near the residence at 85925 *Meter:* Piccolo II *JN:* 15967

Project: Armtec Master Plan *Source:* Avenida Raylynn *Analyst:* N. Johnson

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	54.8	68.8	36.4	68.3	67.2	62.6	58.9	45.2	39.2	37.0	36.7	36.4	54.8	10.0	64.8
	1	52.2	65.6	36.1	65.2	64.2	60.5	57.0	42.6	38.4	36.6	36.4	36.2	52.2	10.0	62.2
	2	61.5	75.7	34.9	75.0	73.9	68.7	64.6	56.1	46.8	36.1	35.3	35.0	61.5	10.0	71.5
	3	56.0	67.1	44.9	66.8	66.3	64.1	61.7	52.6	48.6	45.7	45.3	45.0	56.0	10.0	66.0
	4	57.4	68.6	48.8	68.2	67.5	64.6	62.2	55.1	52.1	49.6	49.3	48.9	57.4	10.0	67.4
	5	61.7	72.6	52.4	72.3	71.6	68.8	66.6	59.9	56.4	53.4	53.0	52.5	61.7	10.0	71.7
	6	66.1	79.9	48.5	79.4	78.2	73.8	69.8	60.4	54.2	49.5	49.0	48.6	66.1	10.0	76.1
Day	7	67.9	81.8	44.1	81.1	80.2	75.9	71.9	60.2	52.7	45.5	44.9	44.3	67.9	0.0	67.9
	8	62.9	75.6	40.2	75.1	74.0	70.8	68.2	59.3	51.1	41.6	40.9	40.4	62.9	0.0	62.9
	9	61.1	74.0	38.9	73.6	72.9	69.2	66.2	55.6	46.7	40.2	39.6	39.0	61.1	0.0	61.1
	10	64.6	77.5	42.8	76.9	76.2	72.9	69.2	59.5	52.7	44.6	43.7	43.0	64.6	0.0	64.6
	11	64.0	77.8	42.1	77.1	75.9	71.4	68.5	58.2	49.2	43.0	42.6	42.2	64.0	0.0	64.0
	12	63.4	77.1	44.8	76.5	75.3	71.1	67.9	57.1	49.4	45.8	45.4	45.0	63.4	0.0	63.4
	13	60.1	72.7	42.7	72.2	71.1	68.0	65.8	56.3	48.0	43.5	43.2	42.8	60.1	0.0	60.1
	14	66.2	79.8	43.9	79.1	77.9	73.5	70.2	62.1	53.5	45.6	44.7	44.1	66.2	0.0	66.2
	15	68.3	83.3	44.2	82.3	80.6	75.3	71.3	61.4	52.7	45.7	45.0	44.4	68.3	0.0	68.3
	16	64.0	76.2	43.6	75.7	74.8	71.7	69.2	61.5	54.1	45.6	44.6	43.8	64.0	0.0	64.0
	17	68.5	82.1	44.6	81.4	79.9	75.9	73.0	64.5	57.1	47.0	45.6	44.8	68.5	0.0	68.5
	18	64.4	76.9	46.5	76.4	75.3	72.0	69.4	61.9	54.3	47.9	47.1	46.6	64.4	0.0	64.4
	19	64.3	77.2	44.9	76.6	75.5	71.9	69.3	60.8	52.8	46.5	45.8	45.1	64.3	5.0	69.3
	20	68.1	82.0	45.5	81.4	80.2	75.8	72.1	61.7	53.3	46.7	46.1	45.6	68.1	5.0	73.1
	21	63.9	76.8	45.5	76.2	75.1	71.4	68.9	60.6	53.8	47.1	46.4	45.7	63.9	5.0	68.9
Night	22	69.0	82.9	43.7	82.3	81.5	76.5	72.2	61.5	51.8	45.5	44.4	43.8	69.0	10.0	79.0
	23	66.3	79.9	41.5	79.5	78.6	74.4	70.0	57.6	51.8	42.4	42.1	41.6	66.3	10.0	76.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	60.1	72.7	38.9	72.2	71.1	68.0	65.8	55.6	46.7	40.2	39.6	39.0
	Max	68.5	83.3	46.5	82.3	80.6	75.9	73.0	64.5	57.1	47.9	47.1	46.6
Energy Average		65.5	Average:		77.4	76.3	72.4	69.4	60.1	52.1	45.1	44.4	43.8
Night	Min	52.2	65.6	34.9	65.2	64.2	60.5	57.0	42.6	38.4	36.1	35.3	35.0
	Max	69.0	82.9	52.4	82.3	81.5	76.5	72.2	61.5	56.4	53.4	53.0	52.5
Energy Average		63.6	Average:		73.0	72.1	68.2	64.8	54.6	48.8	44.0	43.5	43.1

24-Hour CNEL	*Leq (dBA) Daytime (7am-10pm)*	*Leq (dBA) Nighttime (10pm-7am)*
70.7	**65.5**	**63.6**

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APPENDIX 7.1:

OFF-SITE NOISE CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Tyler St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,090 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	172 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-10.29	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-25.16	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-22.94	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.5	60.5	59.0	53.0	61.5	62.1
Medium Trucks:	57.5	54.4	46.6	55.8	61.9	62.0
Heavy Trucks:	64.1	60.9	53.2	62.4	68.5	68.6
Vehicle Noise:	66.6	64.2	60.2	63.6	70.0	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	40	87	187	403
CNEL:	41	88	190	410

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Tyler St.
Road Segment: s/o Avenue 53

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	140 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-11.19	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-26.05	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-23.84	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	59.6	58.1	52.1	60.6	61.2
Medium Trucks:	56.6	53.5	45.7	54.9	61.0	61.1
Heavy Trucks:	63.2	60.1	52.3	61.5	67.6	67.7
Vehicle Noise:	65.7	63.3	59.3	62.7	69.1	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	35	76	163	351
CNEL:	36	77	166	357

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Tyler St.
Road Segment: s/o Armtec Entrance

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,330 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	110 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-12.25	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-27.12	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-24.90	2.85	-1.20	*-5.56*	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:	59.6	58.5	57.1	51.1	59.5	60.1
Medium Trucks:	55.5	52.4	44.6	53.8	60.0	60.0
Heavy Trucks:	62.1	59.0	51.2	60.4	66.6	66.6
Vehicle Noise:	64.6	62.2	58.3	61.7	68.1	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	64	138	298
CNEL:	30	65	141	303

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Palm St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,510 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	125 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:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-10.49	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	77.72	-27.72	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-31.68	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.9	55.6	49.6	58.0	58.6
Medium Trucks:	52.1	49.1	41.6	50.3	56.5	56.5
Heavy Trucks:	53.4	50.2	46.8	51.5	57.7	57.8
Vehicle Noise:	60.1	58.3	56.3	55.3	62.2	62.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	42	91
CNEL:	9	20	44	95

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Grapefruit Blvd.
Road Segment: w/o Tyler St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,970 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	658 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.48	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.34	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-17.13	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.8	66.7	65.3	59.3	67.8	68.4
Medium Trucks:	63.8	60.6	52.9	62.1	68.2	68.3
Heavy Trucks:	70.4	67.2	59.4	68.7	74.8	74.8
Vehicle Noise:	72.9	70.5	66.5	69.9	76.3	76.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	79	171	368	792
CNEL:	81	174	374	807

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Grapefruit Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,050 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	499 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.68	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-20.54	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-18.32	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.6	65.5	64.1	58.1	66.6	67.2
Medium Trucks:	62.6	59.4	51.7	60.9	67.0	67.1
Heavy Trucks:	69.2	66.0	58.3	67.5	73.6	73.6
Vehicle Noise:	71.7	69.3	65.3	68.7	75.1	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	66	142	306	659
CNEL:	67	145	312	671

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Grapefruit Blvd.
Road Segment: e/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,100 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	256 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-8.58	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-23.45	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-21.23	3.32	-1.20	*-5.77*	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	62.6	61.2	55.2	63.7	64.3
Medium Trucks:	59.7	56.5	48.8	58.0	64.1	64.2
Heavy Trucks:	66.3	63.1	55.3	64.6	70.7	70.7
Vehicle Noise:	68.8	66.4	62.4	65.8	72.2	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	42	91	196	422
CNEL:	43	93	200	430

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Airport Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,420 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	282 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	71 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	46.0 feet
Centerline Dist. to Observer:	46.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.677
Medium Trucks:	29.378
Heavy Trucks:	29.407

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-7.69	3.29	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	79.45	-22.56	3.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-20.34	3.35	-1.20	*-5.47*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.9	61.8	60.4	54.4	62.8	63.4
Medium Trucks:	59.0	55.9	48.1	57.3	63.5	63.5
Heavy Trucks:	66.1	62.9	55.1	64.3	70.5	70.5
Vehicle Noise:	68.3	65.9	61.7	65.5	71.9	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	132	284	613
CNEL:	62	134	289	623

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Tyler St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,190 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	181 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-10.09	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-24.95	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-22.74	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.7	60.7	59.2	53.2	61.7	62.3
Medium Trucks:	57.7	54.6	46.8	56.0	62.1	62.2
Heavy Trucks:	64.3	61.2	53.4	62.6	68.7	68.8
Vehicle Noise:	66.8	64.4	60.4	63.8	70.2	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	42	89	193	415
CNEL:	42	91	196	423

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Tyler St.
Road Segment: s/o Avenue 53

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,810 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	149 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-10.92	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-25.78	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-23.56	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.9	59.8	58.4	52.4	60.9	61.5
Medium Trucks:	56.9	53.7	46.0	55.2	61.3	61.3
Heavy Trucks:	63.5	60.3	52.5	61.7	67.9	67.9
Vehicle Noise:	66.0	63.6	59.6	63.0	69.4	69.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	37	79	170	366
CNEL:	37	80	173	373

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Tyler St.
Road Segment: s/o Armtec Entrance

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,340 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	111 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-12.22	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-27.09	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-24.87	2.85	-1.20	*-5.56*	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:	59.6	58.5	57.1	51.1	59.6	60.2
Medium Trucks:	55.6	52.4	44.6	53.9	60.0	60.0
Heavy Trucks:	62.2	59.0	51.2	60.4	66.6	66.6
Vehicle Noise:	64.6	62.3	58.3	61.7	68.1	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	64	139	299
CNEL:	30	66	142	305

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Palm St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,540 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	127 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:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-10.40	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	77.72	-27.64	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-31.59	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.2	57.0	55.7	49.7	58.1	58.7
Medium Trucks:	52.2	49.1	41.6	50.4	56.6	56.6
Heavy Trucks:	53.5	50.3	46.9	51.6	57.8	57.9
Vehicle Noise:	60.2	58.4	56.4	55.4	62.3	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	43	92
CNEL:	10	21	45	96

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Grapefruit Blvd.
Road Segment: w/o Tyler St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,000 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	660 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.46	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.33	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-17.11	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.8	66.7	65.3	59.3	67.8	68.4
Medium Trucks:	63.8	60.7	52.9	62.1	68.2	68.3
Heavy Trucks:	70.4	67.2	59.5	68.7	74.8	74.9
Vehicle Noise:	72.9	70.5	66.5	69.9	76.3	76.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	79	171	369	794
CNEL:	81	174	375	809

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Grapefruit Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,060 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	500 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.67	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-20.53	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-18.32	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.6	65.5	64.1	58.1	66.6	67.2
Medium Trucks:	62.6	59.5	51.7	60.9	67.0	67.1
Heavy Trucks:	69.2	66.0	58.3	67.5	73.6	73.7
Vehicle Noise:	71.7	69.3	65.3	68.7	75.1	75.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	66	142	306	660
CNEL:	67	145	312	672

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Grapefruit Blvd.
Road Segment: e/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,110 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	257 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-8.57	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-23.43	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-21.21	3.32	-1.20	*-5.77*	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	62.6	61.2	55.2	63.7	64.3
Medium Trucks:	59.7	56.6	48.8	58.0	64.1	64.2
Heavy Trucks:	66.3	63.1	55.4	64.6	70.7	70.8
Vehicle Noise:	68.8	66.4	62.4	65.8	72.2	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	42	91	196	423
CNEL:	43	93	200	431

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E + P
Road Name: Airport Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,460 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	285 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	71 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	46.0 feet
Centerline Dist. to Observer:	46.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.677
Medium Trucks:	29.378
Heavy Trucks:	29.407

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-7.64	3.29	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	79.45	-22.51	3.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-20.29	3.35	-1.20	*-5.47*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.9	61.8	60.4	54.4	62.9	63.5
Medium Trucks:	59.1	56.0	48.2	57.4	63.5	63.6
Heavy Trucks:	66.1	63.0	55.2	64.4	70.6	70.6
Vehicle Noise:	68.4	65.9	61.8	65.5	71.9	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	62	133	287	617
CNEL:	63	135	292	628

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Tyler St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,170 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	179 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-10.13	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-24.99	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-22.78	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.7	60.6	59.2	53.2	61.6	62.3
Medium Trucks:	57.7	54.5	46.7	55.9	62.1	62.1
Heavy Trucks:	64.3	61.1	53.3	62.5	68.7	68.7
Vehicle Noise:	66.7	64.4	60.4	63.8	70.2	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	41	89	192	413
CNEL:	42	91	195	420

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Tyler St.
Road Segment: s/o Avenue 53

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,770 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	146 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-11.01	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-25.88	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-23.66	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.8	59.7	58.3	52.3	60.8	61.4
Medium Trucks:	56.8	53.6	45.9	55.1	61.2	61.3
Heavy Trucks:	63.4	60.2	52.4	61.7	67.8	67.8
Vehicle Noise:	65.9	63.5	59.5	62.9	69.3	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	36	78	167	360
CNEL:	37	79	170	367

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Tyler St.
Road Segment: s/o Armtec Entrance

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,380 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	114 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-12.09	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-26.96	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-24.74	2.85	-1.20	*-5.56*	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:	59.7	58.6	57.2	51.2	59.7	60.3
Medium Trucks:	55.7	52.6	44.8	54.0	60.1	60.2
Heavy Trucks:	62.3	59.1	51.4	60.6	66.7	66.8
Vehicle Noise:	64.8	62.4	58.4	61.8	68.2	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	66	142	305
CNEL:	31	67	144	311

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Palm St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,580 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	130 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:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-10.29	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	77.72	-27.53	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-31.48	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.3	57.1	55.8	49.8	58.2	58.8
Medium Trucks:	52.3	49.3	41.8	50.5	56.7	56.7
Heavy Trucks:	53.6	50.4	47.0	51.7	57.9	58.0
Vehicle Noise:	60.3	58.5	56.5	55.5	62.4	62.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	43	94
CNEL:	10	21	45	98

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Grapefruit Blvd.
Road Segment: w/o Tyler St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,290 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	684 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.31	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.17	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-16.96	3.32	-1.20	*-5.77*	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	66.9	65.5	59.5	67.9	68.6
Medium Trucks:	64.0	60.8	53.0	62.2	68.4	68.4
Heavy Trucks:	70.5	67.4	59.6	68.8	75.0	75.0
Vehicle Noise:	73.0	70.6	66.7	70.1	76.5	76.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	81	175	377	813
CNEL:	83	178	384	828

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Grapefruit Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,300 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	520 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.50	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-20.37	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-18.15	3.32	-1.20	*-5.77*	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:	66.8	65.7	64.3	58.3	66.7	67.4
Medium Trucks:	62.8	59.6	51.8	61.0	67.2	67.2
Heavy Trucks:	69.4	66.2	58.4	67.6	73.8	73.8
Vehicle Noise:	71.8	69.5	65.5	68.9	75.3	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	68	146	314	677
CNEL:	69	149	320	690

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Grapefruit Blvd.
Road Segment: e/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,220 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	266 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-8.41	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-23.28	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-21.06	3.32	-1.20	*-5.77*	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	62.8	61.4	55.4	63.8	64.4
Medium Trucks:	59.8	56.7	48.9	58.1	64.3	64.3
Heavy Trucks:	66.4	63.3	55.5	64.7	70.9	70.9
Vehicle Noise:	68.9	66.5	62.6	66.0	72.4	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	43	93	201	433
CNEL:	44	95	205	441

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Airport Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,560 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	294 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	71 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	46.0 feet
Centerline Dist. to Observer:	46.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.677
Medium Trucks:	29.378
Heavy Trucks:	29.407

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-7.52	3.29	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	79.45	-22.39	3.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-20.17	3.35	-1.20	*-5.47*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.0	62.0	60.6	54.5	63.0	63.6
Medium Trucks:	59.2	56.1	48.3	57.5	63.7	63.7
Heavy Trucks:	66.2	63.1	55.3	64.5	70.7	70.7
Vehicle Noise:	68.5	66.0	61.9	65.7	72.0	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	63	136	292	629
CNEL:	64	138	297	640

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Tyler St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,270 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	187 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-9.93	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-24.80	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-22.58	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.9	60.8	59.4	53.4	61.8	62.5
Medium Trucks:	57.9	54.7	46.9	56.1	62.3	62.3
Heavy Trucks:	64.5	61.3	53.5	62.7	68.9	68.9
Vehicle Noise:	66.9	64.6	60.6	64.0	70.4	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	43	92	197	425
CNEL:	43	93	201	433

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Tyler St.
Road Segment: s/o Avenue 53

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,880 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	155 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-10.75	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-25.62	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-23.40	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.1	60.0	58.6	52.6	61.0	61.6
Medium Trucks:	57.0	53.9	46.1	55.3	61.5	61.5
Heavy Trucks:	63.6	60.5	52.7	61.9	68.1	68.1
Vehicle Noise:	66.1	63.7	59.8	63.2	69.6	69.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	38	81	174	375
CNEL:	38	82	177	382

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Tyler St.
Road Segment: s/o Armtec Entrance

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,390 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	115 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-12.06	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-26.93	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-24.71	2.85	-1.20	*-5.56*	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:	59.7	58.7	57.3	51.2	59.7	60.3
Medium Trucks:	55.7	52.6	44.8	54.0	60.2	60.2
Heavy Trucks:	62.3	59.2	51.4	60.6	66.8	66.8
Vehicle Noise:	64.8	62.4	58.5	61.9	68.3	68.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	66	142	307
CNEL:	31	67	145	312

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Palm St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,610 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	133 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:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-10.21	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	77.72	-27.44	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-31.40	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.4	57.2	55.9	49.9	58.3	58.9
Medium Trucks:	52.4	49.3	41.8	50.6	56.8	56.8
Heavy Trucks:	53.7	50.5	47.1	51.8	58.0	58.1
Vehicle Noise:	60.4	58.6	56.6	55.6	62.5	62.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	44	95
CNEL:	10	21	46	99

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Grapefruit Blvd.
Road Segment: w/o Tyler St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,320 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	686 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.29	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.16	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-16.94	3.32	-1.20	*-5.77*	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	66.9	65.5	59.5	67.9	68.6
Medium Trucks:	64.0	60.8	53.0	62.3	68.4	68.4
Heavy Trucks:	70.6	67.4	59.6	68.8	75.0	75.0
Vehicle Noise:	73.0	70.7	66.7	70.1	76.5	76.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	82	176	378	815
CNEL:	83	179	385	830

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Grapefruit Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,310 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	521 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.49	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-20.36	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-18.14	3.32	-1.20	*-5.77*	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:	66.8	65.7	64.3	58.3	66.7	67.4
Medium Trucks:	62.8	59.6	51.8	61.1	67.2	67.2
Heavy Trucks:	69.4	66.2	58.4	67.6	73.8	73.8
Vehicle Noise:	71.8	69.5	65.5	68.9	75.3	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	68	146	315	678
CNEL:	69	149	320	690

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Grapefruit Blvd.
Road Segment: e/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,230 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	266 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-8.40	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-23.27	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-21.05	3.32	-1.20	*-5.77*	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	62.8	61.4	55.4	63.8	64.5
Medium Trucks:	59.9	56.7	48.9	58.1	64.3	64.3
Heavy Trucks:	66.5	63.3	55.5	64.7	70.9	70.9
Vehicle Noise:	68.9	66.6	62.6	66.0	72.4	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	43	93	201	434
CNEL:	44	95	205	442

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Airport Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,600 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	297 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	71 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	46.0 feet
Centerline Dist. to Observer:	46.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.677
Medium Trucks:	29.378
Heavy Trucks:	29.407

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-7.47	3.29	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	79.45	-22.34	3.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-20.12	3.35	-1.20	*-5.47*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.1	62.0	60.6	54.6	63.1	63.7
Medium Trucks:	59.3	56.1	48.3	57.6	63.7	63.7
Heavy Trucks:	66.3	63.1	55.4	64.6	70.7	70.8
Vehicle Noise:	68.5	66.1	61.9	65.7	72.1	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	63	137	294	634
CNEL:	64	139	299	645

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Tyler St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,250 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	186 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-9.97	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-24.84	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-22.62	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.8	60.8	59.4	53.3	61.8	62.4
Medium Trucks:	57.8	54.7	46.9	56.1	62.3	62.3
Heavy Trucks:	64.4	61.3	53.5	62.7	68.8	68.9
Vehicle Noise:	66.9	64.5	60.6	64.0	70.4	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	42	91	196	423
CNEL:	43	93	200	431

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Tyler St.
Road Segment: s/o Avenue 53

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,830 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	151 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-10.87	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-25.73	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-23.52	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.9	59.9	58.5	52.4	60.9	61.5
Medium Trucks:	56.9	53.8	46.0	55.2	61.4	61.4
Heavy Trucks:	63.5	60.4	52.6	61.8	68.0	68.0
Vehicle Noise:	66.0	63.6	59.7	63.1	69.5	69.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	37	79	171	368
CNEL:	38	81	174	375

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Tyler St.
Road Segment: s/o Armtec Entrance

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,440 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	119 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-11.91	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-26.78	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-24.56	2.85	-1.20	*-5.56*	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:	59.9	58.8	57.4	51.4	59.9	60.5
Medium Trucks:	55.9	52.7	45.0	54.2	60.3	60.4
Heavy Trucks:	62.5	59.3	51.5	60.8	66.9	66.9
Vehicle Noise:	65.0	62.6	58.6	62.0	68.4	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	68	146	314
CNEL:	32	69	148	320

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Palm St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,170 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	179 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:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-8.91	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	77.72	-26.15	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-30.10	3.32	-1.20	*-5.77*	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:	59.7	58.5	57.2	51.2	59.6	60.2
Medium Trucks:	53.7	50.6	43.1	51.9	58.1	58.1
Heavy Trucks:	55.0	51.8	48.4	53.1	59.3	59.3
Vehicle Noise:	61.7	59.9	57.9	56.9	63.8	64.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	12	25	54	116
CNEL:	12	26	56	121

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Grapefruit Blvd.
Road Segment: w/o Tyler St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,410 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	694 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.24	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.11	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-16.89	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.0	67.0	65.5	59.5	68.0	68.6
Medium Trucks:	64.0	60.9	53.1	62.3	68.5	68.5
Heavy Trucks:	70.6	67.5	59.7	68.9	75.0	75.1
Vehicle Noise:	73.1	70.7	66.7	70.1	76.6	76.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	82	177	381	821
CNEL:	84	180	388	836

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Grapefruit Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,970 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	575 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.06	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.93	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-17.71	3.32	-1.20	*-5.77*	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	66.1	64.7	58.7	67.2	67.8
Medium Trucks:	63.2	60.1	52.3	61.5	67.6	67.7
Heavy Trucks:	69.8	66.6	58.9	68.1	74.2	74.3
Vehicle Noise:	72.3	69.9	65.9	69.3	75.7	75.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	72	156	336	724
CNEL:	74	159	342	738

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Grapefruit Blvd.
Road Segment: e/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,610 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	298 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-7.92	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-22.78	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-20.57	3.32	-1.20	*-5.77*	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:	64.4	63.3	61.9	55.9	64.3	64.9
Medium Trucks:	60.3	57.2	49.4	58.6	64.8	64.8
Heavy Trucks:	66.9	63.8	56.0	65.2	71.4	71.4
Vehicle Noise:	69.4	67.0	63.1	66.5	72.9	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	101	217	467
CNEL:	48	103	221	476

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Airport Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,730 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	308 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	71 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	46.0 feet
Centerline Dist. to Observer:	46.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.677
Medium Trucks:	29.378
Heavy Trucks:	29.407

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-7.32	3.29	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	79.45	-22.18	3.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-19.97	3.35	-1.20	*-5.47*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.2	62.2	60.8	54.7	63.2	63.8
Medium Trucks:	59.4	56.3	48.5	57.7	63.9	63.9
Heavy Trucks:	66.4	63.3	55.5	64.7	70.9	70.9
Vehicle Noise:	68.7	66.2	62.1	65.9	72.2	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	65	140	301	649
CNEL:	66	142	307	660

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Tyler St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,350 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	194 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-9.78	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-24.65	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-22.43	2.85	-1.20	*-5.56*	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	61.0	59.5	53.5	62.0	62.6
Medium Trucks:	58.0	54.9	47.1	56.3	62.4	62.5
Heavy Trucks:	64.6	61.5	53.7	62.9	69.0	69.1
Vehicle Noise:	67.1	64.7	60.7	64.1	70.6	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	94	202	435
CNEL:	44	96	206	443

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Tyler St.
Road Segment: s/o Avenue 53

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,940 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	160 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-10.61	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-25.48	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-23.26	2.85	-1.20	*-5.56*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.2	60.1	58.7	52.7	61.2	61.8
Medium Trucks:	57.2	54.0	46.3	55.5	61.6	61.6
Heavy Trucks:	63.8	60.6	52.8	62.1	68.2	68.2
Vehicle Noise:	66.3	63.9	59.9	63.3	69.7	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	38	83	178	383
CNEL:	39	84	181	390

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Tyler St.
Road Segment: s/o Armtec Entrance

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,450 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	120 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	49 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	40.0 feet
Centerline Dist. to Observer:	40.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	32.012
Medium Trucks:	31.734
Heavy Trucks:	31.761

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-11.88	2.80	-1.20	*-4.59*	0.000	0.000
Medium Trucks:	81.00	-26.75	2.86	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	85.38	-24.53	2.85	-1.20	*-5.56*	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:	59.9	58.9	57.5	51.4	59.9	60.5
Medium Trucks:	55.9	52.8	45.0	54.2	60.4	60.4
Heavy Trucks:	62.5	59.4	51.6	60.8	66.9	67.0
Vehicle Noise:	65.0	62.6	58.6	62.0	68.5	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	32	68	146	315
CNEL:	32	69	149	321

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Palm St.
Road Segment: s/o Grapefruit Blvd.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,200 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	182 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:	30.0 feet
Centerline Dist. to Observer:	30.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

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

Vehicle Mix

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

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-8.85	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	77.72	-26.09	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	82.99	-30.04	3.32	-1.20	*-5.77*	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:	59.7	58.6	57.2	51.2	59.6	60.3
Medium Trucks:	53.8	50.7	43.2	51.9	58.1	58.2
Heavy Trucks:	55.1	51.9	48.5	53.1	59.3	59.4
Vehicle Noise:	61.8	59.9	57.9	56.9	63.8	64.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	12	25	54	117
CNEL:	12	26	57	122

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Grapefruit Blvd.
Road Segment: w/o Tyler St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,440 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	696 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.23	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.10	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-16.88	3.32	-1.20	*-5.77*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.0	67.0	65.6	59.5	68.0	68.6
Medium Trucks:	64.0	60.9	53.1	62.3	68.5	68.5
Heavy Trucks:	70.6	67.5	59.7	68.9	75.1	75.1
Vehicle Noise:	73.1	70.7	66.8	70.2	76.6	76.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	82	177	382	823
CNEL:	84	181	389	838

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Grapefruit Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,980 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	576 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.05	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-19.92	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-17.70	3.32	-1.20	*-5.77*	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	66.2	64.7	58.7	67.2	67.8
Medium Trucks:	63.2	60.1	52.3	61.5	67.6	67.7
Heavy Trucks:	69.8	66.7	58.9	68.1	74.2	74.3
Vehicle Noise:	72.3	69.9	65.9	69.3	75.7	75.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	72	156	336	725
CNEL:	74	159	343	739

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Grapefruit Blvd.
Road Segment: e/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,620 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	299 vehicles
Vehicle Speed:	50 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:	30.0 feet
Centerline Dist. to Observer:	30.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.816
Medium Trucks:	29.518
Heavy Trucks:	29.547

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-7.91	3.26	-1.20	*-4.49*	0.000	0.000
Medium Trucks:	81.00	-22.77	3.33	-1.20	*-4.86*	0.000	0.000
Heavy Trucks:	85.38	-20.55	3.32	-1.20	*-5.77*	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:	64.4	63.3	61.9	55.9	64.3	65.0
Medium Trucks:	60.4	57.2	49.4	58.6	64.8	64.8
Heavy Trucks:	66.9	63.8	56.0	65.2	71.4	71.4
Vehicle Noise:	69.4	67.0	63.1	66.5	72.9	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	101	217	468
CNEL:	48	103	221	477

Friday, July 26, 2024

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Airport Blvd.
Road Segment: w/o Palm St.

Project Name: Armtec Master Plan
Job Number: 15967

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,770 vehicles
Peak Hour Percentage:	8.25%
Peak Hour Volume:	311 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	71 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	46.0 feet
Centerline Dist. to Observer:	46.0 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%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

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

Lane Equivalent Distance (in feet)

Autos:	29.677
Medium Trucks:	29.378
Heavy Trucks:	29.407

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-7.27	3.29	-1.20	*-4.63*	0.000	0.000
Medium Trucks:	79.45	-22.14	3.36	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	84.25	-19.92	3.35	-1.20	*-5.47*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.3	62.2	60.8	54.8	63.3	63.9
Medium Trucks:	59.5	56.3	48.5	57.8	63.9	63.9
Heavy Trucks:	66.5	63.3	55.6	64.8	70.9	71.0
Vehicle Noise:	68.7	66.3	62.1	65.9	72.3	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	65	141	303	654
CNEL:	67	143	309	665

Friday, July 26, 2024

APPENDIX 10.1:

OPERATIONAL NOISE CALCULATIONS

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15967 - ARMTEC Master Plan

CadnaA Noise Prediction Model: 15967-02_Operation.cna
Date: 18.07.24
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance 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 (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	49.4	17.1	46.4	0.0	0.0	0.0		x	Total	5.00	r	6585073.32	2184562.33	5.00
R2		R2	41.9	19.3	39.1	0.0	0.0	0.0		x	Total	5.00	r	6586635.42	2182498.12	5.00
R3		R3	45.2	34.4	44.3	0.0	0.0	0.0		x	Total	5.00	r	6587815.97	2184101.16	5.00
R4		R4	47.3	37.2	46.7	0.0	0.0	0.0		x	Total	5.00	r	6587831.34	2184343.17	5.00
R5		R5	47.8	21.8	44.8	0.0	0.0	0.0		x	Total	5.00	r	6586989.15	2185845.43	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC1		AC1	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6587488.39	2184737.82	25.00
AC2		AC2	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6587574.68	2184369.07	25.00
AC3		AC3	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6587574.68	2184342.68	25.00
AC4		AC4	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6587574.68	2184315.60	25.00

Line Source(s)

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

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

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
LOAD1		LOAD1	115.8	103.7	103.7	78.3	66.2	66.2	Lw	103.7		900.00	0.00	0.00	8	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LOAD1	LOAD1	8.00	a			6586539.39	2185434.87	8.00	0.00
						6586981.23	2185438.34	8.00	0.00
						6586980.36	2185301.19	8.00	0.00
						6586537.66	2185298.58	8.00	0.00

Barrier(s)

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

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING			BUILDING00001	x	0		20.00	a	6586673.71	2185548.42	20.00	0.00
									6586983.61	2185551.89	20.00	0.00
									6586982.74	2185445.12	20.00	0.00
									6586671.11	2185442.52	20.00	0.00
BUILDING			BUILDING00002	x	0		20.00	a	6586585.17	2184941.65	20.00	0.00
									6586632.91	2184943.38	20.00	0.00
									6586632.91	2184899.11	20.00	0.00
									6586581.70	2184899.11	20.00	0.00
BUILDING			BUILDING00003	x	0		20.00	a	6586735.35	2184942.52	20.00	0.00
									6586786.56	2184944.25	20.00	0.00
									6586786.56	2184899.98	20.00	0.00
									6586734.48	2184898.25	20.00	0.00
BUILDING			BUILDING00004	x	0		20.00	a	6586731.00	2184472.03	20.00	0.00
									6586830.83	2184474.63	20.00	0.00
									6586831.70	2184339.22	20.00	0.00
									6586729.27	2184339.22	20.00	0.00
BUILDING			BUILDING00005	x	0		20.00	a	6587395.39	2184093.34	20.00	0.00
									6587637.06	2184095.42	20.00	0.00
									6587637.06	2183993.34	20.00	0.00
									6587394.70	2183990.56	20.00	0.00
BUILDING			BUILDING00006	x	0		20.00	a	6587522.48	2184457.92	20.00	0.00
									6587630.81	2184458.62	20.00	0.00
									6587629.42	2184222.51	20.00	0.00
									6587520.39	2184217.65	20.00	0.00
BUILDING			BUILDING00007	x	0		20.00	a	6587456.09	2184753.62	20.00	0.00
									6587514.42	2184756.40	20.00	0.00
									6587514.42	2184721.67	20.00	0.00
									6587455.39	2184721.67	20.00	0.00
BUILDING			BUILDING00008	x	0		20.00	a	6587409.40	2185126.71	20.00	0.00
									6587494.47	2185121.50	20.00	0.00
									6587497.94	2185085.04	20.00	0.00
									6587411.14	2185078.10	20.00	0.00
BUILDING			BUILDING00009	x	0		20.00	a	6587199.33	2185119.76	20.00	0.00
									6587374.68	2185121.50	20.00	0.00
									6587374.68	2184999.97	20.00	0.00
									6587308.71	2185005.18	20.00	0.00
									6587308.71	2185034.70	20.00	0.00
									6587201.07	2185038.17	20.00	0.00
BUILDING			BUILDING00010	x	0		20.00	a	6587270.51	2184927.06	20.00	0.00
									6587381.62	2184925.32	20.00	0.00
									6587379.89	2184828.10	20.00	0.00
									6587301.76	2184831.57	20.00	0.00
									6587305.23	2184864.56	20.00	0.00
									6587275.72	2184864.56	20.00	0.00
									6587270.51	2184829.83	20.00	0.00
									6587242.73	2184829.83	20.00	0.00
									6587239.26	2184906.22	20.00	0.00
									6587270.51	2184909.70	20.00	0.00
BUILDING			BUILDING00011	x	0		20.00	a	6587414.61	2184890.60	20.00	0.00
									6587473.64	2184894.07	20.00	0.00
									6587477.11	2184850.67	20.00	0.00
									6587412.87	2184848.93	20.00	0.00
BUILDING			BUILDING00012	x	0		20.00	a	6587135.09	2185107.61	20.00	0.00
									6587136.83	2185074.63	20.00	0.00
									6587089.96	2185072.89	20.00	0.00

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
									6587084.75	2185093.72	20.00	0.00
									6587107.32	2185095.46	20.00	0.00
									6587110.79	2185105.88	20.00	0.00
BUILDING			BUILDING00013	x	0		20.00	a	6587140.30	2185020.81	20.00	0.00
									6587147.25	2184854.14	20.00	0.00
									6587072.59	2184850.67	20.00	0.00
									6587065.65	2184930.53	20.00	0.00
									6587095.16	2184932.26	20.00	0.00
									6587096.90	2185022.54	20.00	0.00
BUILDING			BUILDING00014	x	0		20.00	a	6586603.84	2184803.79	20.00	0.00
									6586629.89	2184807.26	20.00	0.00
									6586628.15	2184776.01	20.00	0.00
									6586600.37	2184774.28	20.00	0.00
BUILDING			BUILDING00015	x	0		20.00	a	6586765.30	2184809.00	20.00	0.00
									6586791.34	2184810.74	20.00	0.00
									6586794.82	2184781.22	20.00	0.00
									6586765.30	2184779.49	20.00	0.00
BUILDING			BUILDING00016	x	0		20.00	a	6586758.36	2184642.33	20.00	0.00
									6586789.61	2184649.28	20.00	0.00
									6586787.87	2184609.35	20.00	0.00
									6586760.09	2184609.35	20.00	0.00
BUILDING			BUILDING00017	x	0		20.00	a	6586596.90	2184645.81	20.00	0.00
									6586622.94	2184649.28	20.00	0.00
									6586624.68	2184614.56	20.00	0.00
									6586595.16	2184611.08	20.00	0.00
BUILDING			BUILDING00018	x	0		20.00	a	6586631.62	2184171.85	20.00	0.00
									6586692.39	2184178.79	20.00	0.00
									6586694.12	2184126.71	20.00	0.00
									6586635.09	2184126.71	20.00	0.00
BUILDING			BUILDING00019	x	0		20.00	a	6586860.79	2184180.53	20.00	0.00
									6586916.34	2184180.53	20.00	0.00
									6586914.61	2184126.71	20.00	0.00
									6586860.79	2184131.92	20.00	0.00
BUILDING			BUILDING00020	x	0		20.00	a	6587076.07	2184272.54	20.00	0.00
									6587112.53	2184270.81	20.00	0.00
									6587112.53	2184225.67	20.00	0.00
									6587072.59	2184225.67	20.00	0.00
BUILDING			BUILDING00021	x	0		20.00	a	6587084.75	2184157.96	20.00	0.00
									6587185.44	2184152.75	20.00	0.00
									6587187.18	2184086.78	20.00	0.00
									6587086.48	2184086.78	20.00	0.00
BUILDING			BUILDING00022	x	0		20.00	a	6587247.94	2183940.95	20.00	0.00
									6587244.47	2184074.63	20.00	0.00
									6587286.14	2184072.89	20.00	0.00
									6587284.40	2183940.95	20.00	0.00
BUILDING			BUILDING00023	x	0		20.00	a	6587223.64	2184178.79	20.00	0.00
									6587260.09	2184178.79	20.00	0.00
									6587267.04	2184156.22	20.00	0.00
									6587237.53	2184157.96	20.00	0.00
									6587237.53	2184145.81	20.00	0.00
									6587223.64	2184145.81	20.00	0.00
BUILDING			BUILDING00024	x	0		20.00	a	6587527.46	2184171.85	20.00	0.00
									6587553.50	2184175.32	20.00	0.00
									6587556.97	2184137.13	20.00	0.00
									6587530.93	2184131.92	20.00	0.00
BUILDING			BUILDING00025	x	0		20.00	a	6587600.37	2184171.85	20.00	0.00
									6587624.68	2184171.85	20.00	0.00
									6587626.41	2184133.65	20.00	0.00
									6587598.64	2184137.13	20.00	0.00
BUILDING			BUILDING00026	x	0		20.00	a	6587287.87	2184446.15	20.00	0.00
									6587404.19	2184439.21	20.00	0.00
									6587411.14	2184277.75	20.00	0.00
									6587294.82	2184282.96	20.00	0.00
BUILDING			BUILDING00027	x	0		20.00	a	6587428.50	2184496.50	20.00	0.00
									6587291.34	2184494.76	20.00	0.00
									6587277.46	2184611.08	20.00	0.00
									6587192.39	2184626.71	20.00	0.00
									6587187.18	2184708.31	20.00	0.00
									6587291.34	2184704.83	20.00	0.00
									6587286.14	2184746.50	20.00	0.00
									6587386.83	2184755.18	20.00	0.00
									6587390.30	2184654.49	20.00	0.00
									6587421.55	2184654.49	20.00	0.00
BUILDING			BUILDING00028	x	0		20.00	a	6587018.78	2184673.58	20.00	0.00
									6587055.23	2184673.58	20.00	0.00
									6587050.03	2184612.82	20.00	0.00
									6587013.57	2184616.29	20.00	0.00

Ground Absorption(s)

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

Contour(s)

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

Vertical Area Source(s)

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

Rail

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

Sound Level Spectra

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

Roads

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

RoadsGeo

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

APPENDIX 11.1:

CONSTRUCTION NOISE LEVEL CALCULATIONS

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15967 - ARMTEC Master Plan

CadnaA Noise Prediction Model: 15967-02_Construction.cna
Date: 18.07.24
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance 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 (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	48.6	-51.4	45.6	0.0	0.0	0.0		x	Total	5.00	r	6585073.32	2184562.33	5.00
R2		R2	47.5	-52.5	44.5	0.0	0.0	0.0		x	Total	5.00	r	6586635.42	2182498.12	5.00
R3		R3	58.1	-41.9	55.0	0.0	0.0	0.0		x	Total	5.00	r	6587815.97	2184101.16	5.00
R4		R4	58.3	-41.7	55.3	0.0	0.0	0.0		x	Total	5.00	r	6587831.34	2184343.17	5.00
R5		R5	58.6	-41.4	55.5	0.0	0.0	0.0		x	Total	5.00	r	6586989.15	2185845.43	5.00

Point Source(s)

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

Line Source(s)

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

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

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
Construction1		Construction1	116.6	16.6	16.6	63.2	-36.8	-36.8	PWL-Pt	116.6					8	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
Construction1	Construction1	8.00	a			6586454.60	2185732.41	8.00	0.00
						6587700.61	2185758.78	8.00	0.00
						6587724.56	2185735.63	8.00	0.00
						6587722.64	2185247.07	8.00	0.00
						6587722.52	2185177.94	8.00	0.00
						6587714.64	2183918.24	8.00	0.00
						6586425.54	2183897.12	8.00	0.00

Barrier(s)

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

Building(s)

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

Ground Absorption(s)

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

Contour(s)

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

Vertical Area Source(s)

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

Rail

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

Sound Level Spectra

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

Roads

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

RoadsGeo

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