

Appendix M-1

Revised Noise Study



West Campus Upper Plateau

REVISED NOISE AND VIBRATION ANALYSIS

MARCH JOINT POWERS AUTHORITY (MARCH JPA)

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LIST OF ABBREVIATED TERMS

| | |
|-----------|---|
| (1) | Reference |
| ANSI | American National Standards Institute |
| CEQA | California Environmental Quality Act |
| CFR | Code of Federal Regulations |
| CNEL | Community Noise Equivalent Level |
| dBA | A-weighted decibels |
| EPA | Environmental Protection Agency |
| FHWA | Federal Highway Administration |
| FTA | Federal Transit Administration |
| Hz | Hertz |
| I-215 | Interstate 215 |
| INCE | Institute of Noise Control Engineering |
| L_{eq} | Equivalent continuous (average) sound level |
| L_{max} | Maximum level measured over the time interval |
| L_{min} | Minimum level measured over the time interval |
| MARB/IPA | March Air Reserve Base/Inland Port Airport |
| MJPA | March Joint Powers Authority |
| mph | Miles per hour |
| OPR | Office of Planning and Research |
| PPV | Peak Particle Velocity |
| Project | West Campus Upper Plateau |
| REMEL | Reference Energy Mean Emission Level |
| RMS | Root-mean-square |
| VdB | Vibration Decibels |

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this revised noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the West Campus Upper Plateau Project (“Project”). This revised study is an update to the West Campus Upper Plateau Noise and Vibration Analysis dated October 2022. Additions are presented in double-underline and deletions are presented with strikethrough. This revised study has been prepared to satisfy applicable March Joint Powers Authority (March JPA) standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) The results of this West Campus Upper Plateau Revised Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

| Analysis | Report Section | Significance Findings | |
|------------------------|----------------|--------------------------------|--|
| | | Unmitigated | Mitigated |
| Off-Site Traffic | 7 | <i>Potentially Significant</i> | <i>Significant and Unavoidable¹</i> |
| Operational Noise | 9 | <i>Less Than Significant</i> | - |
| Construction Noise | 10 | <i>Less Than Significant</i> | - |
| Construction Vibration | | <i>Less Than Significant</i> | - |

¹ The Significant and Unavoidable off-site traffic noise impact is limited to the non-noise sensitive land uses adjacent to the only one study area roadway segment, Cactus Avenue east of Meridian Parkway (Segment #13). This segment is in a developed industrial area and is not located immediately adjacent to any noise sensitive land uses. All other roadway segments will experience off-site traffic noise level impacts that are considered less than significant.

Although not required to address a potentially significant impact, the applicant will implement the following measures, which would further reduce construction noise impacts:

NOI-1 Hours of Construction. Project construction activities shall not be conducted during the period from 7:00 p.m. on a given day until 7:00 a.m. on the following day. Additionally, outdoor construction and grading activities, including the operation of any tools or equipment associated with construction, drilling, repair, alteration, grading/grubbing or demolition work within 500 feet of the property line of a residential use or sensitive receptor, shall be prohibited between 5:00 p.m. and 8:00 a.m. on Saturdays, and at any time on Sunday or a Federal Holiday.

NOI-2 Blasting and Drilling Limits. No blasting shall occur within 1,000 feet of any residence or other sensitive receptor. In the event bedrock material that is not rippable by bulldozer is encountered within 1,000 feet of any residence or other sensitive receptor, the construction contractor shall utilize expansive epoxy or other non-explosive demolition agent for any necessary removal operations. In

addition to the distance limits, any blasting or drilling activities shall not exceed the City of Riverside's construction noise threshold of 75 dBA L_{eq} for City residents or the County of Riverside's construction noise threshold of 65 dBA L_{max} for County residents.

NOI-3 **Blasting Activities.** All blasting activities shall be designed to meet the regulatory construction noise and vibration thresholds outlined on Table 4-1, Significance Criteria Summary.

NOI-4 **Construction Contractor Noise Abatement Best Practices.** Prior to the issuance of each grading permit and building permit, the applicant shall provide evidence that the subject plans contain the following requirements and restrictions:

- All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, consistent with manufacturers' standards).
- All stationary construction equipment shall be placed in such a manner so that the emitted noise is directed away from any sensitive receivers.
- Construction equipment staging areas shall be located at the greatest feasible distance between the staging area and the nearest sensitive receivers.
- The construction contractor shall limit equipment and material deliveries to the same hours specified for construction equipment for **NOI-1**.
- Electrically powered air compressors and similar power tools shall be used, when feasible, in place of diesel equipment.
- No music or electronically reinforced speech from construction workers shall be allowed within 500 feet of the property line of a residential use or sensitive receptor.

1 INTRODUCTION

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

1.1 SITE LOCATION

The Project site is located on either side of Barton Street and Cactus Avenue in the jurisdiction of the March Joint Powers Authority (March JPA) and unincorporated Riverside County, as shown on Exhibit 1-A. Interstate 215 (I-215) is located approximately 2.5 miles east of the Project site via Cactus Avenue, Alessandro Boulevard, and Van Buren Boulevard.

1.2 PROJECT DESCRIPTION

The proposed Project (as shown on Exhibit 1-B) consists of the following uses:

- Building B – 1,250,000 square feet (SF) of high-cube fulfillment center warehouse use
- Building C – 587,000 SF of high-cube fulfillment center warehouse use
- Industrial Area – 725,561 SF of high-cube fulfillment center warehouse use
- Industrial Area – 500,000 SF of high-cube cold storage warehouse use
- Business Park Area – 1, 280,403 SF of business park use (30% Office use)
- Mixed Use Area – 160,921 SF of retail use (25%)
- Mixed Use Area – 482,765 SF of business park use (75%)
- 42.2-acre Active Park (with sports fields)
- 35.8 acres of Park/Open Space use
- Public Facilities – 2.84 acres for future sewer lift station and electrical substation

The proposed Project also includes the establishment of a 445.43-acre Conservation Easement in compliance with the Center for Biological Diversity (CBD) Settlement Agreement. According to the *West Campus Upper Plateau Traffic Analysis*, the proposed Project is anticipated to generate a total of 35,314 trip-ends per day including 2,054 truck trips (in actual vehicles). The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning, trash enclosure activity, parking lot vehicle movements, truck movements and park activities. This noise analysis is intended to describe the noise level impacts associated with the expected typical operational activities at the Project site.

It is expected that the noise generated by the Project construction equipment will include a combination of crawler tractors, excavators, graders, dozers, scrapers, forklifts, generator sets, welders, paving equipment, and air compressors that when combined can reach high levels. In

addition, rock blasting may be required during grading operations to support Project construction, therefore, this analysis considers the potential blasting noise and vibration levels at the nearest noise sensitive receiver locations.

EXHIBIT 1-A: LOCATION MAP

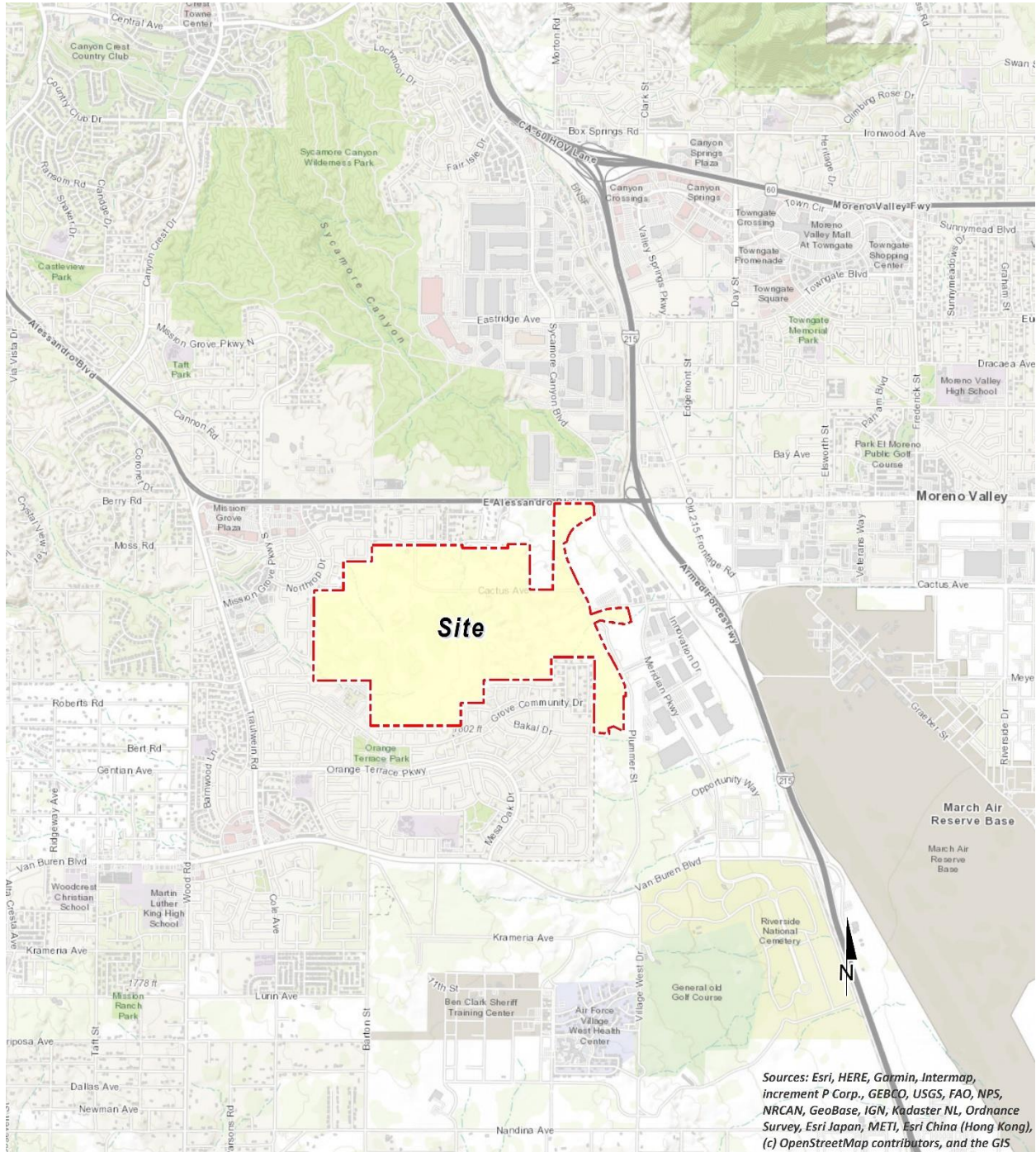
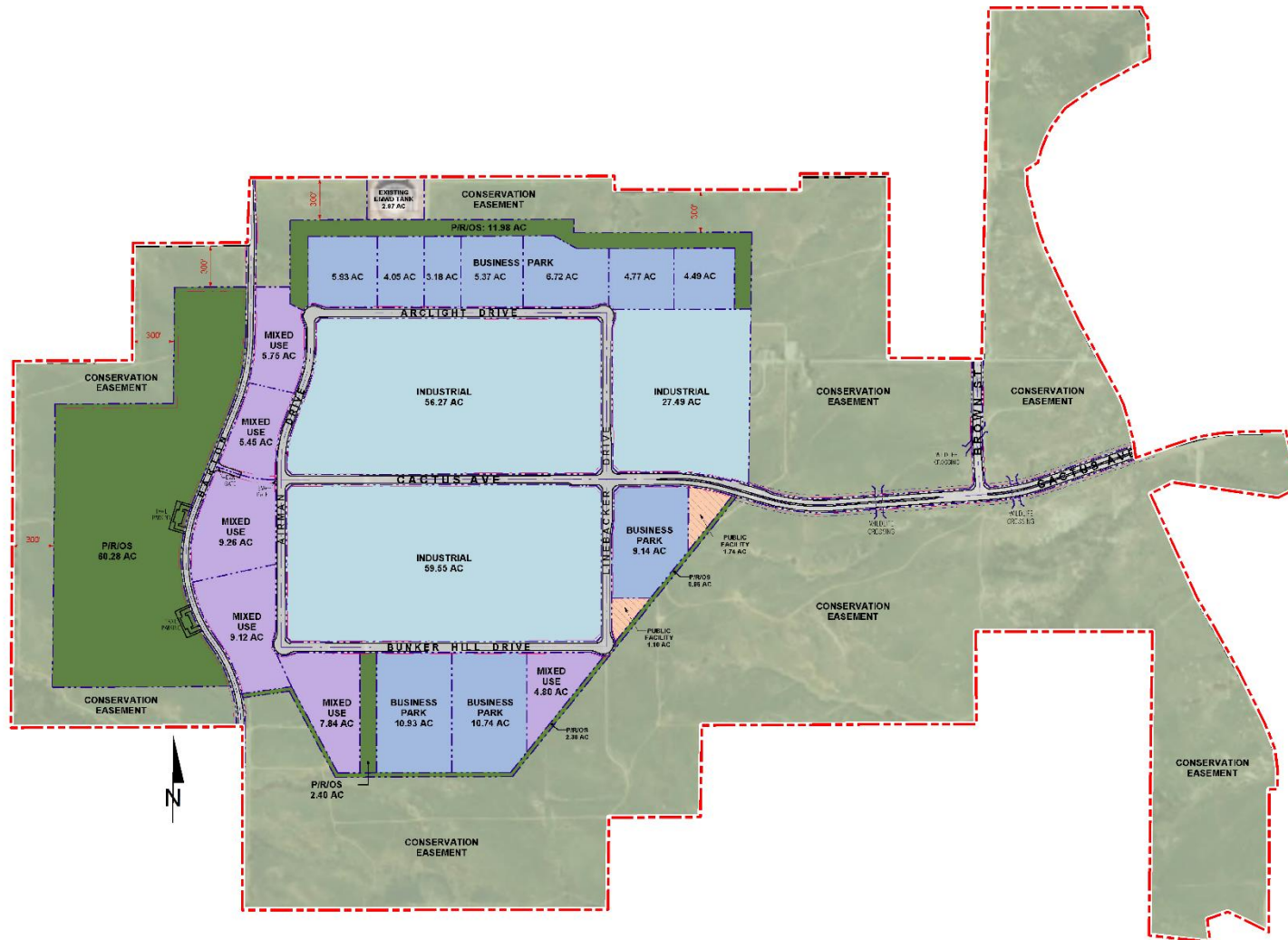


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

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

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

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

at approximately 1,000 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

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

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 Day-Night Noise level (Ldn) or Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The Ldn or CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m. for CNEL, and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. for Ldn and CNEL. These additions are made to account for the noise sensitive time periods during the evening and night hours when noise can become more intrusive. Ldn or CNEL do not represent the actual sound level heard at any time, but rather represents the total sound exposure. The March JPA relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

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

2.3.1 GEOMETRIC SPREADING

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

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been

expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

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

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to 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 Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (5)

2.4 NOISE CONTROL

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

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

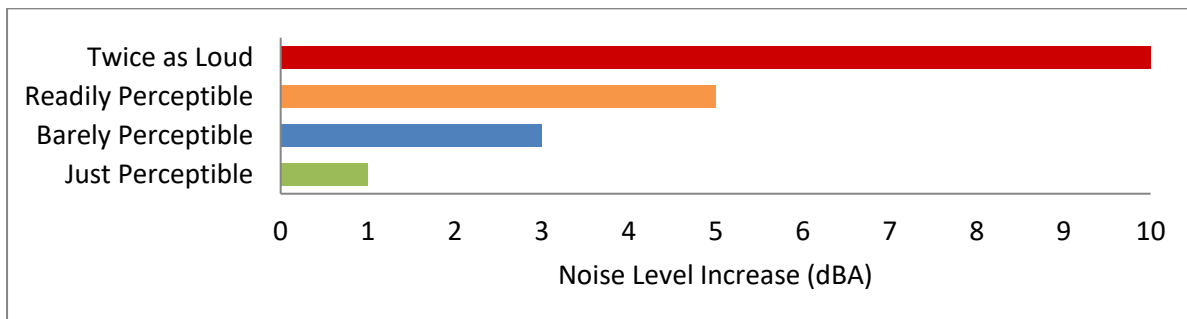
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, 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. (6)

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen 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 may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments (7 pp. 8-6). Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (8) According to research originally published in the Noise Effects Handbook (7), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



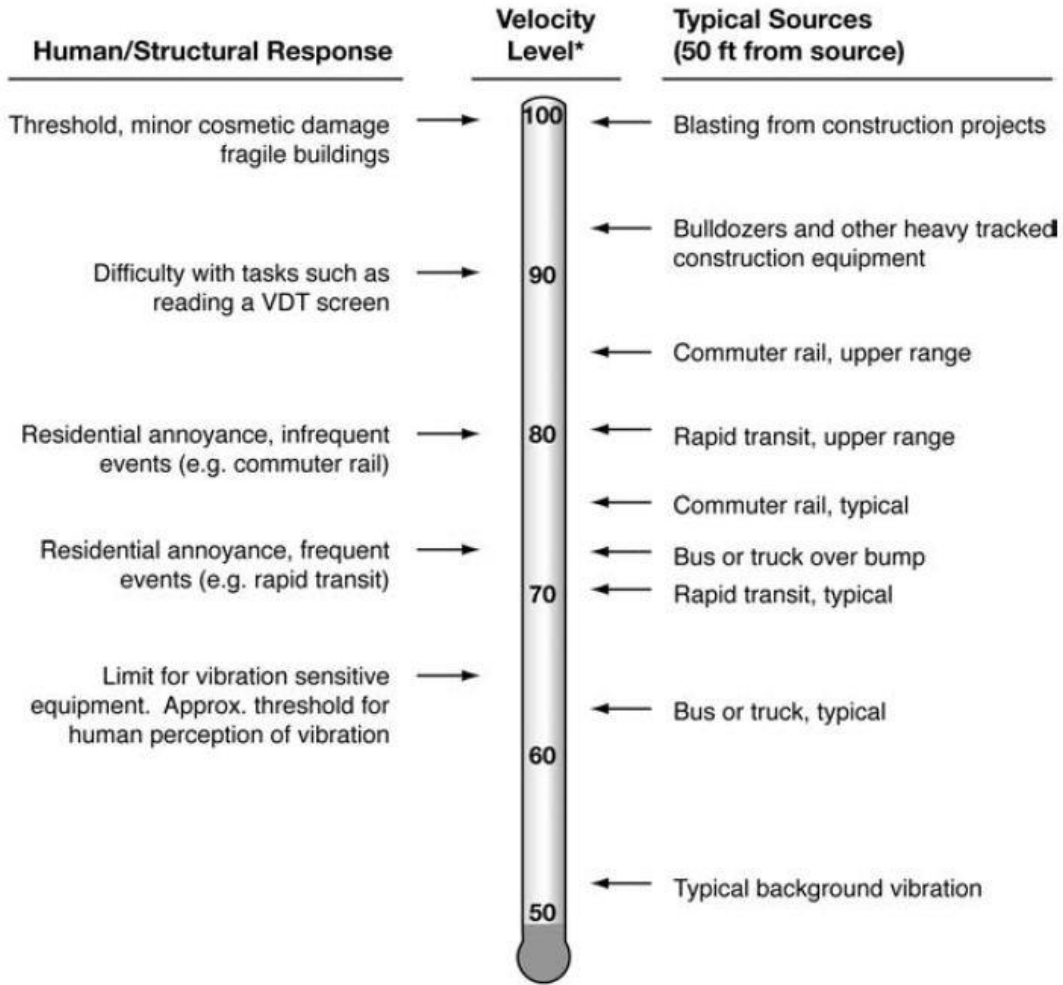
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Impact Assessment Manual* (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 and/or activities.

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

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



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

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

3 REGULATORY SETTING

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

3.1 FEDERAL REGULATIONS

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under Title 40 of the Code of Federal Regulations, Part 205, Subpart B. (10) The federal truck pass-by noise standard is 80 dBA at 50 feet from the vehicle pathway centerline, under specified test procedures. These controls are implemented through regulatory controls on truck manufacturers. There are no comparable standards for vibration, which tend to be specific to the roadway surface, the vehicle load, and other factors.

In 1972, the Noise Control Act (42 U.S.C. Section 4901 et seq.) was passed by Congress to promote noise environments in support of public health and welfare. It also established the U.S. Environmental Protection Agency (USEPA) Office of Noise Abatement and Control to coordinate federal noise control activities. The USEPA established guidelines for noise levels that would be considered safe for community exposure without the risk of adverse health or welfare effects. The USEPA found that to prevent hearing loss over the lifetime of a receiver, the yearly average L_{eq} should not exceed 70 dBA, and the L_{dn} should not exceed 55 dBA in outdoor activity areas or 45 dBA indoors to prevent interference and annoyance. However, in 1982, the USEPA phased out the office's funding as part of a shift in federal noise control policy to transfer the primary responsibility of regulating noise to state and local governments.

3.2 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (11) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.3 MARCH JPA NOISE/AIR QUALITY ELEMENT

The adopted March JPA General Plan Noise/Air Quality Element identifies several goals and policies to protect and enhance the quality of life for those who live and work in the March JPA jurisdiction. (12) The Noise Element provides policy guidance which addresses the generation, mitigation, avoidance, and the control of excessive noise. The adopted March JPA General Plan includes the following goals in the Noise/Air Quality Element:

- 1 *Ensure that land uses are protected from excessive and unwanted noise.*
- 2 *Minimize incompatible noise level exposures throughout the Planning Area, and where possible, mitigate the effect of noise incompatibilities to provide a safe and healthy environment.*
- 3 *Work toward the reduction of noise impacts from vehicular traffic, and aviation and rail operations.*

The noise policies specified in the March JPA Noise/Air Quality Element provide the guidelines necessary to satisfy these goals. The policies are provided below:

- Policy 1.1 Establish acceptable limits of noise for various land uses throughout the March JPA Planning Area. Future development that could increase ambient noise levels shall be required to mitigate the anticipated noise increase, to the extent possible.*
- Policy 1.2 Noise sensitive uses (such as schools, libraries, hospitals, medical facilities, residential uses, etc.) shall be discouraged in areas where noise levels exceed acceptable limits.*
- Policy 1.3 Encourage good acoustical design in new construction.*
- Policy 1.4 Provide buffer areas between noise sources and other developments, where practical.*
- Policy 2.1 Avoid placing noise sensitive land uses in proximity to areas devoted to noise generating facilities such as areas of aviation related activities, industrial parks, transportation facilities, and other noise generating land uses.*
- Policy 2.2 Noise generating facilities shall be located in areas with compatible noise generating land uses (i.e., airport noise contour areas) to minimize land use incompatibilities, noise abatement and mitigation measures needed.*
- Policy 2.3 Noise sensitive land uses shall not be located in areas influenced by noise generating land uses, in particular the noise contours associated with the joint use airfield, unless appropriate mitigation is utilized.*
- Policy 2.4 March JPA shall evaluate noise sensitivity and noise generation when considering land use Projects and transportation improvement Projects, and where appropriate mitigation measures shall be employed.*
- Policy 2.5 March JPA shall utilize and comply with the CALTRANS standards for noise compatibility for aviation generated noise to proposed land use development.*
- Policy 3.1 Include mitigating measures such as landscaping, berming and site orientation, in the design of Projects located near noise generating sources such as arterial roadways.*
- Policy 3.2 Coordinate with adjacent cities and county agencies for noise abatement.*
- Policy 3.3 Adhere to the adopted AICUZ and Comprehensive Land Use Plan standards and promote the use of newer and quieter aircraft and support equipment.*
- Policy 3.4 Where appropriate, noise mitigation measures shall be incorporated in the design and approval of development on property located adjacent to aviation and rail facilities.*
- Policy 3.5 Where appropriate, development in areas adjacent to freeways, arterial streets, and other noise source shall be designed to reduce the potential for noise impacts.*

- Policy 3.6 Regulate the use of local streets by trucks, trailers, and construction vehicles, to the extent possible.*
- Policy 3.7 Limit trucking operations to appropriate routes, times and speeds.*
- Policy 3.8 Appropriate muffling systems for construction equipment and operations shall be required, as necessary.*
- Policy 3.9 March JPA shall encourage and facilitate the use of mass transit services and alternative transportation systems to minimize dependence of the automobile within the Planning Area, thereby minimizing the level of noise generated by surface transportation.*

3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the West Campus Upper Plateau Project, stationary-source (operational) noise such as the expected loading dock activity, roof-top air conditioning, trash enclosure activity, parking lot vehicle movements, truck movements and park activities are typically evaluated against standards established under a jurisdiction’s Municipal Code. Although the Project site is located within the March JPA, noise-sensitive receivers potentially impacted by operational noise activities are also located in the City of Riverside. Therefore, to accurately describe the potential Project-related operational noise level contributions, this analysis presents the appropriate operational noise standards for each jurisdiction adjacent to the Project site. The March JPA, and the City of Riverside operational noise level standards are shown on Table 3-1.

3.4.1 MARCH JPA OPERATIONAL NOISE STANDARDS

The March JPA Development Code, Chapter 9.10 *Performance Standards*, Section 9.10.140 identifies the exterior stationary-source noise level standards for ALL commercial and industrial land uses. Based on Section 9.10.140 of the Development Code, the exterior noise level shall not exceed 55 dBA L_{eq} at any time beyond the boundaries of the property. (13) Chapter 9.10 of the March JPA Development Code is included in Appendix 3.1.

3.4.2 CITY OF RIVERSIDE OPERATIONAL NOISE STANDARDS

To control unnecessary, excessive and/or annoying noise, the City of Riverside has adopted exterior sound level limits in the Noise Control section (Title 7) of the Municipal Code. Title 7 outlines exterior and interior noise level standards for affected land uses. Title 7 relies on the use of percentile noise descriptors to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project noise activities, the L_{50} or average L_{eq} noise level metrics best describe the Project related operational noise source activities. The L_{eq} noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, due to the mathematical relationship between the median (L_{50}) and the mean (L_{eq}), the L_{eq} will always be larger than or equal to the L_{50} . The more variable the noise becomes, the larger the L_{eq} becomes in comparison to the L_{50} . Therefore, this noise study conservatively relies on the average L_{eq} sound level limits to describe the Project noise levels.

For noise-sensitive residential properties, Table 7.25.010A identifies exterior noise standards for the daytime (7:00 a.m. to 10:00 p.m.) hours of 55 dBA L₅₀ and 45 dBA L₅₀ during the nighttime (10:00 p.m. to 7:00 a.m.) hours as shown on Table 3-1. The City of Riverside Municipal Code Title 7 Noise Control section is included in Appendix 3.2.

TABLE 3-1: EXTERIOR NOISE STANDARDS

| Land Use | Time Period | Exterior Noise Level Standards (dBA) ¹ | | | | |
|-------------|-------------|---|------------------------------|----------------------------|---------------------------|-----------------------------|
| | | L ₅₀ (30 mins) | L ₂₅ (15 mins) | L ₈ (5 mins) | L ₂ (1 min) | L _{max} (0 min) |
| Residential | Daytime | 55 | 60 | 65 | 70 | 75 |
| | Nighttime | 45 | 50 | 55 | 60 | 65 |

¹ City of Riverside Municipal Code, Title 7 Noise Control, Section 7.25.010 (A). Section 7.25.010 (B) indicates that if the existing ambient noise level already exceeds any of the exterior noise level limit categories, then the standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. The percent noise level is the level exceeded "n" percent of the time during the measurement period. L₅₀ is the noise level exceeded 50% of the time. "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Section 7.25.010(A) indicates that it is unlawful for any person to cause or allow the creation of any noise which exceeds the following:

1. The exterior noise standard of the applicable land use category up to 5 dBA for a cumulative period of 30 minutes in any hour (L₅₀); or
2. The exterior noise standard of the applicable land use category, plus 5 dBA, for a cumulative period of more than 15 minutes in any hour (L₂₅); or
3. The exterior noise standard of the applicable land use category, plus 10 dBA, for a cumulative period of more than 5 minutes in any hour (L₈); or
4. The exterior noise standard of the applicable land use category, plus 15 dBA, for a cumulative period of more than 1 minute in any hour (L₂).
5. The exterior noise standard for the applicable land use category, plus 20 dBA or the maximum measured ambient noise level, for any period of time (L_{max}).

3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Project, noise from construction activities is typically limited to the hours of operation established under a jurisdiction’s Code. To accurately describe the potential Project-related construction noise level contributions to the existing noise environment, this analysis presents the appropriate construction noise standards for each jurisdiction adjacent to the Project site including: the March JPA, and the City of Riverside. However, the permitted hours of construction for the March JPA are the only applicable hour restrictions for the Project since the construction activity will be within the March JPA jurisdiction.

3.5.1 MARCH JPA CONSTRUCTION NOISE STANDARDS

The March JPA Development Code, Section 9.10.140, states that *outdoor construction and grading activities, including the operation of any tools or equipment associated with construction, drilling, repair, alteration, grading/grubbing or demolition work within 500 feet of the property line of a residential use, shall be prohibited between the hours of 7:00 p.m. and 7:00 a.m. Monday through Friday and between 5:00 p.m. and 8:00 a.m. on Saturdays or at any time on Sunday or a Federal Holiday.* The March JPA Development Code construction noise standards are shown on Table 3-2 and included in Appendix 3.1.

3.5.2 CITY OF RIVERSIDE CONSTRUCTION NOISE STANDARDS

The City of Riverside Municipal Code, Section 7.35.020[G], states that construction activities are limited to the hours of 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays, with no activities allowed on Sundays or federal holidays. (14) The land uses in the Project study area with the potential to be impacted by Project-related construction noise levels include noise-sensitive residential land use. Based on the City of Riverside Municipal Code, Table 7.25.010A *Exterior Noise Standards*, residential land uses have an anytime noise level standard of 75 dBA L_{max} during the daytime hours, and 65 dBA L_{max} during the nighttime hours for construction noise levels. The City of Riverside Municipal Code construction noise standards are shown on Table 3-2 and included in Appendix 3.2.

3.5.3 COUNTY OF RIVERSIDE CONSTRUCTION NOISE STANDARDS

Section 9.52.020[I] of the County's Noise Regulation ordinance, provided in Appendix 3.3, indicates that noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (15) Neither the County's General Plan nor County Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*.

To allow for a quantified determination of what the Noise Regulation Ordinance constitutes as noise that *may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life* due to Project construction activity, relevant quantified stationary source noise standards established in the General Plan, Policy N 4.1, are used in this analysis to assess the Project construction noise levels at nearby sensitive receivers. Therefore, the daytime noise level standard of 65 dBA L_{eq} and nighttime noise level standard of 45 dBA L_{eq} are used to evaluate the potential Project-related construction noise impacts. (16)

TABLE 3-2: CONSTRUCTION NOISE STANDARDS

| Jurisdiction | Land Use | Permitted Hours of Construction Activity | Construction Noise Level Limit at Receiving Use ¹ | |
|----------------------------------|-------------|--|--|-------------------------|
| | | | Daytime | Nighttime |
| March JPA ² | n/a | 7:00 a.m. to 7:00 p.m. | n/a | |
| City of Riverside ³ | Residential | 7:00 a.m. to 7:00 p.m. on weekdays; 8:00 a.m. to 5:00 p.m. on Saturdays; no work on Sundays or federal holidays | 75 dBA L _{max} | 65 dBA L _{max} |
| County of Riverside ⁴ | Residential | 6:00 a.m. to 6:00 p.m. June to September; 7:00 a.m. to 6:00 p.m. October to May | 65 dBA L _{eq} | 45 dBA L _{eq} |

¹ Thresholds based on the City of Riverside and County of Riverside noise level standard for non-transportation noise sources (Table 3-1).

² March Joint Powers Authority, Development Code, Chapter 9.10 Performance Standards, Section 9.10.030 (Appendix 3.1).

³ City of Riverside Municipal Code, Section 7.35.010[B][5] (Appendix 3.2).

⁴ County of Riverside Municipal Code, Section 9.52.020[I] (Appendix 3.3).

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

3.6 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. (8) Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity.

The March JPA and the City of Riverside General Plans, Development Code, and Municipal Code do not identify specific vibration level standards. Therefore, the impacts due to vibration are assessed based on vibration level limits identified in the County of Riverside General Plan Noise Element. Vibration levels with peak particle velocity (PPV) of 0.0787 inches per second are considered readily perceptible and PPV above 0.1968 in/sec are considered annoying to people in buildings. Further, County of Riverside General Plan Policy 16.3 identifies a motion velocity perception threshold for vibration due to passing trains of 0.01 inches per second (in/sec) over the range of one to 100 Hz (16). For the purposes of this analysis, the perception threshold of 0.01 in/sec shall be used to assess the potential impacts due to Project construction at nearby sensitive receiver locations. The vibration standards are shown on Table 3-3.

Typically, the human response at the perception threshold for vibration includes annoyance in residential areas as previously shown on Exhibit 2-B, when vibration levels expressed in vibration decibels (VdB) approach 75 VdB. The County of Riverside, however, identifies a vibration perception threshold of 0.01 in/sec. For vibration levels expressed in velocity, the human body responds to the average vibration amplitude often described as the root-mean-square (RMS). The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a one-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to reduce the range of numbers used to describe human response to vibration. Therefore, the vibration standard of 0.01 in/sec in RMS

velocity levels is used in this analysis to assess the human perception of vibration levels due to Project-related construction activities. The County of Riverside General Plan Policy 16.3 vibration perception threshold of 0.01 RMS in/sec was intended to control perceptible ground vibration for very low range of noise frequency (0 to 100 Hertz) due to passing trains. This policy is more restrictive than the vibration thresholds outlined by the FTA to control construction vibration levels. (8)

TABLE 3-3: VIBRATION ANNOYANCE STANDARDS

| Jurisdiction | Root-Mean-Square (RMS) Velocity (in/sec) |
|----------------------------------|--|
| March JPA | n/a |
| City of Riverside | n/a |
| County of Riverside ¹ | 0.01 |

¹ Source: County of Riverside General Plan Noise Element, Policy N 16.3.

"n/a" = The General Plan, Development, and Municipal Codes do not identify specific vibration level standards.

3.7 MARCH AIR RESERVE BASE/INLAND PORT AIRPORT LAND USE COMPATIBILITY

The March Air Reserve Base/Inland Port Airport (MARB/IPA) is located less than one mile east of the Project site. The *Riverside County Airport Land Use Compatibility Plan Policy Document* (RC ALUCP) includes the policies for determining the land use compatibility of the Project. Policy 4.1.5 *Noise Exposure for Other Land Uses* of the RC ALUCP requires that land uses, demonstrate compatibility with the acceptable noise levels on Table 2B. The Table 2B *Supporting Compatibility Criteria: Noise matrix* is shown on Exhibit 3-B and indicates that the Project's mixed use, business park and industrial land uses (service commercial, wholesale trade, warehousing, light industrial) experience *clearly acceptable* exterior noise levels below 60 dBA CNEL. *Normally acceptable* noise levels for industrial land uses range from 60 to 65 dBA CNEL. *Marginally acceptable* noise levels at industrial land uses range from 65 to 70 dBA CNEL. (17)

According to the *Supporting Compatibility Criteria: Noise matrix*, the Project's Park use will experience *clearly acceptable* exterior noise levels below 55 dBA CNEL, *normally acceptable* noise levels from 55 to 65 dBA CNEL and *marginally acceptable* noise levels above 65 dBA CNEL. For *marginally acceptable* noise levels: *the indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.* (17)

The noise contour boundaries used to determine the potential aircraft-related noise impacts at the Project site are found on Figure 6-9 of the March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study and are presented on Exhibit 3-C of this report. Based on the 2018 noise level contours for the MARB/IPA, the Project development area is located mostly between the 60 to 65 dBA CNEL noise level contour boundaries and is considered *normally acceptable*. In addition, the outdoor activities at the business park and mixed-use land uses within the Project

site are expected to be minimal and include employees traveling from their vehicles to the office buildings within the site. Therefore, based on the RC ALUCP compatibility criteria, *conventional construction methods will eliminate noise intrusions upon indoor activities and thus is allowed under the RC ALUCP.* (17)

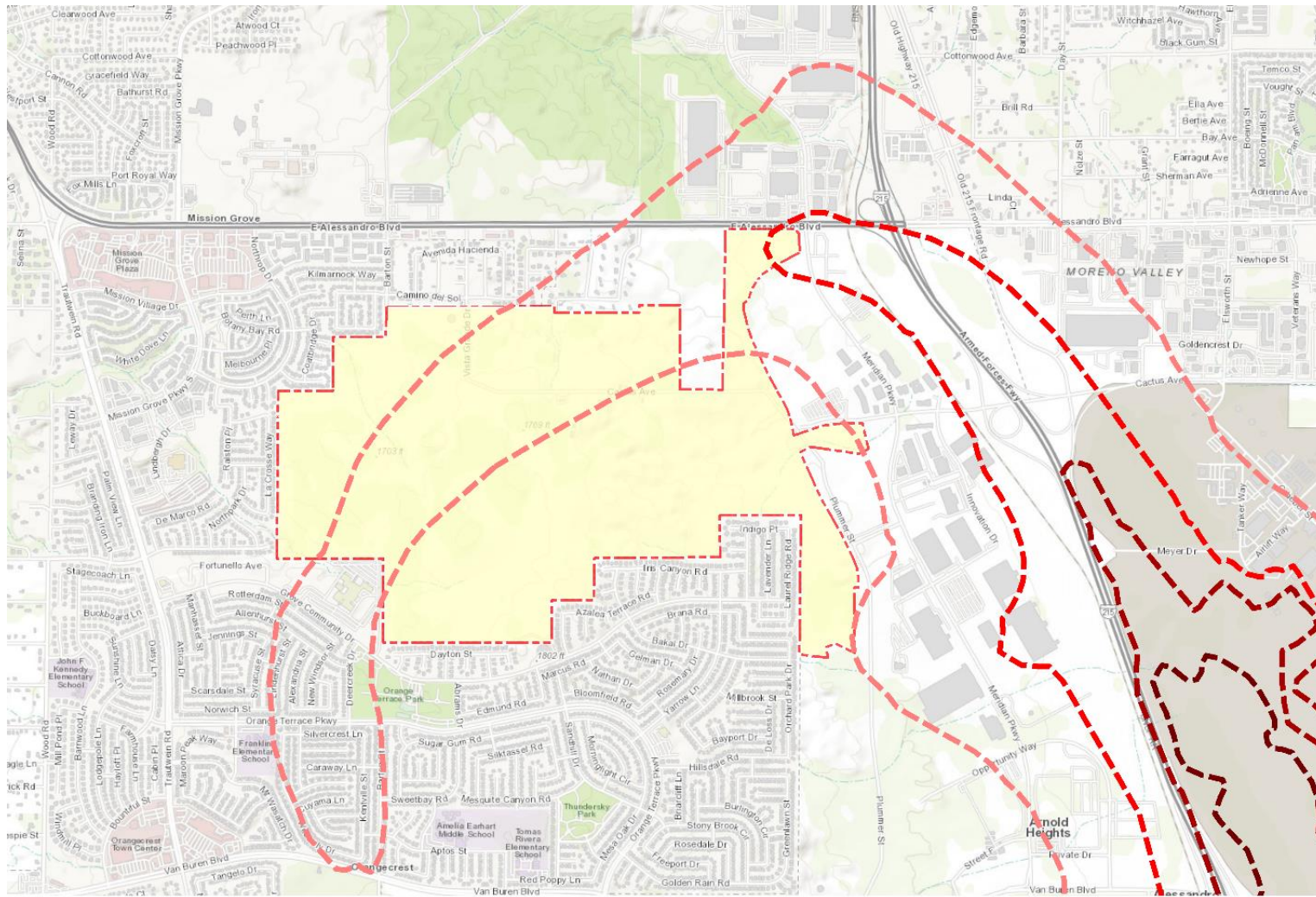
EXHIBIT 3-B: RC ALUCP SUPPORTING COMPATIBILITY CRITERIA: NOISE

| Land Use Category | CNEL (dB) | | | | |
|--|-----------|-------|-------|-------|-------|
| | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 |
| <i>Residential *</i> | | | | | |
| single-family, nursing homes, mobile homes | ++ | o | - | -- | -- |
| multi-family, apartments, condominiums | ++ | + | o | -- | -- |
| <i>Public</i> | | | | | |
| schools, libraries, hospitals | + | o | - | -- | -- |
| churches, auditoriums, concert halls | + | o | o | - | -- |
| transportation, parking, cemeteries | ++ | ++ | ++ | + | o |
| <i>Commercial and Industrial</i> | | | | | |
| offices, retail trade | ++ | + | o | o | - |
| service commercial, wholesale trade, warehousing, light industrial | ++ | ++ | + | o | o |
| general manufacturing, utilities, extractive industry | ++ | ++ | ++ | + | + |
| <i>Agricultural and Recreational</i> | | | | | |
| cropland | ++ | ++ | ++ | ++ | + |
| livestock breeding | ++ | + | o | o | - |
| parks, playgrounds, zoos | ++ | + | + | o | - |
| golf courses, riding stables, water recreation | ++ | ++ | + | o | o |
| outdoor spectator sports | ++ | + | + | o | - |
| amphitheaters | + | o | - | -- | -- |

| Land Use Acceptability | Interpretation/Comments |
|--------------------------------|--|
| ++ <i>Clearly Acceptable</i> | The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure. |
| + <i>Normally Acceptable</i> | Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities. |
| o <i>Marginally Acceptable</i> | The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged. |
| - <i>Normally Unacceptable</i> | Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided. |
| -- <i>Clearly Unacceptable</i> | Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved. |

* Subtract 5 dB for low-activity outlying airports (Chiriaco Summit and Desert Center)
 Source: Riverside County Airport Land Use Compatibility Plan, Table 2B.

EXHIBIT 3-C: MARB/IPA FUTURE AIRPORT NOISE CONTOURS



LEGEND:

Project Site Boundary
 Unmitigated MARB Noise Level Contour Boundaries

| | |
|--|--|
| 60 dBA CNEL | 70 dBA CNEL |
| 65 dBA CNEL | 75 dBA CNEL |

Source: Figure 6-9 of the March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study.

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

- A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- B. Generation of excessive ground-borne vibration or ground-borne noise levels?
- C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant*. (18) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

4.1.1 SUBSTANTIAL PERMANENT NOISE LEVEL INCREASES

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (19) developed guidance to be used for the assessment of Project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

The FICON guidance provides an established source of criteria to assess the impacts of substantial permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived

acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (20 p. 2_48).

4.1.2 SUBSTANTIAL TEMPORARY ~~OF~~ OR PERIODIC NOISE LEVEL INCREASES

To control the noise-generating construction activities, the temporary noise level increases over the existing ambient conditions must be considered under CEQA Significance Threshold A. Therefore, the Caltrans *Traffic Noise Analysis Protocol* 12 dBA L_{eq} *substantial* noise level increase threshold is used in this analysis to assess temporary noise level increases. (21) In California a substantial noise increase is considered to occur when the project's predicted noise level exceeds the existing noise level by 12 dBA or more. The use of 12 dB was established in California many years ago and is based on the concept that a 10 dB increase generally is perceived as a doubling of loudness. (2 pp. 3-2)

If the Project-related construction noise levels generate a temporary noise level increase above the existing ambient noise levels of up to 12 dBA L_{eq} , then the Project construction noise level increases will be considered a potentially significant impact. Although the Caltrans recommendations were specifically developed to assess traffic noise impacts, the 12 dBA L_{eq} substantial noise level increase threshold is used in California to address the temporary noise level increases with the potential to exceed existing conditions. (21) However, the construction activities associated with the West Campus Upper Plateau Project are likely to take several years and cannot reasonably be considered as a short-term temporary noise impact. Therefore, due to the expected duration of construction, a "barely-perceptible" 5 dBA noise level increase threshold has been used to assess the potential impacts associated with the construction related noise level increases.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.6, the vibration impacts originating from the construction of the West Campus Upper Plateau Project are appropriately evaluated against the thresholds of significance outlined in the County of Riverside General Plan (16). These guidelines identify a motion velocity perception threshold for vibration due to passing trains of 0.01 inches per second (in/sec) over the range of one to 100 Hz, which is used in this noise study to assess potential human response (annoyance) due to Project construction vibration levels.

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

The closest airport which would require additional noise analysis under CEQA Significance Criteria C is the March Air Reserve Base/Inland Port Airport (MARB/IPA) which is located less than one mile east of the Project site. As previously indicated in Section 3.7, the noise contour boundaries of MARB/IPA are presented on Exhibit 3-C of this report and shows that the Project's mixed use, business park, industrial and park land uses are considered *normally acceptable* land use since the development area is located mostly between the 60 to 65 dBA CNEL contour. Therefore, the Project impacts are considered *less than significant*, and no further noise analysis is provided under CEQA Significance Criteria C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

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

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

| Analysis | Land Use | Jurisdiction | Condition(s) | Significance Criteria | | |
|--------------------------------|--|--------------------------------|--------------------------------|---------------------------------|---|--|
| | | | | Daytime | Nighttime | |
| Off-Site Traffic | Noise-Sensitive ¹ | All | If ambient is < 60 dBA CNEL | ≥ 5 dBA CNEL Project increase | | |
| | | | If ambient is 60 - 65 dBA CNEL | ≥ 3 dBA CNEL Project increase | | |
| | | | If ambient is > 65 dBA CNEL | ≥ 1.5 dBA CNEL Project increase | | |
| | Non-Noise-Sensitive ¹ | All | If ambient is < 70 dBA CNEL | ≥ 5 dBA CNEL Project increase | | |
| | | | If ambient is > 70 dBA CNEL | ≥ 3 dBA CNEL Project increase | | |
| Operational | Noise-Sensitive | March JPA ² | Noise Level Threshold | 55 dBA Leq | | |
| | | City of Riverside ³ | Exterior Noise Level Standard | 55 dBA Leq | 45 dBA Leq | |
| | | All ¹ | If ambient is < 60 dBA Leq | ≥ 5 dBA Leq Project increase | | |
| | | | If ambient is 60 - 65 dBA Leq | ≥ 3 dBA Leq Project increase | | |
| | | | If ambient is > 65 dBA Leq | ≥ 1.5 dBA Leq Project increase | | |
| | | Construction | Noise-Sensitive | March JPA | Permitted hours between 7:00 a.m. to 7:00 p.m. ⁴ | |
| City of Riverside ⁵ | Exempt from the exterior noise level standards between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday. | | | | | |
| City of Riverside | Noise Level Threshold ⁶ | | | 75 dBA L _{max} | 65 dBA L _{max} | |
| County of Riverside | Noise Level Threshold ⁷ | | | 65 dBA Leq | 45 dBA Leq | |
| All | Noise Level Increase ⁸ | | | 5 dBA Leq | n/a | |
| | Vibration Annoyance Threshold ⁹ | | | 0.01 RMS (in/sec) | | |

¹ FICON, 1992.

² March Joint Powers Authority, Development Code, Chapter 9.10 Performance Standards, Section 9.10.140 (Appendix 3.1).

³ City of Riverside Municipal Code, Title 7 Noise Control, Table 7.25.010A Exterior Noise Standards (Appendix 3.2).

⁴ March Joint Powers Authority, Development Code, Chapter 9.10 Performance Standards, Section 9.10.140 (Appendix 3.1).

⁵ City of Riverside Municipal Code Section 7.35.020(G).

⁶ City of Riverside Municipal Code, Section 7.35.010[B][5] (Appendix 3.2).

⁷ Threshold based on the County of Riverside noise level standard for non-transportation noise sources (Table 3-1).

⁸ FHWA - Highway Traffic Noise Analysis and Abatement Policy and Guidance

⁹ County of Riverside General Plan Noise Element, Policy N 16.3.

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

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at eight locations within the public right-of-way throughout 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 July 22nd, 2021. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (22)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources.* (2) Further, FTA guidance states, *that it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community.* (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (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. Therefore, the noise level measurement locations accurately describe the background ambient noise levels necessary to assess the projects incremental noise contributions.

5.3 NOISE MEASUREMENT RESULTS

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

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

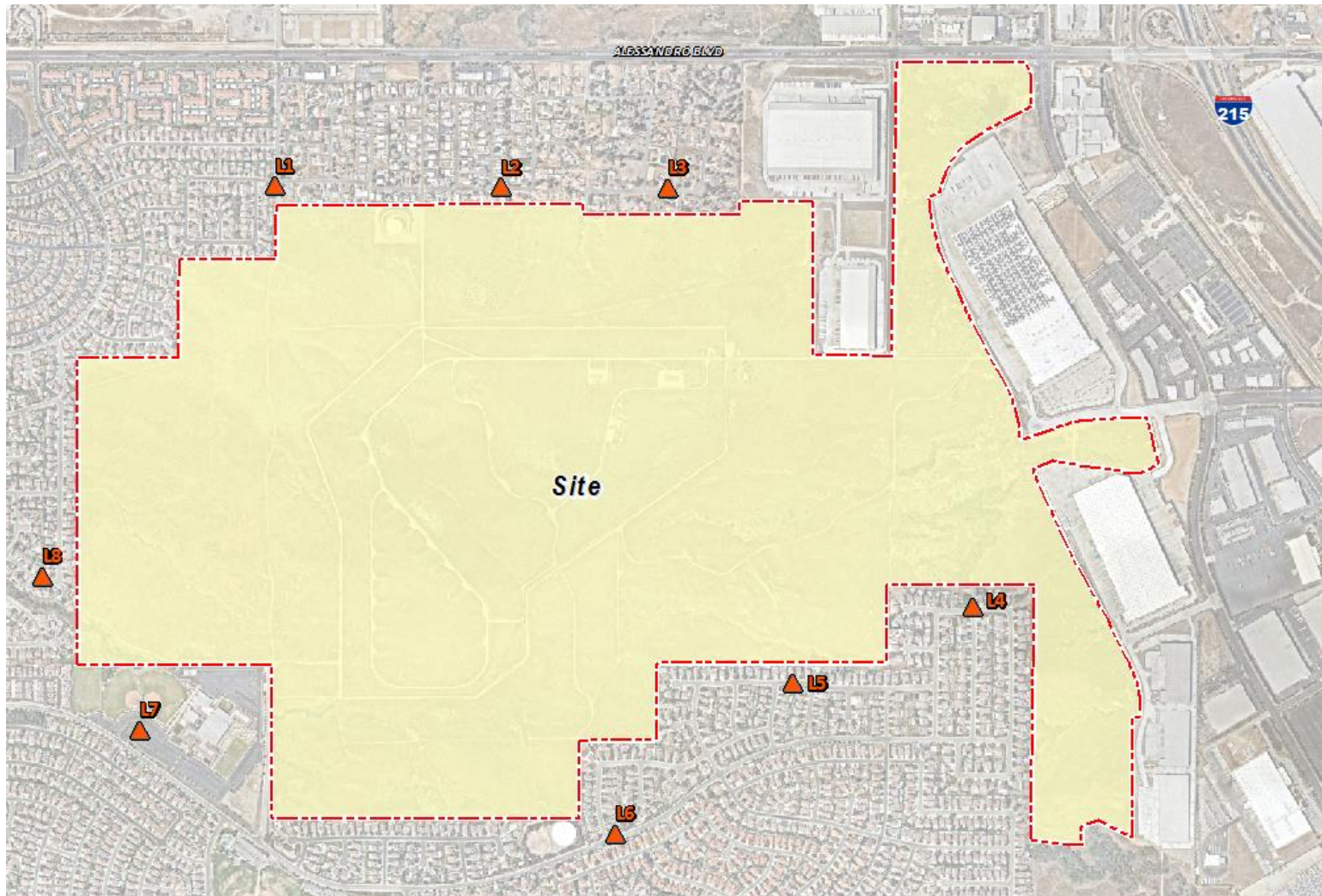
| Location ¹ | Description | Energy Average Noise Level (dBA L_{eq}) ² | |
|-----------------------|---|---|-----------|
| | | Daytime | Nighttime |
| L1 | Located north of the Project site near single-family residence at 7602 Greenock Way. | 52.7 | 50.3 |
| L2 | Located north of the Project site near single-family residence at 14210 Rancho Vista Road. | 51.8 | 49.0 |
| L3 | Located north of the Project site near single-family residence at 20630 Camino Del Sol. | 50.0 | 46.5 |
| L4 | Located south of the Project site near single-family residence at 20870 Indigo Point. | 48.4 | 45.0 |
| L5 | Located south of the Project site near single-family residence at 8256 Gardenia Vista Drive. | 49.0 | 45.6 |
| L6 | Located south of the Project site near single-family residence at 8360 Clover Creek Road. | 61.5 | 56.6 |
| L7 | Located south of the Project site near The Grove Community Church at 19900 Grove Community Drive. | 51.6 | 47.5 |
| L8 | Located west of the Project site near single-family residence at 8079 La Crosse Way. | 47.3 | 43.9 |

¹ See Exhibit 5-A for the noise level measurement locations.

² Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2. "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with the *State Land Use Compatibility Guidelines*, all transportation related noise levels are presented in terms of the 24-hour CNELs.

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. (23) This methodology is commonly used to describe the off-site traffic noise levels throughout California and is consistent with the March JPA General Plan Noise Element.

The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (24) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. 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. (25)

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 19 off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the Moreno Valley, City of Riverside and March JPA General Plan, and the posted vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on *West Campus Upper Plateau Traffic Analysis by Urban Crossroads, Inc.* for the following traffic scenarios. (26)

1. Existing (2021) Conditions (E)
2. Existing + Project (E+P) Conditions
3. Existing plus Ambient Growth (EA)
4. Existing plus Ambient Growth plus Project (EAP)
5. Opening Year Cumulative (2028) Without Project Conditions (OYC)
6. Opening Year Cumulative (2028) With Project Conditions (OYCP)
7. Horizon Year (2045) Without Project Conditions
8. Horizon Year (2045) With Project Conditions

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts at the boundary of the right-of-way of the receiving adjacent land use, without and with project ADT traffic volumes from the Project traffic study. To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix.

Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-8 show the vehicle mixes used for the with Project traffic scenarios. Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

| ID | Roadway | Segment | Classification ¹ | Receiving Land Use ² | Distance from Centerline to Receiving Land Use (Feet) ³ | Vehicle Speed (mph) |
|----|-----------------------|--------------------------|---------------------------------|---------------------------------|--|---------------------|
| 1 | Alessandro Blvd. | s/o Arlington Av. | Arterial | Sensitive | 60' | 50 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Arterial | Sensitive | 60' | 50 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Arterial | Sensitive | 44' | 50 |
| 4 | Barton St. | n/o Van Buren Blvd. | Local | Sensitive | 33' | 30 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Arterial | Non-Sensitive | 55' | 45 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Secondary Highway | Non-Sensitive | 56' | 45 |
| 7 | Day St. | n/o Alessandro Blvd. | Minor Arterial | Sensitive | 44' | 25 |
| 8 | Frederick St. | n/o Cactus Av. | Minor Arterial | Non-Sensitive | 44' | 40 |
| 9 | Alessandro Blvd. | w/o Barton St. | Arterial | Sensitive | 60' | 55 |
| 10 | Alessandro Blvd. | e/o Barton St. | Arterial | Sensitive | 60' | 55 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Arterial | Non-Sensitive | 60' | 45 |
| 12 | Alessandro Blvd. | w/o Day St. | Divided Major Arterial | Sensitive | 67' | 45 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Arterial/Urban Arterial Highway | Non-Sensitive | 60' | 45 |
| 14 | Cactus Av. | w/o Elsworth St. | Divided Major Arterial | Non-Sensitive | 67' | 45 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Arterial | Sensitive | 55' | 45 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Arterial | Sensitive | 60' | 50 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Arterial | Sensitive | 60' | 50 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Arterial | Sensitive | 60' | 50 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Arterial | Non-Sensitive | 60' | 50 |

¹ West Campus Upper Plateau Traffic Analysis, Urban Crossroads, Inc.² Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.³ 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 (2021) | | Existing plus Ambient | | Opening Year Cumulative (2028) | | Horizon Year (2045) | |
| | | | Without Project | With Project | Without Project | With Project | Without Project | With Project | Without Project | With Project |
| 1 | Alessandro Blvd. | s/o Arlington Av. | 51,552 | 53,547 | 59,217 | 61,212 | 62,119 | 64,114 | 72,525 | 74,521 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | 48,548 | 51,541 | 55,767 | 58,760 | 62,261 | 65,254 | 72,851 | 75,845 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | 19,731 | 20,064 | 22,665 | 22,998 | 33,567 | 33,900 | 39,015 | 39,348 |
| 4 | Barton St. | n/o Van Buren Blvd. | 3,375 | 4,040 | 3,877 | 4,542 | 5,685 | 6,350 | 6,716 | 7,381 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | 13,087 | 13,855 | 15,033 | 15,801 | 16,647 | 17,415 | 19,473 | 20,241 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | 12,903 | 20,093 | 14,821 | 22,011 | 15,703 | 22,893 | 19,422 | 26,612 |
| 7 | Day St. | n/o Alessandro Blvd. | 9,913 | 10,579 | 11,387 | 12,053 | 12,893 | 13,559 | 15,094 | 15,759 |
| 8 | Frederick St. | n/o Cactus Av. | 10,147 | 10,812 | 11,656 | 12,321 | 12,508 | 13,173 | 14,646 | 15,311 |
| 9 | Alessandro Blvd. | w/o Barton St. | 42,275 | 46,599 | 48,561 | 52,885 | 49,805 | 54,129 | 58,590 | 62,914 |
| 10 | Alessandro Blvd. | e/o Barton St. | 42,360 | 46,351 | 48,659 | 52,650 | 50,399 | 54,390 | 59,226 | 63,217 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | 44,072 | 50,059 | 50,625 | 56,612 | 52,834 | 58,821 | 62,393 | 68,380 |
| 12 | Alessandro Blvd. | w/o Day St. | 26,874 | 28,205 | 30,870 | 32,201 | 36,990 | 38,321 | 43,210 | 44,540 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | 19,011 | 35,724 | 21,838 | 38,551 | 21,888 | 38,601 | 28,137 | 44,850 |
| 14 | Cactus Av. | w/o Elsworth St. | 26,874 | 28,932 | 30,870 | 32,928 | 36,990 | 39,048 | 43,210 | 45,267 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | 8,884 | 8,884 | 10,205 | 10,205 | 10,277 | 10,277 | 18,352 | 18,352 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | 32,691 | 34,686 | 37,552 | 39,547 | 46,276 | 48,271 | 54,110 | 56,106 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | 30,101 | 32,762 | 34,577 | 37,237 | 44,791 | 47,451 | 52,492 | 55,153 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | 30,048 | 34,704 | 34,516 | 39,172 | 51,616 | 56,272 | 60,749 | 65,405 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | 33,413 | 35,281 | 38,381 | 40,249 | 81,701 | 83,569 | 95,267 | 97,135 |

¹ West Campus Upper Plateau Traffic Analysis, Urban Crossroads, Inc.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

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

¹ County of Riverside General Plan Noise Element, Typical Southern California vehicle mix. Values rounded to the nearest one-hundredth. "Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: EXISTING VEHICLE MIX

| Classification | Total % Traffic Flow | | | Total |
|----------------|----------------------|---------------|--------------|---------|
| | Autos | Medium Trucks | Heavy Trucks | |
| All Segments | 94.08% | 2.20% | 3.73% | 100.00% |

Based on an existing vehicle count taken at Meridian Parkway and Cactus Avenue (West Campus Upper Plateau Traffic Analysis, Urban Crossroads, Inc.). Vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-5: EXISTING + PROJECT VEHICLE MIX

| ID | Roadway | Segment | With Project ¹ | | | |
|----|-----------------------|--------------------------|---------------------------|---------------|--------------|--------------------|
| | | | Autos | Medium Trucks | Heavy Trucks | Total ² |
| 1 | Alessandro Blvd. | s/o Arlington Av. | 94.30% | 2.11% | 3.59% | 100.00% |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | 94.42% | 2.07% | 3.51% | 100.00% |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | 94.18% | 2.16% | 3.66% | 100.00% |
| 4 | Barton St. | n/o Van Buren Blvd. | 95.05% | 1.84% | 3.11% | 100.00% |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | 93.66% | 2.08% | 4.26% | 100.00% |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | 95.17% | 1.41% | 3.41% | 100.00% |
| 7 | Day St. | n/o Alessandro Blvd. | 94.45% | 2.06% | 3.49% | 100.00% |
| 8 | Frederick St. | n/o Cactus Av. | 94.44% | 2.06% | 3.50% | 100.00% |
| 9 | Alessandro Blvd. | w/o Barton St. | 94.63% | 1.99% | 3.38% | 100.00% |
| 10 | Alessandro Blvd. | e/o Barton St. | 94.59% | 2.01% | 3.41% | 100.00% |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | 94.79% | 1.93% | 3.28% | 100.00% |
| 12 | Alessandro Blvd. | w/o Day St. | 94.36% | 2.09% | 3.55% | 100.00% |
| 13 | Cactus Av. | e/o Meridian Pkwy. | 91.96% | 1.17% | 6.87% | 100.00% |
| 14 | Cactus Av. | w/o Elsworth St. | 94.29% | 2.04% | 3.67% | 100.00% |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | 94.08% | 2.20% | 3.73% | 100.00% |
| 16 | Van Buren Blvd. | w/o Wood Rd. | 94.42% | 2.07% | 3.51% | 100.00% |
| 17 | Van Buren Blvd. | e/o Wood Rd. | 94.56% | 2.02% | 3.42% | 100.00% |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | 94.87% | 1.90% | 3.23% | 100.00% |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | 93.81% | 2.08% | 4.11% | 100.00% |

¹ Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: EAP VEHICLE MIX

| ID | Roadway | Segment | With Project ¹ | | | |
|----|-----------------------|--------------------------|---------------------------|---------------|--------------|--------------------|
| | | | Autos | Medium Trucks | Heavy Trucks | Total ² |
| 1 | Alessandro Blvd. | s/o Arlington Av. | 94.27% | 2.13% | 3.60% | 100.00% |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | 94.38% | 2.08% | 3.54% | 100.00% |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | 94.16% | 2.17% | 3.67% | 100.00% |
| 4 | Barton St. | n/o Van Buren Blvd. | 94.94% | 1.88% | 3.18% | 100.00% |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | 93.72% | 2.09% | 4.19% | 100.00% |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | 95.08% | 1.48% | 3.44% | 100.00% |
| 7 | Day St. | n/o Alessandro Blvd. | 94.40% | 2.08% | 3.52% | 100.00% |
| 8 | Frederick St. | n/o Cactus Av. | 94.40% | 2.08% | 3.52% | 100.00% |
| 9 | Alessandro Blvd. | w/o Barton St. | 94.56% | 2.02% | 3.42% | 100.00% |
| 10 | Alessandro Blvd. | e/o Barton St. | 94.53% | 2.03% | 3.44% | 100.00% |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | 94.70% | 1.96% | 3.33% | 100.00% |
| 12 | Alessandro Blvd. | w/o Day St. | 94.32% | 2.11% | 3.57% | 100.00% |
| 13 | Cactus Av. | e/o Meridian Pkwy. | 92.12% | 1.24% | 6.64% | 100.00% |
| 14 | Cactus Av. | w/o Elsworth St. | 94.26% | 2.06% | 3.68% | 100.00% |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | 94.08% | 2.20% | 3.73% | 100.00% |
| 16 | Van Buren Blvd. | w/o Wood Rd. | 94.38% | 2.09% | 3.54% | 100.00% |
| 17 | Van Buren Blvd. | e/o Wood Rd. | 94.50% | 2.04% | 3.46% | 100.00% |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | 94.78% | 1.94% | 3.28% | 100.00% |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | 93.84% | 2.09% | 4.06% | 100.00% |

¹ Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: OYC 2028 WITH PROJECT VEHICLE MIX

| ID | Roadway | Segment | With Project ¹ | | | |
|----|-----------------------|--------------------------|---------------------------|---------------|--------------|--------------------|
| | | | Autos | Medium Trucks | Heavy Trucks | Total ² |
| 1 | Alessandro Blvd. | s/o Arlington Av. | 94.26% | 2.13% | 3.61% | 100.00% |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | 94.35% | 2.10% | 3.55% | 100.00% |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | 94.14% | 2.18% | 3.69% | 100.00% |
| 4 | Barton St. | n/o Van Buren Blvd. | 94.70% | 1.97% | 3.34% | 100.00% |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | 93.75% | 2.10% | 4.15% | 100.00% |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | 95.04% | 1.51% | 3.45% | 100.00% |
| 7 | Day St. | n/o Alessandro Blvd. | 94.37% | 2.09% | 3.54% | 100.00% |
| 8 | Frederick St. | n/o Cactus Av. | 94.38% | 2.09% | 3.54% | 100.00% |
| 9 | Alessandro Blvd. | w/o Barton St. | 94.55% | 2.02% | 3.43% | 100.00% |
| 10 | Alessandro Blvd. | e/o Barton St. | 94.51% | 2.04% | 3.45% | 100.00% |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | 94.68% | 1.97% | 3.35% | 100.00% |
| 12 | Alessandro Blvd. | w/o Day St. | 94.28% | 2.12% | 3.60% | 100.00% |
| 13 | Cactus Av. | e/o Meridian Pkwy. | 92.12% | 1.25% | 6.64% | 100.00% |
| 14 | Cactus Av. | w/o Elsworth St. | 94.23% | 2.08% | 3.69% | 100.00% |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | 94.08% | 2.20% | 3.73% | 100.00% |
| 16 | Van Buren Blvd. | w/o Wood Rd. | 94.32% | 2.11% | 3.57% | 100.00% |
| 17 | Van Buren Blvd. | e/o Wood Rd. | 94.41% | 2.07% | 3.52% | 100.00% |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | 94.57% | 2.02% | 3.42% | 100.00% |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | 93.96% | 2.15% | 3.89% | 100.00% |

¹ Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-8: HY 2045 WITH PROJECT VEHICLE MIX

| ID | Roadway | Segment | With Project ¹ | | | Total ² |
|----|-----------------------|--------------------------|---------------------------|---------------|--------------|--------------------|
| | | | Autos | Medium Trucks | Heavy Trucks | |
| 1 | Alessandro Blvd. | s/o Arlington Av. | 94.24% | 2.14% | 3.63% | 100.00% |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | 94.31% | 2.11% | 3.58% | 100.00% |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | 94.13% | 2.18% | 3.69% | 100.00% |
| 4 | Barton St. | n/o Van Buren Blvd. | 94.61% | 2.00% | 3.39% | 100.00% |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | 93.79% | 2.11% | 4.09% | 100.00% |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | 94.91% | 1.60% | 3.49% | 100.00% |
| 7 | Day St. | n/o Alessandro Blvd. | 94.33% | 2.10% | 3.57% | 100.00% |
| 8 | Frederick St. | n/o Cactus Av. | 94.33% | 2.10% | 3.56% | 100.00% |
| 9 | Alessandro Blvd. | w/o Barton St. | 94.48% | 2.05% | 3.47% | 100.00% |
| 10 | Alessandro Blvd. | e/o Barton St. | 94.45% | 2.06% | 3.49% | 100.00% |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | 94.60% | 2.00% | 3.40% | 100.00% |
| 12 | Alessandro Blvd. | w/o Day St. | 94.25% | 2.13% | 3.61% | 100.00% |
| 13 | Cactus Av. | e/o Meridian Pkwy. | 92.39% | 1.38% | 6.23% | 100.00% |
| 14 | Cactus Av. | w/o Elsworth St. | 94.21% | 2.10% | 3.69% | 100.00% |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | 94.08% | 2.20% | 3.73% | 100.00% |
| 16 | Van Buren Blvd. | w/o Wood Rd. | 94.29% | 2.12% | 3.59% | 100.00% |
| 17 | Van Buren Blvd. | e/o Wood Rd. | 94.36% | 2.09% | 3.55% | 100.00% |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | 94.50% | 2.04% | 3.46% | 100.00% |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | 93.98% | 2.15% | 3.87% | 100.00% |

¹ Total of vehicle mix percentage values rounded to the nearest one-hundredth.

7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on the West Campus Upper Plateau *Traffic Analysis* (26). Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

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

TABLE 7-1: EXISTING CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.1 | 208 | 448 | 966 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 77.8 | 200 | 431 | 928 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 75.8 | 107 | 230 | 495 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 65.8 | RW | RW | 80 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 72.9 | 86 | 186 | 401 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 71.9 | 75 | 162 | 350 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 67.5 | RW | 65 | 140 |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 71.3 | RW | 116 | 251 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.1 | 207 | 446 | 961 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.1 | 207 | 446 | 962 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.5 | 163 | 352 | 758 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 74.8 | 139 | 300 | 645 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 72.9 | 93 | 201 | 433 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 74.8 | 139 | 300 | 645 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.3 | 67 | 144 | 310 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 76.1 | 154 | 331 | 713 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 75.8 | 145 | 313 | 675 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 75.8 | 145 | 313 | 674 |

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------|--------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.2 | 155 | 335 | 721 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of 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 + PROJECT CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.2 | 210 | 452 | 974 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 77.9 | 203 | 437 | 941 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 75.8 | 107 | 231 | 497 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 65.9 | RW | RW | 82 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 73.5 | 95 | 204 | 440 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 73.5 | 96 | 206 | 444 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 67.6 | RW | 65 | 141 |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 71.4 | 55 | 118 | 254 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.2 | 212 | 457 | 985 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.2 | 212 | 457 | 984 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.7 | 168 | 362 | 779 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 74.8 | 140 | 303 | 652 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 77.3 | 184 | 396 | 853 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 75.0 | 145 | 312 | 671 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.3 | 67 | 144 | 310 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 76.2 | 156 | 335 | 723 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 75.9 | 148 | 319 | 688 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 76.0 | 150 | 324 | 697 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.7 | 167 | 359 | 774 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of 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 WITHOUT PROJECT CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.7 | 228 | 492 | 1059 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 78.4 | 219 | 472 | 1017 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 76.4 | 117 | 252 | 543 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 66.4 | RW | RW | 88 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 73.6 | 95 | 204 | 440 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 72.5 | 83 | 178 | 383 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 68.1 | RW | 71 | 153 |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 71.9 | 59 | 128 | 275 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.7 | 227 | 489 | 1054 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.7 | 227 | 490 | 1055 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 77.1 | 179 | 386 | 831 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 75.4 | 152 | 329 | 708 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 73.5 | 102 | 220 | 475 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 75.4 | 152 | 329 | 708 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.9 | 73 | 158 | 340 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 76.7 | 168 | 363 | 782 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 76.4 | 159 | 343 | 740 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 76.4 | 159 | 343 | 739 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.8 | 170 | 367 | 791 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EAP CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|----------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.8 | 230 | 495 | 1067 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 78.5 | 222 | 478 | 1030 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 76.4 | 117 | 253 | 544 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 66.5 | RW | RW | 90 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 74.1 | 103 | 221 | 477 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 73.9 | 102 | 220 | 475 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 68.2 | RW | 72 | 154 |

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|----------------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 72.0 | 60 | 129 | 278 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.8 | 232 | 500 | 1077 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.8 | 232 | 500 | 1076 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 77.3 | 183 | 395 | 852 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 75.4 | 154 | 331 | 714 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 77.5 | 190 | 410 | 883 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 75.6 | 158 | 340 | 733 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.9 | 73 | 158 | 340 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 76.8 | 170 | 367 | 791 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 76.5 | 162 | 349 | 753 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 76.6 | 164 | 353 | 762 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 77.2 | 181 | 391 | 842 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: OYC 2028 WITHOUT PROJECT CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|----------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.9 | 236 | 507 | 1093 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 78.9 | 236 | 508 | 1095 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 78.1 | 152 | 327 | 705 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 68.0 | RW | RW | 113 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 74.0 | 102 | 219 | 471 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 72.8 | 86 | 185 | 399 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 68.7 | RW | 77 | 167 |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 72.2 | 62 | 134 | 288 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.8 | 231 | 497 | 1071 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.8 | 233 | 501 | 1080 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 77.3 | 184 | 397 | 855 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 76.1 | 172 | 371 | 798 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 73.5 | 102 | 221 | 475 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 76.1 | 172 | 371 | 798 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.9 | 74 | 159 | 342 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 77.6 | 194 | 417 | 898 |

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 77.5 | 189 | 408 | 879 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 78.1 | 208 | 449 | 966 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 80.1 | 282 | 607 | 1308 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: OYC 2028 WITH PROJECT CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 79.0 | 237 | 511 | 1101 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 79.0 | 238 | 514 | 1107 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 78.1 | 152 | 328 | 707 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 68.1 | RW | RW | 115 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 74.5 | 109 | 235 | 507 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 74.1 | 105 | 227 | 488 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 68.7 | RW | 78 | 168 |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 72.3 | 63 | 135 | 291 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.9 | 236 | 508 | 1094 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 79.0 | 237 | 511 | 1101 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 77.5 | 189 | 406 | 875 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 76.2 | 173 | 373 | 804 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 77.5 | 190 | 410 | 884 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 76.3 | 177 | 382 | 822 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.9 | 74 | 159 | 342 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 77.7 | 195 | 421 | 907 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 77.6 | 192 | 414 | 891 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 78.2 | 212 | 458 | 986 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 80.3 | 291 | 626 | 1348 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-7: HY 2045 WITHOUT PROJECT CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 79.6 | 261 | 563 | 1212 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 79.6 | 262 | 564 | 1216 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 78.7 | 168 | 362 | 779 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 68.8 | RW | 59 | 127 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 74.7 | 113 | 243 | 523 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 73.7 | 99 | 213 | 459 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 69.4 | RW | 86 | 185 |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 72.9 | 69 | 149 | 320 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 79.5 | 257 | 554 | 1194 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 79.5 | 259 | 558 | 1203 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 78.0 | 206 | 444 | 956 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 76.8 | 191 | 411 | 886 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 74.6 | 121 | 261 | 562 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 76.8 | 191 | 411 | 886 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 74.4 | 108 | 233 | 503 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 78.3 | 215 | 463 | 997 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 78.2 | 211 | 454 | 977 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 78.8 | 232 | 500 | 1077 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 80.7 | 312 | 673 | 1449 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-8: HY 2045 WITH PROJECT CONTOURS

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|-----------------------|----------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 79.6 | 263 | 566 | 1220 |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 79.7 | 264 | 570 | 1227 |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 78.7 | 168 | 362 | 781 |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 68.8 | RW | 60 | 128 |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 75.1 | 120 | 258 | 557 |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 74.8 | 117 | 252 | 544 |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 69.4 | RW | 86 | 186 |

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | Distance to Contour from Centerline (Feet) | | |
|----|----------------------|--------------------------|---------------------------------|---|--|-------------|-------------|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 73.0 | 70 | 150 | 323 |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 79.6 | 262 | 564 | 1216 |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 79.6 | 263 | 567 | 1223 |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 78.2 | 210 | 452 | 975 |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 76.9 | 192 | 414 | 891 |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 78.0 | 204 | 440 | 949 |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 77.0 | 196 | 421 | 908 |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 74.4 | 108 | 233 | 503 |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 78.4 | 217 | 467 | 1006 |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 78.3 | 213 | 459 | 989 |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 78.9 | 236 | 509 | 1096 |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 80.9 | 320 | 690 | 1488 |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING + PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report to fully analyze all the existing traffic scenarios identified in the *West Campus Upper Plateau Traffic Analysis*. This scenario is analyzed to show the potential impacts of the Project using the existing baseline consistent with the Project Traffic Analysis. Table 7-1 shows the Existing conditions CNEL noise levels. The Existing exterior noise levels are expected to range from 65.8 to 78.1 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing + Project conditions will range from 65.9 to 78.2 dBA CNEL. Table 7-9 shows that the Project off-site traffic noise level impacts will range from 0.0 to 4.4 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project conditions. The segment is described below.

- Cactus Avenue east of Meridian Parkway (Segment #13).

Section 7.9 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would not experience noise level increases under Existing + Project conditions that would exceed the established thresholds of significance.

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

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ¹ | | | Incremental Noise Level Increase Threshold ² | |
|----|-----------------------|--------------------------|---------------------------------|---|--------------|------------------|---|------------|
| | | | | No Project | With Project | Project Addition | Limit | Exceeded? |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.1 | 78.2 | 0.1 | 1.5 | No |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 77.8 | 77.9 | 0.1 | 1.5 | No |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 75.8 | 75.8 | 0.0 | 1.5 | No |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 65.8 | 65.9 | 0.1 | 1.5 | No |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 72.9 | 73.5 | 0.6 | 3.0 | No |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 71.9 | 73.5 | 1.6 | 3.0 | No |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 67.5 | 67.6 | 0.1 | 1.5 | No |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 71.3 | 71.4 | 0.1 | 3.0 | No |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.1 | 78.2 | 0.1 | 1.5 | No |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.1 | 78.2 | 0.1 | 1.5 | No |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.5 | 76.7 | 0.2 | 3.0 | No |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 74.8 | 74.8 | 0.0 | 1.5 | No |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 72.9 | 77.3 | 4.4 | 3.0 | Yes |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 74.8 | 75.0 | 0.2 | 3.0 | No |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.3 | 71.3 | 0.0 | 1.5 | No |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 76.1 | 76.2 | 0.1 | 1.5 | No |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 75.8 | 75.9 | 0.1 | 1.5 | No |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 75.8 | 76.0 | 0.2 | 1.5 | No |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.2 | 76.7 | 0.5 | 3.0 | No |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

³ Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

7.3 EA TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the Existing plus Ambient Growth without Project conditions CNEL noise levels. The Existing plus Ambient Growth without Project exterior noise levels are expected to range from 66.4 to 78.7 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the EAP conditions will range from 66.5 to 78.8 dBA CNEL. Table 7-10 shows that the Project off-site traffic noise level increases will range from 0.0 to 4.0 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project conditions. The segment is described below.

- Cactus Avenue east of Meridian Parkway (Segment #13).

Section 7.9 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would not experience noise level increases under the EAP conditions that would exceed the established thresholds of significance.

TABLE 7-10: EAP TRAFFIC NOISE LEVEL INCREASES

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ¹ | | | Incremental Noise Level Increase Threshold ² | |
|----|-----------------------|--------------------------|---------------------------------|---|--------------|------------------|---|------------|
| | | | | No Project | With Project | Project Addition | Limit | Exceeded? |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.7 | 78.8 | 0.1 | 1.5 | No |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 78.4 | 78.5 | 0.1 | 1.5 | No |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 76.4 | 76.4 | 0.0 | 1.5 | No |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 66.4 | 66.5 | 0.1 | 1.5 | No |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 73.6 | 74.1 | 0.5 | 3.0 | No |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 72.5 | 73.9 | 1.4 | 3.0 | No |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 68.1 | 68.2 | 0.1 | 1.5 | No |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 71.9 | 72.0 | 0.1 | 3.0 | No |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.7 | 78.8 | 0.1 | 1.5 | No |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.7 | 78.8 | 0.1 | 1.5 | No |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 77.1 | 77.3 | 0.2 | 3.0 | No |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 75.4 | 75.4 | 0.0 | 1.5 | No |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 73.5 | 77.5 | 4.0 | 3.0 | Yes |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 75.4 | 75.6 | 0.2 | 3.0 | No |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.9 | 71.9 | 0.0 | 1.5 | No |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 76.7 | 76.8 | 0.1 | 1.5 | No |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 76.4 | 76.5 | 0.1 | 1.5 | No |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 76.4 | 76.6 | 0.2 | 1.5 | No |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.8 | 77.2 | 0.4 | 3.0 | No |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

³ Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

7.4 OYC 2028 TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the Opening Year Cumulative (2028) without Project conditions CNEL noise levels. The Opening Year Cumulative (2028) without Project exterior noise levels are expected to range from 68.0 to 80.1 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the Opening Year Cumulative (2028) with Project conditions will range from 68.1 to 80.3 dBA CNEL. Table 7-11 shows that the Project off-site traffic noise level increases will range from 0.0 to 4.0 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments

is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project conditions. The segment is described below.

- Cactus Avenue east of Meridian Parkway (Segment #13).

Section 7.9 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would not experience noise level increases under Opening Year Cumulative (2028) with Project conditions that would exceed the established thresholds of significance.

TABLE 7-11: OYC 2028 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ¹ | | | Incremental Noise Level Increase Threshold ² | |
|----|-----------------------|--------------------------|---------------------------------|---|--------------|------------------|---|------------|
| | | | | No Project | With Project | Project Addition | Limit | Exceeded? |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.9 | 79.0 | 0.1 | 1.5 | No |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 78.9 | 79.0 | 0.1 | 1.5 | No |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 78.1 | 78.1 | 0.0 | 1.5 | No |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 68.0 | 68.1 | 0.1 | 1.5 | No |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 74.0 | 74.5 | 0.5 | 3.0 | No |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 72.8 | 74.1 | 1.3 | 3.0 | No |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 68.7 | 68.7 | 0.0 | 1.5 | No |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 72.2 | 72.3 | 0.1 | 3.0 | No |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.8 | 78.9 | 0.1 | 1.5 | No |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.8 | 79.0 | 0.2 | 1.5 | No |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 77.3 | 77.5 | 0.2 | 3.0 | No |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 76.1 | 76.2 | 0.1 | 1.5 | No |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 73.5 | 77.5 | 4.0 | 3.0 | Yes |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 76.1 | 76.3 | 0.2 | 3.0 | No |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.9 | 71.9 | 0.0 | 1.5 | No |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 77.6 | 77.7 | 0.1 | 1.5 | No |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 77.5 | 77.6 | 0.1 | 1.5 | No |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 78.1 | 78.2 | 0.1 | 1.5 | No |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 80.1 | 80.3 | 0.2 | 3.0 | No |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

³ Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

7.5 HY 2045 TRAFFIC NOISE LEVEL INCREASES

Table 7-7 presents the Horizon Year (2045) without Project conditions CNEL noise levels. The Horizon Year (2045) without Project exterior noise levels are expected to range from 68.8 to 80.7 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or

topography. Table 7-8 shows the Horizon Year (2045) with Project conditions will range from 68.8 to 80.9 dBA CNEL. Table 7-12 shows that the Project off-site traffic noise level increases will range from 0.0 to 3.4 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments is shown to experience *potentially significant* off-site traffic noise level increases due to the proposed Project conditions. The segment is described below.

- Cactus Avenue east of Meridian Parkway (Segment #13).

Section 7.9 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would not experience noise level increases under Horizon Year (2045) with Project conditions that would exceed the established thresholds of significance.

TABLE 7-12: HY 2045 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ¹ | | | Incremental Noise Level Increase Threshold ² | |
|----|-----------------------|--------------------------|---------------------------------|---|--------------|------------------|---|------------|
| | | | | No Project | With Project | Project Addition | Limit | Exceeded? |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 79.6 | 79.6 | 0.0 | 1.5 | No |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 79.6 | 79.7 | 0.1 | 1.5 | No |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 78.7 | 78.7 | 0.0 | 1.5 | No |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 68.8 | 68.8 | 0.0 | 1.5 | No |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 74.7 | 75.1 | 0.4 | 3.0 | No |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 73.7 | 74.8 | 1.1 | 3.0 | No |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 69.4 | 69.4 | 0.0 | 1.5 | No |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 72.9 | 73.0 | 0.1 | 3.0 | No |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 79.5 | 79.6 | 0.1 | 1.5 | No |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 79.5 | 79.6 | 0.1 | 1.5 | No |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 78.0 | 78.2 | 0.2 | 3.0 | No |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 76.8 | 76.9 | 0.1 | 1.5 | No |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 74.6 | 78.0 | 3.4 | 3.0 | Yes |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 76.8 | 77.0 | 0.2 | 3.0 | No |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 74.4 | 74.4 | 0.0 | 1.5 | No |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 78.3 | 78.4 | 0.1 | 1.5 | No |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 78.2 | 78.3 | 0.1 | 1.5 | No |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 78.8 | 78.9 | 0.1 | 1.5 | No |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 80.7 | 80.9 | 0.2 | 3.0 | No |

¹ Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

² The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.

³ Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

7.6 OFF-SITE TRAFFIC NOISE IMPACTS

The study area roadway segment that would exceed the established thresholds of significance criteria outlined on Table 4-1 is limited to the non-noise sensitive land uses adjacent to Cactus Avenue east of Meridian Parkway (Segment #13). All other roadway segments will experience off-site traffic noise level impacts that are considered less than significant. The off-site Traffic Noise Analysis shows that Project traffic noise level increases on one non-sensitive study area roadway segment #13 will exceed the incremental noise level increase thresholds outlined on Table 4-1 for the following traffic conditions.

- Existing (2021) Conditions (E)
- Existing plus Project (E+P) Conditions
- Existing plus Ambient Growth (EA)
- Existing plus Ambient Growth plus Project (EAP)
- Opening Year Cumulative (2028) Without Project Conditions (OYC)
- Opening Year Cumulative (2028) With Project Conditions (OYCP)
- Horizon Year (2045) Without Project Conditions
- Horizon Year (2045) With Project Conditions

It should be noted that significant off-site traffic noise level increases identified under Existing + Project Conditions do not have the potential to occur, since the Project will not be fully developed and occupied under existing conditions, but rather under future conditions. Additionally, Segment #13 is in a developed industrial area and is not located immediately adjacent to any noise sensitive land uses. To reduce the *potentially significant* Project traffic noise level increases on the study area roadway segment (Segment #13) for the traffic conditions mentioned above, potential noise mitigation measures are identified in this analysis. Potential mitigation measures discussed below include rubberized asphalt hot mix pavement.

7.6.1 RUBBERIZED ASPHALT

Due to the potential noise attenuation benefits, rubberized asphalt is considered as a mitigation measure for the off-site Project-related traffic noise level increases. To reduce traffic noise levels at the noise source, Caltrans research has shown that rubberized asphalt can provide noise attenuation of approximately 4 dBA for automobile traffic noise levels (27). Changing the pavement type of a roadway has been shown to reduce the amount of tire/pavement noise produced at the source under both near-term and long-term conditions. Traffic noise is generated primarily by the interaction of the tires and pavement, the engine, and exhaust systems. For automobile noise, as much as 75 to 90-percent of traffic noise is generated by the interaction of the tires and pavement, especially when traveling at higher and constant speeds. (2) According to research conducted by Caltrans (27) and the Canadian Ministry of Transportation and Highways (28), a 4 dBA reduction in tire/pavement noise is attainable using rubberized asphalt under typical operating conditions.

The effectiveness of reducing traffic noise levels on roadways with high percentages of heavy trucks is limited, since the heavy truck engine and exhaust noise is not affected by rubberized alternative pavement due to the truck engine and exhaust stack height above the pavement

itself. (27) Per Caltrans guidance, a truck stack height is modeled using a height of 11.5 feet above the road. (29) With the primary off-site traffic noise source for the Project consisting of heavy trucks with a stack height of 11.5 feet off the ground, the tire/pavement noise reduction benefits associated with rubberized asphalt will be primarily limited to autos.

While the off-site Project-related traffic noise level increases could theoretically be reduced with the 4 dBA reduction provided by rubberized asphalt, the reduction would not provide reliable benefits for the noise levels generated by heavy truck traffic. This is, as previously stated, due to the noise source height difference between automobiles and trucks. While rubberized asphalt will provide some noise reduction, this noise study recognizes that this is only effective for tire-on-pavement noise at higher speeds and would not reduce truck-related off-site traffic noise levels associated with truck engine and exhaust stacks to less than significant levels. Since the use of rubberized asphalt would not lower the off-site traffic noise levels below a level of significance, rubberized asphalt is not proposed as mitigation for the Project and the off-site Project-related traffic noise level increases ~~at adjacent land uses~~ along non-sensitive Segment #13 would remain *potentially significant*.

7.6.2 SIGNIFICANT OFF-SITE TRAFFIC NOISE IMPACTS

Rubberized asphalt was considered as a potential noise mitigation measure to reduce the *potentially significant* off-site traffic noise level increases along non-sensitive Segment #13 as shown on Tables 7-9 to 7-12. However, the use of rubberized asphalt would not eliminate the off-site traffic noise level increases to the non-noise sensitive land uses adjacent to Cactus Avenue east of Meridian Parkway (Segment #13). This segment is in a developed industrial area and is not located immediately adjacent to any noise sensitive land uses. Therefore, the Project-related off-site traffic noise level increases are considered a *significant and unavoidable* impact for the non-noise sensitive land uses adjacent to Cactus Avenue east of Meridian Parkway (Segment #13). All other roadway segments will experience off-site traffic noise level impacts that are considered less than significant.

7.7 CUMULATIVE TRAFFIC NOISE LEVEL INCREASES

Table 7-13 presents a summary of the cumulative and project incremental noise level increases for each of the study area roadway segments. The cumulative traffic noise level increase increment describes the difference between the HY 2045 with Project conditions and the Existing (baseline) conditions. Based on the significance criteria for off-site traffic noise presented in Table 4-1, twelve of the study area roadway segments are shown to experience *potentially significant* off-site traffic noise level increases due to cumulative conditions. These segments are listed below will experience this *potentially significant* off-site traffic noise level increase without the Project.

- Alessandro Blvd. south of Canyon Crest Drive (Segment #2)
- Trautwein Rd. north of Van Buren Blvd. (Segment #3)
- Barton St. north of Van Buren Blvd. (Segment #4)
- Meridian Pkwy. north of Van Buren Blvd. (Segment #6)
- Day St. north of Alessandro Blvd. (Segment #7)

- Alessandro Blvd. west of Day St. (Segment #12)
- Cactus Avenue east of Meridian Parkway (Segment #13)
- Orange Terrace Pkwy. east of Trautwein Rd. (Segment #15)
- Van Buren Blvd. west of Wood Rd. (Segment #16)
- Van Buren Blvd. east of Wood Rd. (Segment #17)
- Van Buren Blvd. east of Orange Terrace Pkwy. (Segment #18)
- Van Buren Blvd. east of Meridian Pkwy. (Segment #19)

The Project increment shown on Table 7-13 represents the difference between the existing without Project and the existing with Project conditions. Based on the significance criteria for off-site traffic noise presented in Table 4-1, one of the study area roadway segments is shown to experience *cumulatively considerable* off-site traffic noise level increase due to the added Project traffic. The segment is described below.

- Cactus Avenue east of Meridian Parkway (Segment #13).

Section 7.6 describes the off-site traffic noise mitigation measures considered in this analysis. All other roadway segments would not experience project-related cumulatively considerable off-site traffic noise level increases that would exceed the established thresholds of significance.

TABLE 7-13: CUMULATIVE PROJECT TRAFFIC NOISE LEVEL INCREASES

| ID | Road | Segment | Receiving Land Use ¹ | CNEL at Receiving Land Use (dBA) ² | | | Cumulative Conditions | | | Cumulatively Considerable Project Contribution | | |
|----|-----------------------|--------------------------|---------------------------------|---|---------------------------|----------------------|---------------------------|------------------|---------------------------------|--|---------------|------------------------------|
| | | | | Existing No Project (a) | Existing With Project (b) | HY 2045 With Project | Cumulative Increase (c-a) | Cumulative Limit | Cumulative Impact? ³ | Project Increment (c-b) | Project Limit | Project Impact? ³ |
| 1 | Alessandro Blvd. | s/o Arlington Av. | Sensitive | 78.1 | 78.2 | 79.6 | 1.5 | 1.5 | Yes | 0.1 | 1.5 | No |
| 2 | Alessandro Blvd. | s/o Canyon Crest Dr. | Sensitive | 77.8 | 77.9 | 79.7 | 1.9 | 1.5 | Yes | 0.1 | 1.5 | No |
| 3 | Trautwein Rd. | n/o Van Buren Blvd. | Sensitive | 75.8 | 75.8 | 78.7 | 2.9 | 1.5 | Yes | 0.0 | 1.5 | No |
| 4 | Barton St. | n/o Van Buren Blvd. | Sensitive | 65.8 | 65.9 | 68.8 | 3.0 | 1.5 | Yes | 0.1 | 1.5 | No |
| 5 | Sycamore Canyon Blvd. | n/o Cottonwood Av. | Non-Sensitive | 72.9 | 73.5 | 75.1 | 2.2 | 3.0 | No | 0.6 | 3.0 | No |
| 6 | Meridian Pkwy. | n/o Van Buren Blvd. | Non-Sensitive | 71.9 | 73.5 | 74.8 | 2.9 | 3.0 | No | 1.6 | 3.0 | No |
| 7 | Day St. | n/o Alessandro Blvd. | Sensitive | 67.5 | 67.6 | 69.4 | 1.9 | 1.5 | Yes | 0.1 | 1.5 | No |
| 8 | Frederick St. | n/o Cactus Av. | Non-Sensitive | 71.3 | 71.4 | 73.0 | 1.7 | 3.0 | No | 0.1 | 3.0 | No |
| 9 | Alessandro Blvd. | w/o Barton St. | Sensitive | 78.1 | 78.2 | 79.6 | 1.5 | 1.5 | Yes | 0.1 | 1.5 | No |
| 10 | Alessandro Blvd. | e/o Barton St. | Sensitive | 78.1 | 78.2 | 79.6 | 1.5 | 1.5 | Yes | 0.1 | 1.5 | No |
| 11 | Alessandro Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.5 | 76.7 | 78.2 | 1.7 | 3.0 | No | 0.2 | 3.0 | No |
| 12 | Alessandro Blvd. | w/o Day St. | Sensitive | 74.8 | 74.8 | 76.9 | 2.1 | 1.5 | Yes | 0.0 | 1.5 | No |
| 13 | Cactus Av. | e/o Meridian Pkwy. | Non-Sensitive | 72.9 | 77.3 | 78.0 | 5.1 | 3.0 | Yes | 4.4 | 3.0 | Yes |
| 14 | Cactus Av. | w/o Elsworth St. | Non-Sensitive | 74.8 | 75.0 | 77.0 | 2.2 | 3.0 | No | 0.2 | 3.0 | No |
| 15 | Orange Terrace Pkwy. | e/o Trautwein Rd. | Sensitive | 71.3 | 71.3 | 74.4 | 3.1 | 1.5 | Yes | 0.0 | 1.5 | No |
| 16 | Van Buren Blvd. | w/o Wood Rd. | Sensitive | 76.1 | 76.2 | 78.4 | 2.3 | 1.5 | Yes | 0.1 | 1.5 | No |
| 17 | Van Buren Blvd. | e/o Wood Rd. | Sensitive | 75.8 | 75.9 | 78.3 | 2.5 | 1.5 | Yes | 0.1 | 1.5 | No |
| 18 | Van Buren Blvd. | e/o Orange Terrace Pkwy. | Sensitive | 75.8 | 76.0 | 78.9 | 3.1 | 1.5 | Yes | 0.2 | 1.5 | No |
| 19 | Van Buren Blvd. | e/o Meridian Pkwy. | Non-Sensitive | 76.2 | 76.7 | 80.9 | 4.7 | 3.0 | Yes | 0.5 | 3.0 | No |

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

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8 SENSITIVE RECEIVER LOCATIONS

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

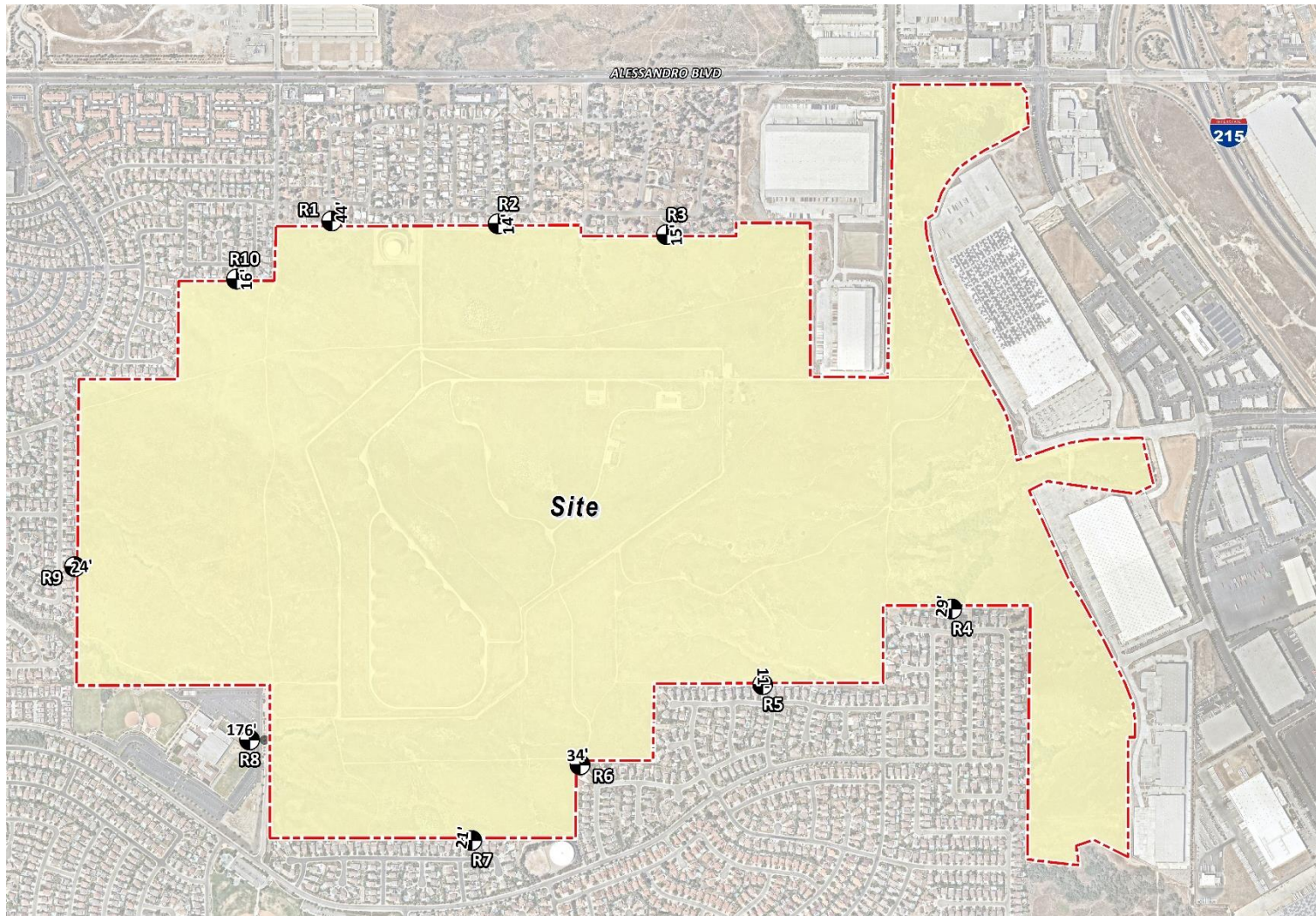
To describe the potential off-site Project noise levels, ten receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project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

- R1: Location R1 represents the existing noise sensitive residence at 20081 Camino Del Sol, approximately 44 feet north of the Project site in the unincorporated area of Riverside County. R1 is placed in the private outdoor living areas (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 existing noise sensitive residence at 20351 Camino Del Sol, approximately 14 feet north of the Project site in the unincorporated area of Riverside County. R2 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R3: Location R3 represents the existing noise sensitive residence at 20635 Camino Del Sol, approximately 15 feet north of the Project site in the unincorporated area of Riverside County. R3 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.
- R4: Location R4 represents the existing noise sensitive residence at 20852 Indigo Point, approximately 29 feet south of the Project site in the City of Riverside. R4 is placed in the private outdoor living areas (backyard) 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 20698 Iris Canyon Road, approximately 11 feet south of the Project site in the City of Riverside. R5 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.
- R6: Location R6 represents the existing noise sensitive residence at 8301 Clover Creek Road, approximately 34 feet south of the Project site in the City of Riverside. R6 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.
- R7: Location R7 represents the existing noise sensitive residence at 20304 Dayton Street, approximately 21 feet south of the Project site in the City of Riverside. R7 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.
- R8: Location R8 represents the existing noise sensitive Grove Community Church and preschool at 19900 Grove Community Drive, approximately 176 feet south of the Project site in the City of Riverside. R8 is placed on the Church's building façade facing the Project site. A 24-hour noise measurement was taken near this location, L7, to describe the existing ambient noise environment.
- R9: Location R9 represents the existing noise sensitive residence at 8044 La Crosse Way, approximately 24 feet west of the Project site in the City of Riverside. R9 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L8, to describe the existing ambient noise environment.
- R10: Location R10 represents the existing noise sensitive residence at 941 Saltcoats Drive, approximately 16 feet north of the Project site in the City of Riverside. R10 is placed in the private outdoor living areas (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS



LEGEND:
N
● Receiver Locations
—● Distance from receiver to Project site boundary (in feet)

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9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed West Campus Upper Plateau Project. Exhibit 9-A identifies the noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. Consistent with similar warehouse and industrial uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning, trash enclosure activity, parking lot vehicle movements, truck movements and park activities.

9.2 REFERENCE NOISE LEVELS

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

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (22)

REVISED EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

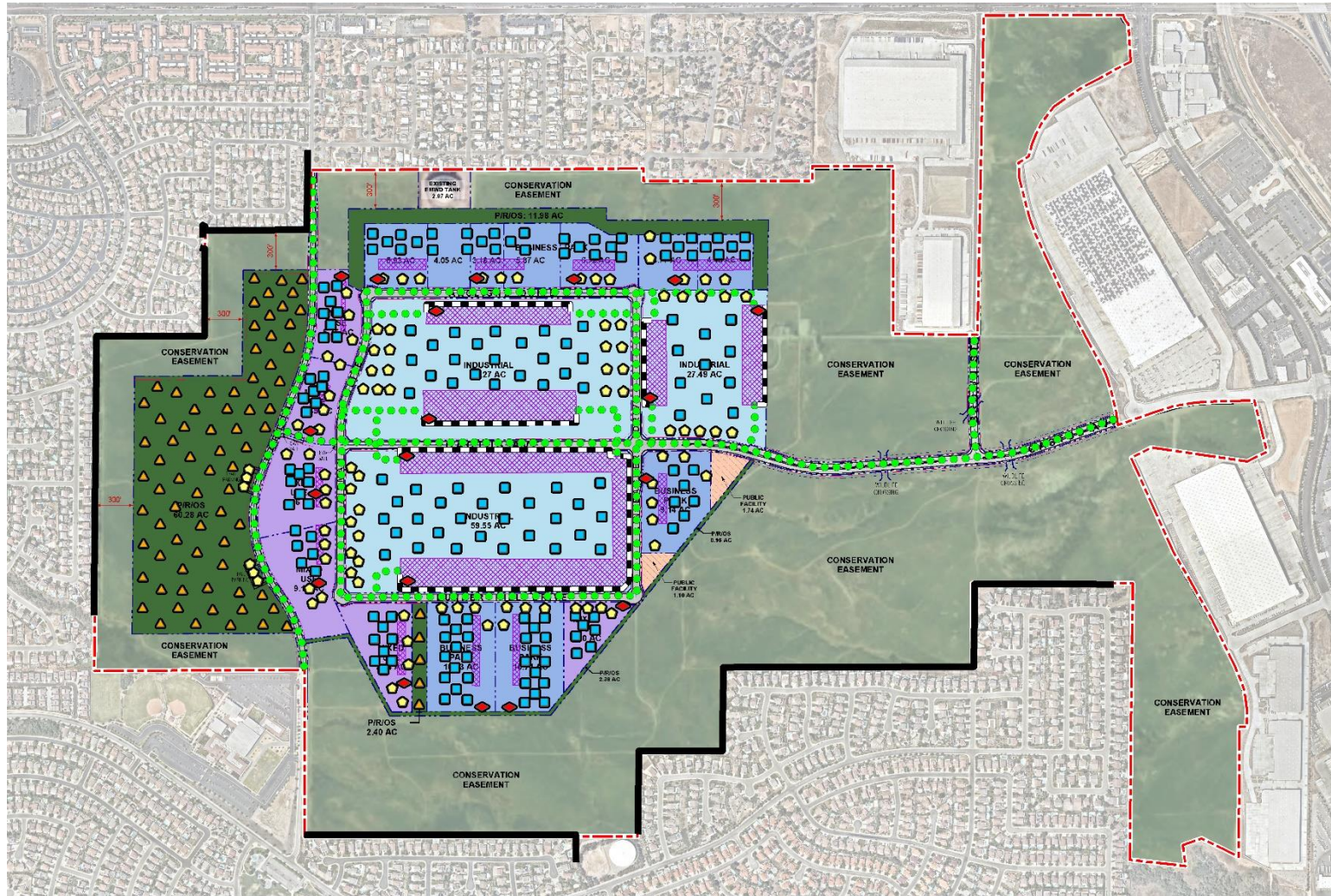


TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

| Noise Source ¹ | Noise Source Height (Feet) | Min./ Hour ² | | Reference Noise Level (dBA L_{eq}) @ 50 Feet | Sound Power Level (dBA) ³ |
|---------------------------------|----------------------------|-------------------------|-----------------|---|--------------------------------------|
| | | Day | Night | | |
| Loading Dock Activity | 8' | 60 | 60 | 65.7 | 111.5 |
| Roof-Top Air Conditioning Units | 5' | 39 | 28 | 57.2 | 88.9 |
| Trash Enclosure Activity | 5' | 10 | 10 | 57.3 | 89.0 |
| Parking Lot Vehicle Movements | 5' | 60 | 60 | 56.1 | 87.8 |
| Truck Movements | 8' | -. ⁴ | -. ⁴ | 59.8 | 93.2 |
| Park Activities | 5' | 60' | 0' | 49.4 | 81.1 |

¹ As measured by Urban Crossroads, Inc.

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

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

³ Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings.

⁴ Truck Movements are calculated based on the number of events by time of day (See Table 9-2).

9.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical outdoor operational noise activities associated with the Project. This includes truck idling, reefer activity (refrigerator truck/cold storage), deliveries, backup alarms, trailer docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background operation activities. Since the noise levels generated by cold storage loading dock activity can be slightly higher due to the use of refrigerated trucks or reefers. The reference noise level measurement was taken in the center of the loading dock activity area and represents multiple concurrent noise sources resulting in a combined noise level of 65.7 dBA L_{eq} at a uniform distance of 50 feet. Specifically, the reference noise level measurement represents one truck located approximately 30 feet from the noise level meter with another truck passing by to park roughly 20 feet away, both with their engines idling. Throughout the reference noise level measurement, a separate docked and running reefer truck was located approximately 50 feet east of the measurement location. Additional background noise sources included truck pass-by noise, truck drivers talking to each other next to docked trucks, and air brake release noise when trucks parked.

9.2.3 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents 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 and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching

96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.

9.2.4 TRASH ENCLOSURE ACTIVITY

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

9.2.5 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity, a long-term 29-hour reference noise level measurement was collected in the center of activity within the staff parking lot of a warehouse distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 56.1 dBA L_{eq} . Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due cars pulling in and out of parking spaces in combination with car doors opening and closing.

9.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represents multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area. Consistent with the *West Campus Upper Plateau Traffic Analysis* prepared by Urban Crossroads, Inc., the Project is expected to generate a total of approximately 2,054 two-way truck trips per day (26). Using the estimated number of truck trips in combination with time-of-day vehicle splits, the number of truck movements were calculated. As shown on Table 9-2, this information is then used to calculate the truck movements operational noise source activity based on the number of events by time of day.

TABLE 9-2: TRUCK MOVEMENTS BY LOCATION

| Truck Movements Location | Total Project Truck Trips ¹ | Trip Dist. | Truck Trips by Location ² | Time of Day Vehicle Splits ³ | | | Truck Movements ⁴ | | |
|--------------------------|--|------------|--------------------------------------|---|---------|--------|------------------------------|---------|-------|
| | | | | Day | Evening | Night | Day | Evening | Night |
| All Driveways | 2,054 | 100% | 2,054 | 86.50% | 2.70% | 10.80% | 1,777 | 55 | 222 |

¹ Total Project truck trips according to Table 4-2 of the West Campus Upper Plateau Traffic Analysis.

² Calculated trip trucks per location represents the product of the total project truck trips and the trip distribution.

³ County of Riverside General Plan Noise Element, Typical Southern California vehicle mix. Values rounded to the nearest one-hundredth.

⁴ Calculated time of day truck movements by location.

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

9.2.7 PARK ACTIVITIES

To represent the potential noise level impacts associated with the Project’s Park activities, a reference noise level measurement was collected at the Founders Park in the unincorporated community of Ladera Ranch in the County of Orange. The reference noise levels collected at the Founders Park are expected to reflect the noise level activities within the open space-recreation land use areas of the Project site, since the reference noise level measurement includes girls’ youth soccer games, coaches shouting instructions, and parents speaking on cell phones at five feet from the noise level measurement location, and background noise levels from kids playing on swing sets and people cheering and clapping at 50 feet from the noise level measurement location. Using the uniform reference distance of 50 feet, the reference park activity noise level is 49.4 dBA L_{eq} . The playground activities are estimated to occur for 60 minutes during the peak hour conditions.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels. Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources.

While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly

outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning, trash enclosure activity, parking lot vehicle movements, truck movements and park activities, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-3 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 33.9 to 47.7 dBA L_{eq} .

TABLE 9-3: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

| Noise Source ¹ | Operational Noise Levels by Receiver Location (dBA Leq) | | | | | | | | | |
|----------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 |
| Loading Dock Activity | 45.3 | 42.0 | 36.5 | 37.4 | 29.4 | 43.2 | 39.4 | 41.6 | 33.1 | 36.8 |
| Roof-Top Air Conditioning Units | 36.2 | 35.2 | 33.2 | 27.6 | 25.9 | 34.7 | 31.3 | 35.9 | 29.2 | 31.7 |
| Trash Enclosure Activity | 13.6 | 9.8 | 5.8 | 6.4 | 0.0 | 14.7 | 12.7 | 20.9 | 5.6 | 12.1 |
| Parking Lot Vehicle Movements | 27.1 | 22.7 | 19.0 | 20.4 | 12.3 | 26.1 | 22.2 | 34.1 | 24.1 | 19.9 |
| Truck Movements | 43.0 | 38.6 | 36.1 | 41.9 | 30.8 | 43.5 | 35.8 | 45.3 | 35.4 | 36.7 |
| Park Activities | 22.3 | 13.6 | 5.7 | 3.6 | 2.0 | 14.8 | 15.7 | 27.6 | 27.3 | 20.8 |
| Total (All Noise Sources) | 47.7 | 44.3 | 40.3 | 43.4 | 33.9 | 46.7 | 41.5 | 47.4 | 38.5 | 40.5 |

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

Table 9-4 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 31.0 to 45.9 dBA L_{eq} . The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 9-1 and Appendix 9.1.

TABLE 9-4: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

| Noise Source ¹ | Operational Noise Levels by Receiver Location (dBA Leq) | | | | | | | | | |
|----------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 |
| Loading Dock Activity | 45.3 | 42.0 | 36.5 | 37.4 | 29.4 | 43.2 | 39.4 | 41.6 | 33.1 | 36.8 |
| Roof-Top Air Conditioning Units | 33.8 | 32.8 | 30.8 | 25.2 | 23.5 | 32.2 | 28.9 | 33.5 | 26.8 | 29.3 |
| Trash Enclosure Activity | 12.7 | 8.8 | 4.8 | 5.5 | 0.0 | 13.7 | 11.7 | 20.0 | 4.6 | 11.2 |
| Parking Lot Vehicle Movements | 27.1 | 22.7 | 19.0 | 20.4 | 12.3 | 26.1 | 22.2 | 34.1 | 24.1 | 19.9 |
| Truck Movements | 34.0 | 29.6 | 27.1 | 32.9 | 21.8 | 34.5 | 26.8 | 36.2 | 26.3 | 27.7 |
| Park Activities | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total (All Noise Sources) | 45.9 | 42.8 | 38.0 | 39.0 | 31.0 | 44.1 | 40.1 | 43.7 | 35.1 | 38.0 |

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

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the March JPA and City of Riverside exterior noise level standards at the nearest noise-sensitive receiver locations. Table 9-5 shows the operational noise levels associated with West Campus Upper Plateau Project will not exceed the daytime and nighttime exterior noise level standards. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-5: OPERATIONAL NOISE LEVEL COMPLIANCE

| Receiver Location ¹ | Jurisdiction | Project Operational Noise Levels (dBA Leq) ² | | Noise Level Standards (dBA Leq) ³ | | Noise Level Standards Exceeded? ⁴ | |
|--------------------------------|---------------------|---|-----------|--|-----------|--|-----------|
| | | Daytime | Nighttime | Daytime | Nighttime | Daytime | Nighttime |
| R1 | County of Riverside | 47.7 | 45.9 | 55 | 55 | No | No |
| R2 | | 44.3 | 42.8 | 55 | 45 | No | No |
| R3 | | 40.3 | 38.0 | 55 | 55 | No | No |
| R4 | City of Riverside | 43.4 | 39.0 | 55 | 45 | No | No |
| R5 | | 33.9 | 31.0 | 55 | 45 | No | No |
| R6 | | 46.7 | 44.1 | 55 | 45 | No | No |
| R7 | | 41.5 | 40.1 | 55 | 45 | No | No |
| R8 | | 47.4 | 43.7 | 55 | 45 | No | No |
| R9 | | 38.5 | 35.1 | 55 | 45 | No | No |
| R10 | | 40.5 | 38.0 | 55 | 45 | No | No |

¹ See Exhibit 8-A for the receiver locations.

² Proposed Project operational noise levels as shown on Tables 9-3 and 9-4.

³ Exterior noise level standards, as shown on Table 4-1.

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

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

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

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

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

Where “SPL1,” “SPL2,” etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. As indicated on Tables 9-6, the Project will generate a daytime operational noise level increases ranging from 0.1 to 2.0 dBA L_{eq} at the nearest receiver locations. Table 9-7 shows that the Project will generate a nighttime operational noise level increases ranging from 0.1 to 2.3 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the increases at the sensitive receiver locations will be *less than significant*.

TABLE 9-6: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

| Receiver Location ¹ | Total Project Operational Noise Level ² | Measurement Location ³ | Reference Ambient Noise Levels ⁴ | Combined Project and Ambient ⁵ | Project Increase ⁶ | Increase Criteria ⁷ | Increase Criteria Exceeded? |
|--------------------------------|--|-----------------------------------|---|---|-------------------------------|--------------------------------|-----------------------------|
| R1 | 47.7 | L1 | 52.7 | 53.9 | 1.2 | 5.0 | No |
| R2 | 44.3 | L2 | 51.8 | 52.5 | 0.7 | 5.0 | No |
| R3 | 40.3 | L3 | 50.0 | 50.4 | 0.4 | 5.0 | No |
| R4 | 43.4 | L4 | 48.4 | 49.6 | 1.2 | 5.0 | No |
| R5 | 33.9 | L5 | 49.0 | 49.1 | 0.1 | 5.0 | No |
| R6 | 46.7 | L5 | 49.0 | 51.0 | 2.0 | 5.0 | No |
| R7 | 41.5 | L5 | 49.0 | 49.7 | 0.7 | 5.0 | No |
| R8 | 47.4 | L7 | 51.6 | 53.0 | 1.4 | 5.0 | No |
| R9 | 38.5 | L8 | 47.3 | 47.8 | 0.5 | 5.0 | No |
| R10 | 40.5 | L1 | 52.7 | 53.0 | 0.3 | 5.0 | No |

¹ See Exhibit 8-A for the receiver locations.

² Total Project daytime operational noise levels as shown on Table 9-3.

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

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

⁵ Represents the combined ambient conditions plus the Project activities.

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

⁷ Significance increase criteria as shown on Table 4-1.

TABLE 9-7: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

| Receiver Location ¹ | Total Project Operational Noise Level ² | Measurement Location ³ | Reference Ambient Noise Levels ⁴ | Combined Project and Ambient ⁵ | Project Increase ⁶ | Increase Criteria ⁷ | Increase Criteria Exceeded? |
|--------------------------------|--|-----------------------------------|---|---|-------------------------------|--------------------------------|-----------------------------|
| R1 | 45.9 | L1 | 50.3 | 51.7 | 1.4 | 5.0 | No |
| R2 | 42.8 | L2 | 49.0 | 49.9 | 0.9 | 5.0 | No |
| R3 | 38.0 | L3 | 46.5 | 47.1 | 0.6 | 5.0 | No |
| R4 | 39.0 | L4 | 45.0 | 46.0 | 1.0 | 5.0 | No |
| R5 | 31.0 | L5 | 45.6 | 45.7 | 0.1 | 5.0 | No |
| R6 | 44.1 | L5 | 45.6 | 47.9 | 2.3 | 5.0 | No |
| R7 | 40.1 | L5 | 45.6 | 46.7 | 1.1 | 5.0 | No |
| R8 | 43.7 | L7 | 47.5 | 49.0 | 1.5 | 5.0 | No |
| R9 | 35.1 | L8 | 43.9 | 44.4 | 0.5 | 5.0 | No |
| R10 | 38.0 | L1 | 50.3 | 50.5 | 0.2 | 5.0 | No |

¹ See Exhibit 8-A for the receiver locations.

² Total Project nighttime operational noise levels as shown on Table 9-4.

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

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

⁵ Represents the combined ambient conditions plus the Project activities.

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

⁷ Significance increase criteria as shown on Table 4-1.

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10 CONSTRUCTION ANALYSIS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the limits of construction noise source activity including the off-site roadway and utility improvements in relation to the nearest sensitive receiver locations previously described in Section 8.

10.1 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the West Campus Upper Plateau Project, noise from construction activities is typically limited to the hours of operation established under a jurisdiction's Code. To accurately describe the potential Project-related construction noise level contributions to the existing noise environment, this analysis presents the appropriate construction noise standards for each jurisdiction adjacent to the Project site including: the March JPA, City of Riverside, and the County of Riverside.

10.2 CONSTRUCTION NOISE LEVELS

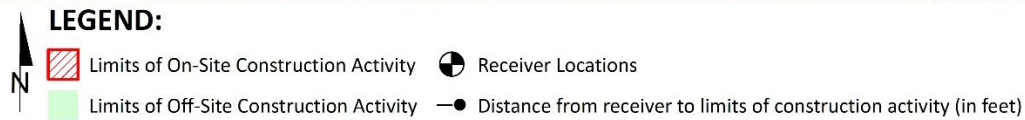
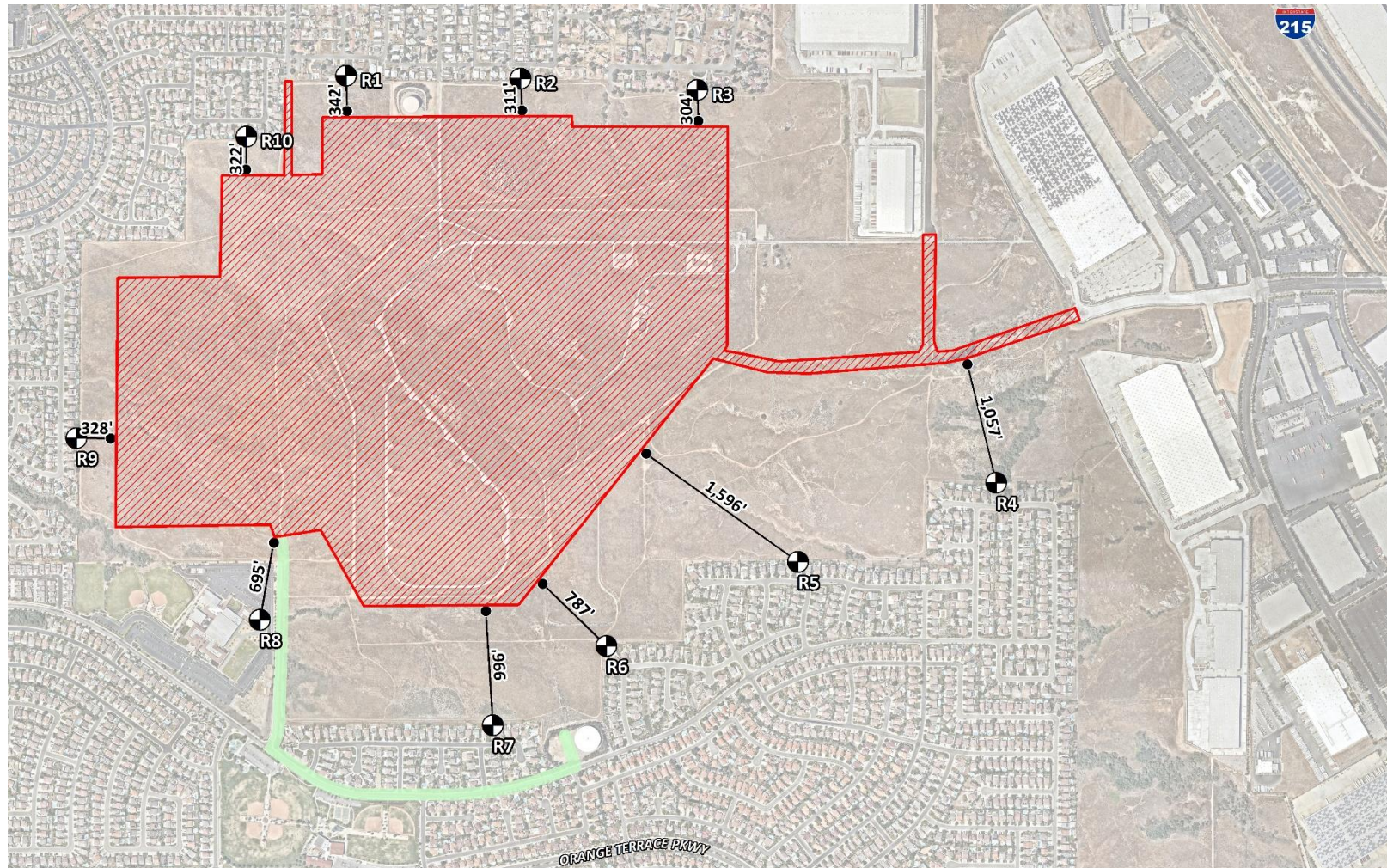
The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed 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:

- Mass Grading
- Blasting
- Remedial Grading
- Building Construction
- Architectural Coating
- Paving

10.3 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (30) 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.

REVISED EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE ACTIVITY



10.4 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. Consistent with FTA guidance for general construction noise assessment, Table 10-1 presents the combined noise levels for the loudest construction equipment, assuming they operate at the same time. As shown on Table 10-2, the highest construction noise levels are expected to range from 39.7 to 48.0 dBA L_{eq} and 44.7 to 53.0 dBA L_{max} at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

| Construction Stage | Reference Construction Activity | Reference Noise Level @ 50 Feet ¹ | | Combined/Max Noise Level ² | |
|-----------------------|---------------------------------|--|------|---------------------------------------|------|
| | | Leq | Lmax | Leq | Lmax |
| Mass Grading | Graders | 81 | 85 | 83 | 85 |
| | Excavators | 77 | 81 | | |
| | Compactors | 76 | 83 | | |
| Blasting | Drilling Rig | 72 | 79 | 82 | 94 |
| | Warning Horn | 70 | 83 | | |
| | Blasting | 81 | 94 | | |
| Remedial Grading | Graders | 81 | 85 | 83 | 85 |
| | Excavators | 77 | 81 | | |
| | Compactors | 76 | 83 | | |
| Building Construction | Cranes | 73 | 81 | 81 | 84 |
| | Tractors | 80 | 84 | | |
| | Welders | 70 | 74 | | |
| Architectural Coating | Cranes | 73 | 81 | 77 | 81 |
| | Air Compressors | 74 | 78 | | |
| | Generator Sets | 70 | 73 | | |
| Paving | Pavers | 74 | 77 | 83 | 85 |
| | Paving Equipment | 82 | 85 | | |
| | Rollers | 73 | 80 | | |

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.

TABLE 10-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

| Receiver Location ¹ | Construction Noise Levels (dBA L _{eq}) | | | | | | | Construction Noise Levels (dBA L _{max}) | | | | | | |
|--------------------------------|--|----------|------------------|----------------|---------------|--------|-----------------------------|---|----------|------------------|----------------|---------------|--------|-----------------------------|
| | Mass Grading | Blasting | Remedial Grading | Building Cons. | Arch. Coating | Paving | Highest Levels ² | Mass Grading | Blasting | Remedial Grading | Building Cons. | Arch. Coating | Paving | Highest Levels ² |
| R1 | 47.2 | 46.2 | 47.2 | 45.2 | 41.2 | 47.2 | 47.2 | 49.2 | 58.2 | 49.2 | 48.2 | 45.2 | 49.2 | 58.2 |
| R2 | 48.0 | 47.0 | 48.0 | 46.0 | 42.0 | 48.0 | 48.0 | 50.0 | 59.0 | 50.0 | 49.0 | 46.0 | 50.0 | 59.0 |
| R3 | 46.8 | 45.8 | 46.8 | 44.8 | 40.8 | 46.8 | 46.8 | 48.8 | 57.8 | 48.8 | 47.8 | 44.8 | 48.8 | 57.8 |
| R4 | 39.7 | 38.7 | 39.7 | 37.7 | 33.7 | 39.7 | 39.7 | 41.7 | 50.7 | 41.7 | 40.7 | 37.7 | 41.7 | 50.7 |
| R5 | 42.3 | 41.3 | 42.3 | 40.3 | 36.3 | 42.3 | 42.3 | 44.3 | 53.3 | 44.3 | 43.3 | 40.3 | 44.3 | 53.3 |
| R6 | 44.7 | 43.7 | 44.7 | 42.7 | 38.7 | 44.7 | 44.7 | 46.7 | 55.7 | 46.7 | 45.7 | 42.7 | 46.7 | 55.7 |
| R7 | 43.5 | 42.5 | 43.5 | 41.5 | 37.5 | 43.5 | 43.5 | 45.5 | 54.5 | 45.5 | 44.5 | 41.5 | 45.5 | 54.5 |
| R8 | 46.0 | 45.0 | 46.0 | 44.0 | 40.0 | 46.0 | 46.0 | 48.0 | 57.0 | 48.0 | 47.0 | 44.0 | 48.0 | 57.0 |
| R9 | 47.2 | 46.2 | 47.2 | 45.2 | 41.2 | 47.2 | 47.2 | 49.2 | 58.2 | 49.2 | 48.2 | 45.2 | 49.2 | 58.2 |
| R10 | 47.8 | 46.8 | 47.8 | 45.8 | 41.8 | 47.8 | 47.8 | 49.8 | 58.8 | 49.8 | 48.8 | 45.8 | 49.8 | 58.8 |

¹ Noise receiver locations are shown on Exhibit 10-A.

² Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.5 CONSTRUCTION NOISE LEVEL COMPLIANCE

The construction noise analysis shows that the highest construction noise levels will occur when construction activities take place at the edge of the Project site. Table 10-3 shows the unmitigated peak daytime construction noise levels at the nearby sensitive receiver locations will range from 46.8 to 47.2 dBA L_{eq} and 50.7 to 59.0 dBA L_{max} and will not exceed the daytime construction noise level thresholds for each jurisdiction at the nearby sensitive receiver locations. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 10-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

| Receiver Location ¹ | Jurisdiction | Peak Construction Activity Noise Levels ² | | Threshold ³ | | Threshold Exceeded? ⁴ | |
|--------------------------------|---------------------|--|------|------------------------|------|----------------------------------|------|
| | | Leq | Lmax | Leq | Lmax | Leq | Lmax |
| R1 | County of Riverside | 47.2 | - | 65 | - | No | - |
| R2 | | 48.0 | - | 65 | - | No | - |
| R3 | | 46.8 | - | 65 | - | No | - |
| R4 | City of Riverside | - | 50.7 | - | 75 | - | No |
| R5 | | - | 53.3 | - | 75 | - | No |
| R6 | | - | 55.7 | - | 75 | - | No |
| R7 | | - | 54.5 | - | 75 | - | No |
| R8 | | - | 57.0 | - | 75 | - | No |
| R9 | | - | 58.2 | - | 75 | - | No |
| R10 | | - | 58.8 | - | 75 | - | No |

¹ Construction noise receiver locations are shown on Exhibit 10-A.

² Estimated construction noise levels during peak operating conditions, as shown on Table 10-2.

³ Construction noise standards as shown on Table 3-2.

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

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

10.6 TEMPORARY CONSTRUCTION NOISE LEVEL INCREASES

To describe the temporary Project construction noise level contributions to the existing ambient noise environment, the Project construction noise levels were combined with the existing ambient noise levels measurements at the off-site receiver locations. The difference between the combined Project-construction and ambient noise levels ~~are~~ is used to describe the construction noise level contributions. Temporary noise level increases that would be experienced at sensitive receiver locations when Project construction-source noise is added to the ambient daytime conditions are presented on Table 10-4.

A temporary noise level increase of 12 dBA is considered a potentially significant impact based on the Caltrans substantial noise level increase criteria which is used to assess the Project-construction noise level increases. (21) However, the construction activities associated with the West Campus Upper Plateau Project are likely to take several years and cannot reasonably be

considered as a short-term temporary noise impact. Therefore, due to the expected duration of construction, a “barely-perceptible” 5 dBA noise level increase threshold has been used to assess the potential impacts associated with the construction related noise level increases. As indicated in Table 10-4, the Project will contribute construction noise level increases ranging from 0.5 to 3.0 dBA L_{eq} during the daytime hours at the closest sensitive receiver locations. Since the worst-case temporary noise level increases of up to 3.0 dBA L_{eq} during Project construction will not exceed the 5 dBA L_{eq} noise level increase significance threshold, the construction noise level increases are considered *less than significant* temporary noise impacts.

TABLE 10-4: DAYTIME TEMPORARY CONSTRUCTION NOISE LEVEL INCREASES

| Receiver Location ¹ | Total Project Construction Noise Level ² | Measurement Location ³ | Reference Ambient Noise Levels ⁴ | Combined Project and Ambient ⁵ | Project Increase ⁶ | Increase Criteria ⁷ | Increase Criteria Exceeded? |
|--------------------------------|---|-----------------------------------|---|---|-------------------------------|--------------------------------|-----------------------------|
| R1 | 47.2 | L1 | 52.7 | 53.8 | 1.1 | 5 | No |
| R2 | 48.0 | L2 | 51.8 | 53.3 | 1.5 | 5 | No |
| R3 | 46.8 | L3 | 50.0 | 51.7 | 1.7 | 5 | No |
| R4 | 39.7 | L4 | 48.4 | 48.9 | 0.5 | 5 | No |
| R5 | 42.3 | L5 | 49.0 | 49.8 | 0.8 | 5 | No |
| R6 | 44.7 | L5 | 49.0 | 50.4 | 1.4 | 5 | No |
| R7 | 43.5 | L5 | 49.0 | 50.1 | 1.1 | 5 | No |
| R8 | 46.0 | L7 | 51.6 | 52.7 | 1.1 | 5 | No |
| R9 | 47.2 | L8 | 47.3 | 50.3 | 3.0 | 5 | No |
| R10 | 47.8 | L1 | 52.7 | 53.9 | 1.2 | 5 | No |

¹ See Exhibit 10-A for the receiver locations.

² Total Project daytime construction noise levels as shown on Table 10-2.

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

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

⁵ Represents the combined ambient conditions plus the Project construction activities.

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

⁷ Significance increase criteria as shown on Table 4-1.

10.7 OFF-SITE CONSTRUCTION NOISE ANALYSIS

To support the Project development, there will be grading, trenching, and paving for off-site improvements associated with the utility installation of a proposed reclaimed water tank for the Project as shown on Exhibit 10-A. The proposed reclaimed water tank site is located south of the Project site and accessed from Grove Community Drive within the City of Riverside. Construction would consist of an aboveground 0.5-million-gallon prefabricated, bolted steel tank on a poured concrete slab next to an existing water tank on an already disturbed and graded site. The new tank would be connected to a new reclaimed water line to be installed along Grove Community Drive, traveling west to connect to Barton Street and north to connect with the Specific Plan Area. Construction would occur beginning in 2023 and would involve remedial grading, pouring a concrete pad, assembling the tank, trenching and utility line installation and connections to provide the reclaimed water to the Project site.

Construction of the off-site utility improvements will be primarily within the existing public right-of-way (ROW) and be of brief duration. It is expected that the off-site construction activities would not take place at any one location for more than four days due to the nature of the linear construction activity. Construction noise from this off-site work would, therefore, be relatively short-term and the noise levels would be reduced as construction work moves linearly along the selected alignment and farther from sensitive uses. The loudest phase of construction associated with off-site improvements would likely be grading/excavation activities, which would generate similar noise levels compared to the grading/excavation phase of the proposed project's on-site construction activities previously outlined on Table 10-1. Both March JPA and the City of Riverside noise standards exempt ROW and utility construction.¹ Although not required to address a potentially significant impact, the Project will comply with March JPA's permitted hours of construction and implement noise abatement best practices as detailed in NOI-4 to minimize the potential construction noise impacts of the off-site improvements.

10.87 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground-borne vibration levels resulting from typical construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). (8) However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 10-6. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$

TABLE 10-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

¹ March JPA Development Code § 9.10.140(3), (4). City of Riverside Municipal Code § 7.35.020(E), (F).

Using the vibration source level of construction equipment provided on Table 10-5 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-6 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 304 to 1,596 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.000 to 0.001 in/sec RMS and will remain below the County of Riverside threshold of 0.01 in/sec RMS at all receiver locations, as shown on Table 10-6. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site.

TABLE 10-6: PROJECT CONSTRUCTION VIBRATION LEVELS

| Receiver ¹ | Distance to Const. Activity (Feet) | Receiver Levels (in/sec) RMS ² | | | | | Threshold (in/sec) RMS ⁴ | Threshold Exceeded? ⁵ |
|-----------------------|------------------------------------|---|-------------|---------------|-----------------|----------------|-------------------------------------|----------------------------------|
| | | Small Bulldozer | Jack-hammer | Loaded Trucks | Large Bulldozer | Peak Vibration | | |
| R1 | 342' | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 | 0.01 | No |
| R2 | 311' | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.01 | No |
| R3 | 304' | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.01 | No |
| R4 | 1,057' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.01 | No |
| R5 | 1,596' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.01 | No |
| R6 | 787' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.01 | No |
| R7 | 996' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.01 | No |
| R8 | 695' | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.01 | No |
| R9 | 328' | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.01 | No |
| R10 | 322' | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.01 | No |

¹ Receiver locations are shown on Exhibit 10-A.

² Based on the Vibration Source Levels of Construction Equipment included on Table 10-7. Vibration levels in PPV are converted to RMS velocity using a 0.71 conversion factor identified in the Caltrans Transportation and Construction Vibration Guidance Manual, September 2013.

³ County of Riverside General Plan Noise Element, Policy N 16.3.

⁴ Does the vibration level exceed the maximum acceptable vibration threshold?

Moreover, the impacts at the site of the nearest sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

10.98 BLASTING IMPACTS

If blasting is determined to be required during excavation and grading, the blasting contractor is required to obtain blasting permit(s) from the State, and to notify Riverside County Sheriff's Department within 24 hours of planned blasting events. All blasting activities shall be designed to meet the regulatory construction noise and vibration thresholds outlined on Table 4-1. These construction thresholds may be satisfied by modifying the blast design and/or through the use alternative rock breaking methods. Alternative rock breaking methods may include the use of non-explosive techniques such as expanding chemical agents (epoxy resin). Even though the epoxy resin is capable of breaking rock overtime without explosive blasting, these activities still require drilling and other construction equipment to complete. In addition, while these

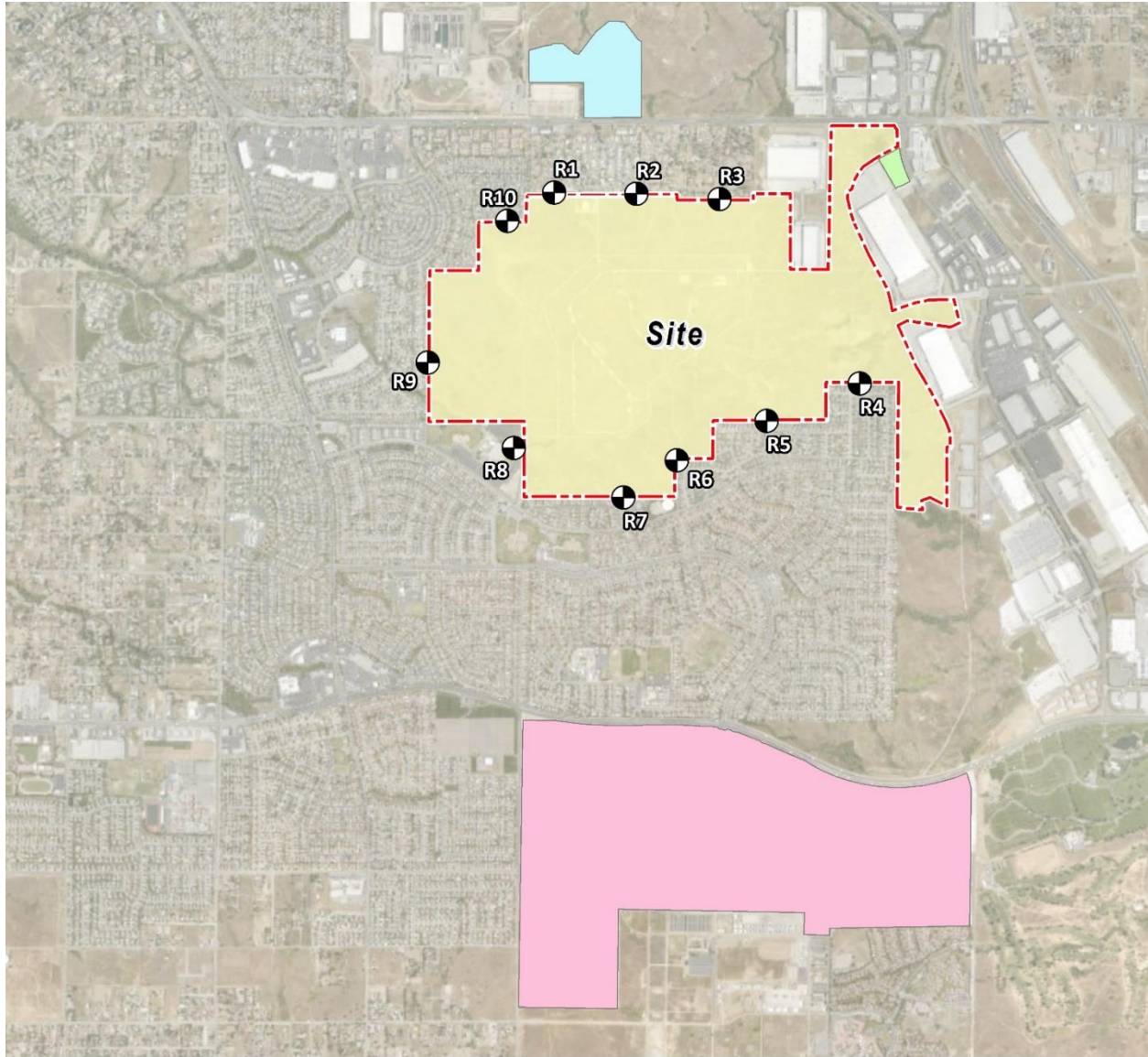
alternative methods are effective in breaking rock without the use of explosives, they are typically more costly and time intensive. The Project will utilize alternative rock breaking methods instead of blasting within 1,000 feet of any residence or other sensitive receptor.

10.10 CUMULATIVE CONSTRUCTION NOISE LEVEL INCREASES

Although unlikely, it is possible the Project could be under construction at the same time as nearby developments, including Sycamore Hills Distribution Center, Meridian South Campus Buildings F, G, and 1, and Meridian West Building 4 as shown below on Exhibit 10-B. Since noise levels diminish quickly at a rate of 6 dB for each doubling of distance from a source, the potential cumulative construction noise source activities are expected to be lower than the Project-related construction noise levels. This is largely due to distance, topography, intervening building structures and development between the nearest noise sensitive receiver locations and the potential “under construction projects.” Using the reference construction equipment noise levels published by the Federal Highway Administration (FHWA) in the Roadway Construction Noise Model (RCNM), in combination with the FTA guidance for noise assessment, the potential construction noise levels were calculated for each of the “under construction projects.” The construction noise levels from the Sycamore Hills Distribution Center are expected to range from 32.5 to 46.2 dBA L_{eq} at the Project noise sensitive receiver locations without accounting for any intervening building structures or topography. The cumulative construction noise levels from the Meridian South Campus are estimated at 24.8 to 34.8 dBA L_{eq} , and 30.2 to 42.5 dBA L_{eq} from Meridian West Building 4. With the Project related construction noise levels ranging from 33.7 to 48.0 dBA L_{eq} , the cumulative construction noise levels are not expected to meaningfully contribute to a potential cumulative construction noise increase.

In addition, the existing ambient noise levels ranging from 47.3 to 61.5 dBA L_{eq} show that noise from intervening roadways, specifically Alessandro Boulevard for the Sycamore Hills Distribution Center and Van Buren Boulevard for the Meridian South Campus development, will likely overshadow the potential cumulative construction noise source levels from these external projects. Therefore, the proximity of the West Campus Upper Plateau project site to the nearest noise sensitive receiver locations suggests that any potential cumulative construction noise levels will be diminished below ambient levels and washed out by intervening roadway traffic noise.

EXHIBIT 10-B: CUMULATIVE PROJECT LOCATIONS



LEGEND:

-  Site Boundary
-  Meridian South Campus
-  Meridian West Building 4
-  Sycamore Hills Distribution Center

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
4. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
5. **U.S. Department of Transportation Federal Highway Administration.** *Highway Noise Barrier Design Handbook.* 2001.
6. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
7. **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.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
9. **U.S. Government Publishing Office.** *Code of Federal Regulations, Title 40, Part 205, Subpart B.*
10. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
11. **March Joint Powers Authority.** *General Plan Noise/Air Quality Element.* 1999.
12. —. *Development Code, Chapter 9.10 Performance Standards.*
13. **City of Riverside.** *Municipal Code, Title 7 Noise Control.*
14. **County of Riverside.** *Municipal Code, Title 9 - Public, Peace, Morals and Welfare, Chapter 9.52 - Noise Regulation.*
15. —. *General Plan Noise Element.* December 2015.
16. —. *Airport Land Use Compatibility Plan.* October 2004.
17. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
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20. —. *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects.* May 2011.
21. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
22. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.

23. **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.
24. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
25. **Urban Crossroads, Inc.** *West Campus Upper Plateau Traffic Analysis.* October 2022.
26. **California Department of Transportation Environmental Program.** *I-80 Davis OGAC Pavement Noise Study.* September 2001.
27. **Canadian Ministry of Transportation and Highways, Highway Environment Branch.** *Open-Graded Asphalt 'Quiet Pavement' - Assessment of Traffic Noise Reduction Performance.* November 1995.
28. **California Department of Transportation.** *Highway Design Manual, Chapter 1100 Highway Traffic Noise Abatement.* November 2017.
29. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.

12 CERTIFICATION

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

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EDUCATION

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

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

PROFESSIONAL REGISTRATIONS

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

PROFESSIONAL AFFILIATIONS

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

PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 3.1:
MARCH JPA DEVELOPMENT CODE

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CHAPTER 9.10**PERFORMANCE STANDARDS****Sections:**

| | |
|----------|---|
| 9.10.010 | Purpose and Intent |
| 9.10.020 | Applicability |
| 9.10.030 | Exemptions |
| 9.10.040 | Administration |
| 9.10.050 | Air Quality |
| 9.10.060 | Electrical or Electronic Interference |
| 9.10.070 | Fire and Explosive Hazards |
| 9.10.080 | Liquid and Solid Wastes |
| 9.10.090 | Radioactive Wastes |
| 9.10.100 | Heat and Cold |
| 9.10.110 | Light and Glare |
| 9.10.120 | Maintenance of Open Areas |
| 9.10.130 | Mechanical and Electrical Equipment |
| 9.10.140 | Noise and Sound |
| 9.10.150 | Odors |
| 9.10.160 | Outdoor Storage, Trash Areas, and Service Areas |
| 9.10.170 | Vibration |

Section 9.10.010 Purpose and Intent

The purpose and intent of this Chapter is to explicitly describe the location, configuration, design, amenities, operation, and other standards for proposed development projects that may impact the surrounding neighborhood. The performance standards set maximum tolerance limits on certain adverse effects created by any use or development of land.

Section 9.10.020 **Applicability****Applicability**

These performance standards shall apply to all land uses, in all districts, unless specifically stated otherwise in this Title. All uses shall be subject to these performance standards, the General Development Standards of Chapter 9.08, the Specific Use Development Standards of Chapter 9.09, the requirements of the underlying district, and all other requirements of this Title.

Section 9.10.030 **Exemptions****Exemptions**

The following uses or activities are exempt from the provisions of this Chapter.

1. Emergency equipment, vehicles, devices, and activities.
2. Temporary construction, maintenance, or demolition activities between the hours of 7:00 a.m. and 7:00 p.m.

Section 9.10.040 **Administration**

The standards of this Chapter shall be enforced by the department or agency having enforcement authority over the subject matter. Upon discovery of any potential violation of these standards, the appropriate department or agency shall investigate and initiate corrective action as deemed necessary.

Section 9.10.050 **Air Quality**

No operation or activity otherwise permitted under this Title shall cause the emission of any smoke, fly ash, dust, fumes, vapors, gases or other forms of air pollution which exceeds the requirements of the South Coast Air Quality Management District or the requirements of any Air Quality Plan or General Plan Air Quality Element adopted by the March JPA.

Section 9.10.060 **Electrical or Electronic Interference**

No operation or activity otherwise permitted under this Title shall cause any source of electrical or electronic disturbance that adversely affects persons or the operation of equipment on other property and is not in conformance with the regulations of the Federal Communication Commission.

Section 9.10.070 **Fire and Explosive Hazards**

An operation or activity otherwise permitted under this Title involving the storage of flammable or explosive materials shall be provided with adequate safety devices against the hazard of fire and explosion and adequate fire-fighting and fire suppression equipment and devices in accordance with the requirements of the Uniform Fire Code. Open fire burning of waste material is prohibited. Closed system incineration of waste material, where such activity is otherwise permitted under this Title and is required for research, medical or similar uses, may be permitted subject to the requirements of the California Department of Health and South Coast Air Quality Management District or other requirements of any Air Quality Plan or General Plan Air Quality Element adopted by the March JPA.

Section 9.10.080 Liquid and Solid Wastes

No operation or action otherwise permitted under this Title shall discharge at any point into any public street, public sewer, private sewage disposal system, stream, body of water or into the ground, any materials which can contaminate any water supply, interfere with bacterial processes in sewage treatment, or otherwise cause the emission of dangerous or offensive elements, except in accordance with standards approved by the California Department of Public Health or other governmental agency having jurisdiction over liquid and solid waste.

Section 9.10.090 Radioactive Wastes

No operation or activities otherwise permitted under this Title shall be permitted which result at any time in the release or emission of any fissionable or radioactive materials into the atmosphere, the ground, groundwater or sewage systems except as provided by and in accordance with State law. Any such operation or activity which handles, tests, transports, stores or in any way uses fissionable or radioactive material shall prepare a study addressing the probability of the release of such material and implement all recommendations identified by the study.

Section 9.10.100 Heat and Cold

No operation or activity otherwise permitted under this Title shall emit heat or cold which would cause a temperature increase or decrease on any adjacent property in excess of 10 degrees Fahrenheit, whether the change is in the air, on the ground, or in any structure, or in any body of water.

Section 9.10.110 Light and Glare

No operation, activity, sign, or lighting fixture shall create illumination which exceeds 0.5 foot-candles minimum maintained on any adjacent property, whether the illumination is direct or indirect light from the source. All lighting shall be designed to project downward and shall not create glare on adjacent properties.

Section 9.10.120 Maintenance of Open Areas

Except as otherwise provided in this Title, all open areas shall be landscaped, surfaced, or treated and maintained permanently in a dust-free, weed-free condition.

Section 9.10.130 Mechanical and Electrical Equipment

All mechanical and electrical equipment, including air conditioners, antennas, pumps, transformers, and heating and ventilating equipment shall be located, operated and screened in a manner that does not disturb adjacent uses and activities. In addition, all central building electrical controlling equipment and switching facilities shall be located within the building for all commercial, industrial and business facilities.

Section 9.10.140 Noise and Sound

Unless otherwise specified in Chapter 9.08, General Development Standards, or Chapter 9.09, Specific Use Development Standards, all commercial and industrial uses shall be operated so that noise created by any loudspeaker, bells, gongs, buzzers, or other noise attention or attracting devices shall not exceed 55 dBA at any one time beyond the boundaries of the property. Sounds emitting from any of the aforementioned devices, including or live or recorded music, shall cease between the hours of 10:00 p.m. and 7:00 a.m. if the sound therefrom creates a noise disturbance across the property line of a residential use.

Additionally, outdoor construction and grading activities, including the operation of any tools or equipment associated with construction, drilling, repair, alteration, grading/grubbing or demolition work within 500 feet of the property line of a residential use, shall be prohibited between the hours of 7:00 p.m. and 7:00 a.m. Monday through Friday and between 5:00 p.m. and 8:00 a.m. on Saturdays or at any time on Sunday or a Federal Holiday.

The following activities are exempt from the provisions of this Section:

1. Emergency Work. This Section does not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work if the work is necessary to address immediate public health and safety related issues as deemed necessary by the March JPA Building Official or Engineer.
2. Federal or State Highway/Freeway Projects or preempted activities. This Section does not apply to roadwork on federal or state highways or any other activity the noise level of which is regulated by state or federal law.
3. Right-of-way construction. This Section does not prohibit work performed within the rights-of-way when it is deemed by the March JPA Engineer that such work will create traffic congestion and/or

hazardous or unsafe conditions.

4. Public health, welfare and safety activities. This Section does not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers or storm drains, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc.

Section 9.10.150 Odors

No operation or activity shall be permitted which emits odorous gases or other odorous matter in such quantities as to be dangerous, injurious, noxious, or otherwise objectionable to a level that is detectable with or without the aid of instruments at or beyond the lot line of the property containing said operation or activity.

Section 9.10.160 Outdoor Storage, Trash Areas, and Service Areas

All storage areas for storage of maintenance equipment or vehicles or refuse, and all collection areas and service areas, shall be enclosed or effectively screened from public view with a fence, wall, landscaping, berming or a combination thereof. Doors to trash enclosures shall be closed at all times except when the enclosure is being accessed for refuse disposal or pick-up. The screening requirements of Section 9.08.150 are also referenced and not intended to be superseded hereby.

Section 9.10.170 Vibration

No vibration shall be permitted which can be felt at or beyond the property line.

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APPENDIX 3.2:

CITY OF RIVERSIDE MUNICIPAL CODE

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Title 7 - NOISE CONTROL

Chapter 7.05 - POLICY AND INTENT

7.05.010 - Policy and intent.

It shall be the policy of the City to maintain and preserve the quiet atmosphere of the City, to implement programs aimed at retaining ambient noise levels throughout the City, and to mitigate noise conflicts.

It is determined that certain noise levels are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore, the City Council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner not in conformity with the provisions of this title, is a public nuisance and shall be punishable as such.

In order to control unnecessary, excessive and/or annoying noise in the City, it is declared to be the policy of the City to prohibit such noise generated by the sources specified in this title. It shall be the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment.

(Ord. 7489 § 1, 2019; Ord. 6273 § 1 (part), 1996)

Chapter 7.10 - DEFINITIONS

7.10.010 - Definitions generally.

For the purposes of this title, the words and phrases defined in this chapter shall have the meanings respectively ascribed to them by this chapter.

(Ord. 7489 § 3, 2019)

7.10.015 - A-weighted sound level.

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 is designated dB(A) or dBA.

(Ord. 7489 § 4, 2019; Ord. 6273 § 1(part), 1996)

7.10.020 - Agricultural property.

"Agricultural property" means a parcel of real property which is developed for agricultural and incidental residential purposes which is located within any permitted zone.

(Ord. 6273 § 1(part), 1996)

7.10.025 - Ambient noise level.

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

(Ord. 6273 § 1(part), 1996)

7.10.030 - Commercial purpose.

"Commercial purpose" means the use, operation or maintenance of any sound amplification equipment for the purpose of advertising any business, goods or services, or for the purposes of attracting the attention of the public, or soliciting patronage of customers to any performance, show, entertainment, exhibition or event, or for the purpose of demonstrating such sound equipment.

(Ord. 6273 § 1(part), 1996)

7.10.035 - Construction.

"Construction" means any site preparation including grading, building, fabricating, assembly, substantial repair, alteration, blasting, jack hammering, pile drivers and the like.

(Ord. 7489 § 5, 2019; Ord. 6273 § 1(part), 1996)

7.10.036 - Community & Economic Development Director.

"Community & Economic Development Director" means the duly appointed and acting head of the Community & Economic Development Department and/or his/her designee.

(Ord. 7489 § 6, 2019)

7.10.040 - Community support land use category.

"Community support land use category" means areas developed with schools, libraries, fire stations, hospitals and similar uses in any zone.

(Ord. 6273 § 1(part), 1996)

7.10.045 - Cumulative period.

"Cumulative period" means a total period of time composed of time segments which may be continuous or discontinuous.

(Ord. 6273 § 1(part), 1996)

7.10.050 - Decibel (dB).

"Decibel (dB)" means a unit for measuring amplitude of a sound, equal to 20 times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

(Ord. 7489 § 7, 2019; Ord. 6273 § 1(part), 1996)

7.10.055 - Demolition.

"Demolition" means any dismantling, intentional destruction or removal of structures, site improvements, landscaping or utilities.

(Ord. 6273 § 1(part), 1996)

7.10.060 - Emergency.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate action.

(Ord. 6273 § 1(part), 1996)

7.10.065 - Emergency work.

"Emergency work" means work made necessary to restore property to a safe condition following a physical trauma or property damage caused by an emergency or work necessary to prevent or minimize damage from a potential emergency.

(Ord. 6273 § 1(part), 1996)

7.10.070 - Fixed noise source.

"Fixed noise source" means a stationary device which creates sounds from a fixed location, including residential, agricultural, industrial and commercial machinery and equipment, pumps fans, compressors, air conditioners and refrigeration devices.

(Ord. 6273 § 1(part), 1996)

7.10.075 - Grading.

"Grading" means any excavating and/or filling of earth material to prepare a site for construction or the placement of improvements.

(Ord. 6273 § 1(part), 1996)

7.10.080 - Impulsive sound.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples include explosions, drum beats, drop-forge impacts, fire crackers, discharge of firearms and one object striking another.

(Ord. 6273 § 1(part), 1996)

7.10.085 - Industrial land use category.

"Industrial land use category" means any area occupied by land uses whose primary operation involves warehousing, manufacturing, assembling, distributing, packaging or processing goods in the BMP, I, and AIR zones.

(Ord. 6273 § 1(part), 1996)

7.10.090 - Intrusive noise.

"Intrusive noise" means a noise which intrudes over and above the existing ambient noise. The relative intrusiveness of the sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content as well as its relationship to the prevailing ambient noise level.

(Ord. 6273 § 1(part), 1996)

7.10.095 - Minor maintenance.

"Minor maintenance" means work required to keep property used for residential purposes in an existing state.

(Ord. 6273 § 1(part), 1996)

7.10.100 - Mobile noise source.

"Mobile noise source" means any noise source other than a fixed noise source.

(Ord. 6273 § 1(part), 1996)

7.10.105 - Motor vehicle.

"Motor vehicle" means any self-propelled vehicle as defined in the California Vehicle Code, including all on-highway types of motor vehicles subject to registration under said code, and all off-highway type motor vehicles subject to identification under said code.

(Ord. 6273 § 1(part), 1996)

7.10.110 - Muffler or sound dissipative device.

"Muffler or sound dissipative device" means a device for abating the sound of escaping gases from an internal combustion engine.

(Ord. 7489 § 8, 2019; Ord. 6273 § 1(part), 1996)

7.10.115 - Noise.

"Noise" means any sound which exceeds the appropriate actual or presumed ambient noise level or which annoys or tends to disturb humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

(Ord. 6273 § 1(part), 1996)

7.10.120 - Noise Control Officer.

"Noise Control Officer" means the City official(s) or duly authorized representative(s) with the responsibility to enforce the noise ordinance.

(Ord. 6273 § 1(part), 1996)

7.10.125 - Noise disturbance.

"Noise disturbance" means any sound which, as judged by a City police officer or code enforcement officer, annoys or disturbs a reasonable person of normal sensitivities or exceeds a standard set forth in this title.

(Ord. 7489 § 9, 2019; Ord. 6273 § 1(part), 1996)

7.10.130 - Noise source.

"Noise source" means a disturbance causing operation which originates from noise generating mechanism. An example of a noise source is the combination of a motor, pump and compressor.

(Ord. 6273 § 1(part), 1996)

7.10.135 - Noise zone.

"Noise zone" means defined areas of generally consistent land use where the ambient noise levels are generally similar within a range of five decibels.

(Ord. 6273 § 1(part), 1996)

7.10.140 - Nonurban land use category.

"Nonurban land use category" means vacant land or land primarily for agricultural production containing ten acres or more.

(Ord. 6273 § 1(part), 1996)

7.10.145 - Office/commercial land use category.

"Office/commercial land use category" means areas developed with office and/or commercial uses in the O, CRC, CR-NC, CR, and CG zones.

(Ord. 6967 § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.150 - Person.

"Person" means any individual, association, partnership or corporation and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State.

(Ord. 6273 § 1(part), 1996)

7.10.155 - Powered model vehicle.

"Powered model vehicle" means airborne, waterborne or land-borne vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power.

(Ord. 6273 § 1(part), 1996)

7.10.160 - Public recreation facility land use category.

"Public recreation facility land use category" means areas developed with public parks and other public recreational facilities.

(Ord. 6273 § 1(part), 1996)

7.10.165 - Public right-of-way.

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

(Ord. 6273 § 1(part), 1996)

7.10.170 - Public space.

"Public space" means any real property or structures which are owned or controlled by a government entity.

(Ord. 6273 § 1(part), 1996)

7.10.175 - Residential land use category.

"Residential land use category" means areas primarily used for residential purposes in the RE, RA-5, RR, RC, R-1-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, and R-4 zones.

(Ord. 6967, § 2, 2007; Ord. 6273 § 1(part), 1996)

7.10.180 - Sound.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

(Ord. 6273 § 1(part), 1996)

7.10.185 - Sound amplifying equipment.

"Sound amplifying equipment" means any device for the amplification of the human voice, or music, or any other sound, excluding devices in motor vehicles when heard only by the occupants of the vehicle, excluding warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used only for traffic safety purposes.

(Ord. 6273 § 1(part), 1996)

7.10.190 - Sound level.

"Sound level" means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighing network, such as A, B or C, as specified in American National Standards Institute specifications for sound level meter ANSI S1.4-1971 or the latest approved revision thereof. If the frequency weighing method used is not stated, the A-weighing shall apply.

(Ord. 6273 § 1(part), 1996)

7.10.195 - Sound level meter.

"Sound level meter" means an instrument, including a microphone, an amplifier, an output meter, and frequency weighing networks for the measurement of sound levels which satisfies the requirements for S2A meters in American National Standards Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.

(Ord. 6273 § 1(part), 1996)

7.10.200 - Sound pressure.

"Sound pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given point in space, as produced by sound energy.

(Ord. 6273 § 1(part), 1996)

7.10.205 - Sound pressure level.

"Sound pressure level" means 20 times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure, which reference pressure shall be explicitly stated.

(Ord. 7489 § 10, 2019; Ord. 6273 § 1(part), 1996)

7.10.210 - Supplementary definitions of technical terms.

Definitions of technical terms not defined herein shall be obtained from the American National Standard, "Acoustical Terminology" S1.1-1961 (R-1971) or the latest revision thereof.

(Ord. 6273 § 1 (part), 1996)

7.15.005 - Administration and enforcement.

- A. The noise regulation shall be enforced by the Code Enforcement Division of the Community & Economic Development Department and/or the Riverside Police Department.
- B. It shall be the responsibility of the Code Enforcement Division and/or the Riverside Police Department to enforce the provisions of this title and to perform all other functions required by this title. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations, and providing evidence to the City Attorney for legal action.
- C. A violation of these regulations may be prosecuted as a misdemeanor or as an infraction. Each day a violation occurs shall constitute a separate offense and shall be punishable as such. However, nothing in these regulations shall prevent any code compliance officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or education.

(Ord. 7489 § 11, 2019; Ord. 7341 § 6, 2016; Ord. 6959 § 1, 2007; Ord. 6844 § 15, 2006; Ord. 6273 § 1 (part), 1996)

7.15.010 - Fines and penalties.

- A. Any violation of this title shall be subject to fines as set forth in Chapter 1.17 of the Riverside Municipal Code.
- B. The civil fines and criminal penalties imposed shall be in addition to any other fines and/or penalties imposed for violation of local, State, and/or Federal law.

(Ord. 7489 § 13, 2019)

7.15.015 - Responsible parties.

Persons responsible for violations of this title shall include the person, persons, entity, or entities responsible for the noise disturbance including, but not limited to, the property owner, business operations, renters, or lessees on whose premises the noise originates.

(Ord. 7489 § 14, 2019)

Chapter 7.20 - SOUND LEVEL MEASUREMENT

7.20.010 - Sound level measurement.

Except as provided by Chapter 17.35, General Noise Regulations, any sound or noise level measurement made to enforce this title shall be measured with a sound level meter using the A-weighting scale at slow response. The exterior noise level shall be measured at the position or positions along the complainant's property line closest to the noise source or where the noise level is highest. If the complaint concerns an interior source, noise measurements shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source with windows opened or closed as would be normal for the season.

(Ord. 7489 § 15, 2019; Ord. 6273 § 1 (part), 1996)

Chapter 7.23 - AMBIENT SOUND LEVELS

Footnotes:

--- (1) ---

Editor's note— Ord. 7489 § 16, adopted Nov. 5, 2019, amended the title of Ch. 7.23 from "Ambient Noise Levels" to "Ambient Sound Levels," as set out herein.

7.23.010 - Ambient sound levels.

Title 7 - Noise Control of the Riverside Municipal Code shall be consistent with Title 24 of the California Code of Regulations as may be amended from time to time.

(Ord. 7489 § 17, 2019; Ord. 6967 § 3, 2007)

7.23.020 - Mixed use development.

Where a new development proposal includes a mix of residential and nonresidential uses within the same project, the interior ambient noise standard for the residential component of the project may be increased by five decibels.

(Ord. 7489 § 18, 2019; Ord. 6967 § 3, 2007)

7.23.030 - Infill single-family residential development.

Where a new development proposal includes an infill single-family residential use, the interior ambient noise standard for the proposal may be increased by five decibels.

(Ord. 7489 § 19, 2019; Ord. 6967 § 3, 2007)

Chapter 7.25 - NUISANCE EXTERIOR SOUND LEVEL LIMITS

7.25.010 - Exterior sound level limits.

- A. Unless a variance has been granted as provided in this title, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:
1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or
 2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or
 3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
 4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour; or
 5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum

measured ambient noise level, for any period of time.

- B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.
- C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.
- D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this title, the exterior noise level when measured at the property line shall not exceed 60 dBA for units installed before 1-1-80 and 55 dBA for units installed after 1-1-80.

Table 7.25.010A

| Exterior Noise Standards | | |
|---------------------------------|---------------------------------|--------------------|
| Land Use Category | Time Period | Noise Level |
| Residential | Night (10:00 p.m. to 7:00 a.m.) | 45 dBA |
| | Day (7:00 a.m. to 10:00 p.m.) | 55 dBA |
| Office/commercial | Any time | 65 dBA |
| Industrial | Any time | 70 dBA |
| Community support | Any time | 60 dBA |
| Public recreation facility | Any time | 65 dBA |
| Nonurban | Any time | 70 dBA |

Table 7.25.010.B

| Land Use Category/Zoning Matrix | |
|--|---|
| Land Use Category | Underlying Zone |
| Residential | RE, RA-5, RR, RC, R-1-1/2 acre, R-1-13000, R-1-10500, R-1-8500, R-1-7000, R-3-2500, R-3-4000, R-3-3000, R-3-2000, R-3-1500, R-4 |
| Office/commercial | O, CRC, CR-NC, CR, CG |
| Industrial | BMP, I, AIR |
| Community support | Any permitted zone |
| Nonurban | Any permitted zone |

(Ord. 7489 § 20, 21(Exh. A), 2019; Ord. 6967 § 5, 2007; Ord. 6273 § 1 (part), 1996)

7.30.015 - Interior sound level limits.

- A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:
1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
 2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;
 3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.
- B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.
- C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 7.30.015

| Interior Noise Standard | | |
|-------------------------|--|-------------|
| Land Use Category | Time Period | Noise Level |
| Residential | Night (10 p.m. to 7 a.m.) | 35 dBA |
| | Day (7 a.m. to 10 p.m.) | 45 dBA |
| School | 7 a.m. to 10 p.m. (while school is in session) | 45 dBA |
| Hospital | Any time | 45 dBA |

(Ord. 7489 § 22, 23(Exh. B), 2019; Ord. 6273 § 1 (part), 1996)

Chapter 7.35 - GENERAL NOISE REGULATIONS

7.35.010 - General noise regulations.

- A. It is unlawful for any person to make, continue, or cause to be made or continued any noise disturbance. The factors which should be considered in determining whether a violation of this section exists, include the following:
1. The sound level of the objectionable noise.
 2. The sound level of the ambient noise.
 3. The proximity of the noise to dwelling units, hospital, hotels and the like.
 4. The zoning of the area.
 5. The population density of the area.
 6. The time of day or night.

7. The duration of the noise.
 8. Whether the noise is recurrent, intermittent, or constant.
 9. Whether the noise is produced by a commercial or noncommercial activity.
 10. Whether the nature of the noise is usual or unusual.
 11. Whether the noise is natural or unnatural.
- B. It is unlawful for any person to make, continue, or cause to be made or continued any noise disturbance.
- C. Any noise plainly audible through partitions common to two dwelling units within a building shall be prohibited.

(Ord. 7489 § 24, 2019; Ord. 7341 §6, 2016; Ord. 6959 §2, 2007; Ord. 6328 § 1, 1996; Ord. 6273 § 1 (part), 1996)

7.35.020 - Exemptions.

The following activities shall be exempt from the provisions of this title:

- A. *Emergency work.* The provisions of this title shall not apply to the emission of sound for the purpose of alerting persons to the existence of an emergency or in the performance of emergency work.
- B. *School events.* Sanctioned school activities conducted on public or private school grounds including but not limited to school athletic and entertainment events are exempted from the provisions of this chapter conducted between the hours of 7:00 a.m. and 11:00 p.m.
- C. *Federal or State preempted activities.* The provisions of this Chapter shall not apply to any other activity the noise level of which is regulated by state or federal law.
- D. *Minor maintenance to residential property.* The provisions of this title shall not apply to noise sources associated with minor maintenance to property used for residential purposes, provided the activities take place between the hours of 7:00 a.m. and 10:00 p.m.
- E. *Right-of-way construction.* The provisions of this title shall not apply to any work performed in the City right-of-ways when, in the opinion of the Public Works Director or his designee, such work will create traffic congestion and/or hazardous or unsafe conditions.
- F. *Public health, welfare and safety activities.* The provisions of this title shall not apply to construction maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including but not limited to, trash collection, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of damaged poles, removal of abandoned vehicles, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc.
- G. *Construction.* Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.
- H. *Warning devices.* Warning devices necessary for the protection of public safety, as for example fire, police, and ambulance sirens, including the testing of such devices, are exempted from the provisions of this title.

- I. *Agriculture*. Any agricultural activity, operation, or facility, or appurtenances thereof (e.g., wind machines), or maintained for commercial purposes, and in a manner consistent with proper and accepted customs and as allowed under California Civil Code Section 3482 as amended from time to time.

(Ord. 7489 § 25, 2019; Ord. 7341 § 6, 2016; Ord. 6917 § 1, 2006; Ord. 6328 § 2, 1996; Ord. 6273 § 1 (part), 1996)

Chapter 7.40 - VARIANCE PROCEDURE

7.40.010 - Variance procedure.

- A. The Community & Economic Development Director is authorized to grant variances for exemption from any provision of this title, and may limit area of applicability, noise levels, time limits, and other terms and conditions determined appropriate to protect the public health, safety, and welfare. The provisions of this section shall in no way affect the duty to obtain any permit or license required by law for such activities.
- B. Any person seeking a variance pursuant to this section shall file an application with the Community & Economic Development Director. The application shall be signed by the property owner or owner's representative using forms supplied by the Community & Economic Development Department-Planning Division. The application shall contain information which demonstrates that bringing the source of the sound or activity into compliance with this title would constitute an unreasonable hardship to the applicant, the community, or other persons. The Community & Economic Development Director may require additional information if it is necessary to make a determination regarding the variance request. The application shall be accompanied by a fee established by resolution of the City Council.
- C. A separate application shall be filed for each noise source; provided, however, several mobile sources under common ownership or several fixed sources on a single property may be combined into one application. Any person who claims to be adversely affected by the allowance of the variance may file a statement with the Community & Economic Development Director containing any information to support his claim. If the Community & Economic Development Director determines that a sufficient controversy exists regarding a variance application, the variance may be set for public hearing before the Planning Commission.
- D. Public notice of the consideration of a proposed variance from the standards of this title shall be provided by the Community & Economic Development Director by mailing such notice to property owners within 300 feet of the exterior boundaries of the property under consideration. The notice shall invite interested persons to notify the Planning Division of any concerns or comments within ten days of the date of the notice.
- E. In determining whether to grant or deny the application, the Community & Economic Development Director or the Planning Commission shall consider comments received from property owners within 300 feet, hardship on the applicant, the community, or other persons affected and property affected and any other adverse impacts. The requested variance may be granted in whole or in part and upon such terms and conditions as it deems necessary if, from the facts presented on the application, the Community & Economic Development Director or the Planning Commission finds that:
1. The strict application of the provisions of this title would result in practical difficulties or unnecessary hardships inconsistent with the general purpose of this Title;
 2. There are exceptional circumstances or conditions applicable to the property involved or to the intended use or development of the property that do not apply generally to other property in the same zone or neighborhood;

3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the proposed improvements in the zone or neighborhood in which the property is located;
4. The granting of such variance will not be contrary to the objectives of any part of the adopted General Plan.

F. A variance shall be granted by a notice to the applicant containing all the necessary conditions, including any time limits on the permitted activity. The variance shall not become effective until all the conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this title for which the variance was granted.

G. A variance shall be valid for a period not exceeding one year after the date on which it was granted. Applications for extensions of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances.

H. In the event the Community & Economic Development Director does not approve an application for a variance within ten days after the application is filed it shall be placed on the agenda of the next regularly scheduled Planning Commission, unless the Commission refers the matter to the City Council.

(Ord. 7489 § 26, 2019; Ord. 7341 § 6, 2016; Ord. 6967 § 7, 2007; Ord. 6462 § 8-10, 1999; Ord. 6273 § 1 (part), 1996)

7.40.020 - Appeals.

Any person aggrieved by the approval or disapproval of a variance, may appeal the decision of the Community & Economic Development Director or Planning Commission to the City Council within ten days after the date of such approval or disapproval. The City Council shall hold a hearing thereon, upon notice to the applicant, considering the same criteria presented to the Community & Economic Development Director.

(Ord. 7489 § 27, 2019; Ord. 6462 § 11, 1999; Ord. 6273 § 1 (part), 1996)

Chapter 7.45 - SEVERABILITY

7.45.010 - Severability.

If any section, subsection, sentence, clause or phrase in this title is for any reason held to be invalid or unconstitutional by decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this title. The City Council hereby declares that it would have passed this title and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more other sections, subsections, clauses or phrases may be declared invalid or unconstitutional.

(Ord. 6328 § 3, 1996)

APPENDIX 3.3:

COUNTY OF RIVERSIDE MUNICIPAL CODE

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Chapter 9.52 - NOISE REGULATION

Sections:

9.52.010 - Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

(Ord. 847 § 1, 2006)

9.52.020 - Exemptions.

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

- A. Facilities owned or operated by or for a governmental agency;
- B. Capital improvement projects of a governmental agency;
- C. The maintenance or repair of public properties;
- D. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;
- E. Public or private schools and school-sponsored activities;
- F. Agricultural operations on land designated "Agriculture" in the Riverside County general plan, or land zoned A-1 (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;
- G. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Riverside County Ordinance No. 348;
- H. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;
- I. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:
 1. Construction does not occur between the hours of six p.m. and six a.m. during the months of June through September, and
 2. Construction does not occur between the hours of six p.m. and seven a.m. during the months of October through May;
- J. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of seven a.m. and eight p.m.;
- K. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;
- L. Heating and air conditioning equipment;
- M. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

N. The discharge of firearms consistent with all state laws.

(Ord. 847 § 2, 2006)

9.52.030 - Definitions.

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

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

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

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

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

"Land use permit" means a discretionary permit issued by Riverside County pursuant to Riverside County Ordinance No. 348.

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

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

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

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

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

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

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

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

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

"Sound level meter" means an instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data.

(Ord. 847 § 3, 2006)

9.52.040 - General sound level standards.

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

TABLE 1
Sound Level Standards (Db L_{max})

| GENERAL PLAN FOUNDATION COMPONENT | GENERAL PLAN LAND USE DESIGNATION | GENERAL PLAN LAND USE DESIGNATION NAME | DENSITY | MAXIMUM DECIBEL LEVEL | |
|-----------------------------------|-----------------------------------|--|---------|-----------------------|------------|
| | | | | 7 am—10 pm | 10 pm—7 am |
| Community Development | EDR | Estate Density Residential | 2 AC | 55 | 45 |
| | VLDR | Very Low Density Residential | 1 AC | 55 | 45 |
| | LDR | Low Density Residential | 1/2 AC | 55 | 45 |
| | MDR | Medium Density Residential | 2—5 | 55 | 45 |
| | MHDR | Medium High Density Residential | 5—8 | 55 | 45 |
| | HDR | High Density Residential | 8—14 | 55 | 45 |
| | VHDR | Very High Density Residential | 14—20 | 55 | 45 |
| | H'TDR | Highest Density Residential | 20+ | 55 | 45 |
| | CR | Retail Commercial | | 65 | 55 |
| | CO | Office Commercial | | 65 | 55 |
| | CT | Tourist Commercial | | 65 | 55 |

| | | | | | |
|-----------------|------|--------------------------------|--------|----|----|
| | CC | Community Center | | 65 | 55 |
| | LI | Light Industrial | | 75 | 55 |
| | HI | Heavy Industrial | | 75 | 75 |
| | BP | Business Park | | 65 | 45 |
| | PF | Public Facility | | 65 | 45 |
| | SP | Specific Plan-Residential | | 55 | 45 |
| | | Specific Plan-Commercial | | 65 | 55 |
| | | Specific Plan-Light Industrial | | 75 | 55 |
| | | Specific Plan-Heavy Industrial | | 75 | 75 |
| Rural Community | EDR | Estate Density Residential | 2 AC | 55 | 45 |
| | VLDR | Very Low Density Residential | 1 AC | 55 | 45 |
| | LDR | Low Density Residential | 1/2 AC | 55 | 45 |
| Rural | RR | Rural Residential | 5 AC | 45 | 45 |
| | RM | Rural Mountainous | 10 AC | 45 | 45 |
| | RD | Rural Desert | 10 AC | 45 | 45 |
| Agriculture | AG | Agriculture | 10 AC | 45 | 45 |
| Open Space | C | Conservation | | 45 | 45 |
| | CH | Conservation Habitat | | 45 | 45 |

| | | | | | |
|--|-----|-------------------|-------|----|----|
| | REC | Recreation | | 45 | 45 |
| | RUR | Rural | 20 AC | 45 | 45 |
| | W | Watershed | | 45 | 45 |
| | MR | Mineral Resources | | 75 | 45 |

(Ord. 847 § 4, 2006)

9.52.050 - Sound level measurement methodology.

Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in Section 9.52.080 of this chapter. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually.

(Ord. 847 § 5, 2006)

9.52.060 - Special sound sources standards.

The general sound level standards set forth in Section 9.52.040 of this chapter apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitutes separate violations of this chapter:

A. Motor Vehicles.

1. Off-Highway Vehicles.

- a. No person shall operate an off-highway vehicle unless it is equipped with a USDA-qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.
- b. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than ninety-six (96) dBA if the vehicle was manufactured on or after January 1, 1986 or is not more than one hundred one (101) dBA if the vehicle was manufactured before January 1, 1986. For purposes of this subsection, emitted noise shall be measured a distance of twenty (20) inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

- 2. Sound Systems. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of ten p.m. and eight a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate

a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than one hundred (100) feet from the vehicle.

- B. Power Tools and Equipment. No person shall operate any power tools or equipment between the hours of ten p.m. and eight a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than one hundred (100) feet from the power tools or equipment.
- C. Audio Equipment. No person shall operate any audio equipment, whether portable or not, between the hours of ten p.m. and eight a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than one hundred (100) feet from the equipment.
- D. Sound-Amplifying Equipment and Live Music. No person shall install, use or operate sound-amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control:
 - 1. Sound-amplifying equipment or live music is prohibited between the hours of ten p.m. and eight a.m.
 - 2. Sound emanating from sound-amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than two hundred (200) feet from the equipment or music.

(Ord. 847 § 6, 2006)

9.52.070 - Exceptions.

Exceptions may be requested from the standards set forth in Section 9.52.040 or 9.52.060 of this chapter and may be characterized as construction-related, single-event or continuous-events exceptions.

- A. Application and Processing.
 - 1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the director of building and safety on forms provided by the building and safety department and shall be accompanied by the appropriate filing fee. No public hearing is required.
 - 2. Single-Event Exceptions. An application for a single-event exception shall be made to and considered by the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. No public hearing is required.
 - 3. Continuous-Events Exceptions. An application for a continuous-events exception shall be made to the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. Upon receipt of an application for a continuous-events exception, the planning director shall set the matter for public hearing before the planning commission, notice of which shall be given as provided in Section 18.26c of Riverside County Ordinance No. 348. Notwithstanding the above, an application for a continuous-events exception that is associated with an application for a land use permit shall be processed concurrently with the land use permit in the same manner that the land use permit is required to be processed.

- B. Requirements for Approval. The appropriate decisionmaking body or officer shall not approve an exception application unless the applicant demonstrates that the activities described in the application would not be detrimental to the health, safety or general welfare of the community. In determining whether activities are detrimental to the health, safety or general welfare of the community, the appropriate decisionmaking body or officer shall consider such factors as the proposed duration of the activities and their location in relation to sensitive receptors. If an exception application is approved, reasonable conditions may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours.
- C. Appeals. The director of building and safety's decision on an application for a construction-related exception is considered final. The planning director's decision on an application for a single-event exception is considered final. After making a decision on an application for a continuous-events exception, the appropriate decisionmaking body or officer shall mail notice of the decision to the applicant. Within ten (10) calendar days after the mailing of such notice, the applicant or an interested person may appeal the decision to the board of supervisors. Upon receipt of an appeal and payment of the appropriate appeal fee, the clerk of the board shall set the matter for hearing not less than five days nor more than thirty (30) days thereafter and shall give written notice of the hearing in the same manner as notice of the hearing was given by the appropriate hearing officer or body. The board of supervisors shall render its decision within thirty (30) days after the appeal hearing is closed.
- D. Effect of a Pending Continuous-Events Exception Application. For a period of one hundred eighty (180) days from the effective date of this chapter, no person creating any sound prohibited by this chapter shall be considered in violation of this chapter if the sound is related to a use that is operating pursuant to an approved land use permit, if an application for a continuous-events exception has been filed to sanction the sound and if a decision on the application is pending.

(Ord. 847 § 7, 2006)

9.52.080 - Enforcement.

The Riverside County sheriff and code enforcement shall have the primary responsibility for enforcing this chapter; provided, however, the sheriff and code enforcement may be assisted by the public health department. Violations shall be prosecuted as described in Section 9.52.100 of this chapter, but nothing in this chapter shall prevent the sheriff, code enforcement or the department of public health from engaging in efforts to obtain voluntary compliance by means of warnings, notices, or educational programs.

(Ord. 847.1 § 1, 2007; Ord. 847 § 8, 2006)

9.52.090 - Duty to cooperate.

No person shall refuse to cooperate with, or obstruct, the enforcement officials identified in Section 9.52.080 of this chapter when they are engaged in the process of enforcing the provisions of this chapter. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this chapter.

(Ord. 847 § 9, 2006)

9.52.100 - Violations and penalties.

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

- A. For the first violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be five hundred dollars (\$500.00).
- B. For the second violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be seven hundred fifty dollars (\$750.00).
- C. For any further violations within a one hundred eighty (180) day period, the minimum mandatory fine shall be one thousand dollars (\$1,000.00) or imprisonment in the county jail for a period not exceeding six months, or both.

(Ord. 847 § 10, 2006)

APPENDIX 5.1:
STUDY AREA PHOTOS

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JN: 14064 Study Area Photos



L1-E

33, 54' 48.180000"117, 18' 49.890000"



L1-N

33, 54' 48.140000"117, 18' 50.050000"



L1-S

33, 54' 48.220000"117, 18' 49.830000"



L1-W

33, 54' 48.240000"117, 18' 49.940000"



L2-E

33, 54' 48.290000"117, 18' 26.570000"



L2-N

33, 54' 48.290000"117, 18' 26.570000"

JN: 14064 Study Area Photos



L2-S
33, 54' 48.290000"117, 18' 26.570000"



L2-W
33, 54' 48.290000"117, 18' 26.570000"



L3-E
33, 54' 48.360000"117, 18' 9.490000"



L3-N
33, 54' 48.320000"117, 18' 9.460000"



L3-S
33, 54' 48.360000"117, 18' 9.490000"



L3-W
33, 54' 48.390000"117, 18' 9.490000"

JN: 14064 Study Area Photos



L4-E
33, 54' 12.760000"117, 17' 37.870000"



L4-N
33, 54' 12.780000"117, 17' 37.870000"



L4-S
33, 54' 12.760000"117, 17' 37.870000"



L4-W
33, 54' 12.760000"117, 17' 37.900000"



L5-E
33, 54' 6.060000"117, 17' 56.080000"



L5-N
33, 54' 6.100000"117, 17' 56.140000"

JN: 14064 Study Area Photos



L5-S
33, 54' 6.050000" 117, 17' 56.110000"



L5-W
33, 54' 6.100000" 117, 17' 56.110000"



L6-E
33, 53' 53.070000" 117, 18' 14.210000"



L6-N
33, 53' 53.110000" 117, 18' 14.210000"



L6-S
33, 53' 53.070000" 117, 18' 14.210000"



L6-W
33, 53' 53.080000" 117, 18' 14.210000"

JN: 14064 Study Area Photos



L7-E
33, 54' 1.540000"117, 19' 3.130000"



L7-N
33, 54' 1.540000"117, 19' 3.130000"



L7-S
33, 54' 1.530000"117, 19' 3.150000"



L7-W
33, 54' 1.540000"117, 19' 3.130000"



L8-E
33, 54' 14.590000"117, 19' 13.150000"



L8-N
33, 54' 14.590000"117, 19' 13.180000"

JN: 14064 Study Area Photos



L8-S

33, 54' 14.590000"117, 19' 13.180000"



L8-W

33, 54' 14.590000"117, 19' 13.180000"

APPENDIX 5.2:
NOISE LEVEL MEASUREMENT WORKSHEETS

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24-Hour Noise Level Measurement Summary

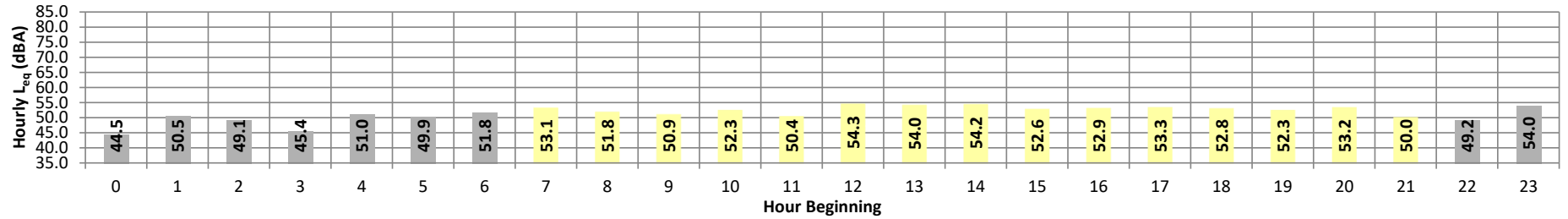
Date: Friday, July 23, 2021
Project: West Campus Upper Plateau

Location: L1- Located north of the Project site near single-family residence at 7602 Greenock Way.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

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 | 44.5 | 49.1 | 42.6 | 48.7 | 48.1 | 47.1 | 46.5 | 44.6 | 43.9 | 43.1 | 42.9 | 42.7 | 44.5 | 10.0 | 54.5 |
| | 1 | 50.5 | 61.4 | 41.8 | 61.2 | 61.0 | 59.3 | 55.0 | 46.5 | 44.8 | 42.3 | 42.1 | 41.9 | 50.5 | 10.0 | 60.5 |
| | 2 | 49.1 | 60.4 | 42.2 | 60.1 | 59.8 | 57.2 | 53.3 | 44.6 | 43.5 | 42.6 | 42.4 | 42.3 | 49.1 | 10.0 | 59.1 |
| | 3 | 45.4 | 52.3 | 42.1 | 52.0 | 51.6 | 50.2 | 49.2 | 45.2 | 43.6 | 42.5 | 42.4 | 42.2 | 45.4 | 10.0 | 55.4 |
| | 4 | 51.0 | 60.2 | 43.5 | 60.0 | 59.7 | 58.8 | 57.0 | 49.9 | 45.0 | 44.0 | 44.0 | 43.8 | 51.0 | 10.0 | 61.0 |
| | 5 | 49.9 | 59.9 | 46.7 | 57.5 | 56.5 | 54.5 | 53.3 | 49.4 | 48.0 | 47.1 | 46.9 | 46.8 | 49.9 | 10.0 | 59.9 |
| | 6 | 51.8 | 59.8 | 47.3 | 59.5 | 59.0 | 57.3 | 55.7 | 51.9 | 49.4 | 47.8 | 47.6 | 47.4 | 51.8 | 10.0 | 61.8 |
| Day | 7 | 53.1 | 69.0 | 44.6 | 68.1 | 66.4 | 62.6 | 60.4 | 53.7 | 48.0 | 45.3 | 45.0 | 44.7 | 53.1 | 0.0 | 53.1 |
| | 8 | 51.8 | 74.4 | 45.3 | 74.1 | 73.9 | 73.3 | 72.5 | 66.3 | 58.1 | 46.7 | 46.0 | 45.6 | 51.8 | 0.0 | 51.8 |
| | 9 | 50.9 | 71.1 | 43.4 | 70.5 | 69.7 | 66.9 | 64.6 | 57.8 | 51.1 | 44.7 | 44.2 | 43.6 | 50.9 | 0.0 | 50.9 |
| | 10 | 52.3 | 60.9 | 43.2 | 60.5 | 59.9 | 58.5 | 57.1 | 52.9 | 49.4 | 44.3 | 43.8 | 43.4 | 52.3 | 0.0 | 52.3 |
| | 11 | 50.4 | 58.9 | 41.5 | 58.6 | 58.3 | 56.8 | 55.2 | 50.9 | 46.6 | 42.3 | 42.0 | 41.7 | 50.4 | 0.0 | 50.4 |
| | 12 | 54.3 | 64.5 | 43.1 | 63.9 | 63.3 | 61.8 | 60.7 | 56.7 | 52.7 | 45.2 | 44.5 | 44.3 | 54.3 | 0.0 | 54.3 |
| | 13 | 54.0 | 64.7 | 45.1 | 64.3 | 63.7 | 62.2 | 60.2 | 54.7 | 50.5 | 46.2 | 45.7 | 45.2 | 54.0 | 0.0 | 54.0 |
| | 14 | 54.2 | 67.3 | 46.6 | 67.0 | 66.7 | 64.2 | 61.2 | 54.7 | 50.6 | 47.4 | 47.1 | 46.7 | 54.2 | 0.0 | 54.2 |
| | 15 | 52.6 | 66.9 | 45.6 | 66.6 | 65.9 | 64.2 | 61.9 | 52.6 | 48.5 | 46.4 | 46.1 | 45.7 | 52.6 | 0.0 | 52.6 |
| | 16 | 52.9 | 62.0 | 46.4 | 61.3 | 60.4 | 58.6 | 57.1 | 53.3 | 50.0 | 47.3 | 47.0 | 46.5 | 52.9 | 0.0 | 52.9 |
| | 17 | 53.3 | 62.7 | 45.7 | 62.3 | 61.6 | 60.0 | 58.3 | 52.7 | 49.2 | 46.6 | 46.2 | 45.9 | 53.3 | 0.0 | 53.3 |
| | 18 | 52.8 | 62.9 | 44.0 | 62.3 | 61.7 | 59.4 | 57.7 | 52.3 | 48.5 | 44.9 | 44.5 | 44.1 | 52.8 | 0.0 | 52.8 |
| | 19 | 52.3 | 67.8 | 43.2 | 67.3 | 66.5 | 64.3 | 61.9 | 53.9 | 48.8 | 44.1 | 43.7 | 43.3 | 52.3 | 5.0 | 57.3 |
| | 20 | 53.2 | 62.9 | 42.2 | 62.5 | 62.0 | 60.7 | 58.7 | 53.4 | 46.7 | 43.0 | 42.6 | 42.3 | 53.2 | 5.0 | 58.2 |
| | 21 | 50.0 | 60.3 | 41.7 | 59.9 | 59.3 | 56.6 | 54.6 | 49.3 | 45.0 | 42.4 | 42.1 | 41.8 | 50.0 | 5.0 | 55.0 |
| Night | 22 | 49.2 | 58.3 | 42.9 | 58.0 | 57.6 | 56.2 | 54.3 | 48.3 | 45.3 | 43.4 | 43.2 | 43.0 | 49.2 | 10.0 | 59.2 |
| | 23 | 54.0 | 65.6 | 42.5 | 64.7 | 64.0 | 61.5 | 59.2 | 51.4 | 45.8 | 42.9 | 42.8 | 42.6 | 54.0 | 10.0 | 64.0 |
| Day | Min | 50.0 | 58.9 | 41.5 | 58.6 | 58.3 | 56.6 | 54.6 | 49.3 | 45.0 | 42.3 | 42.0 | 41.7 | 24-Hour | L_{eq} (dBA) | Nighttime |
| | Max | 54.3 | 74.4 | 46.6 | 74.1 | 73.9 | 73.3 | 72.5 | 66.3 | 58.1 | 47.4 | 47.1 | 46.7 | | | |
| Energy Average | | 52.7 | Average: | | 64.6 | 64.0 | 62.0 | 60.1 | 54.3 | 49.6 | 45.1 | 44.7 | 44.3 | 52.0 | 52.7 | 50.3 |
| Night | Min | 44.5 | 49.1 | 41.8 | 48.7 | 48.1 | 47.1 | 46.5 | 44.6 | 43.5 | 42.3 | 42.1 | 41.9 | | | |
| | Max | 54.0 | 65.6 | 47.3 | 64.7 | 64.0 | 61.5 | 59.2 | 51.9 | 49.4 | 47.8 | 47.6 | 47.4 | | | |
| Energy Average | | 50.3 | Average: | | 58.0 | 57.5 | 55.8 | 53.7 | 48.0 | 45.5 | 44.0 | 43.8 | 43.6 | | | |

24-Hour Noise Level Measurement Summary

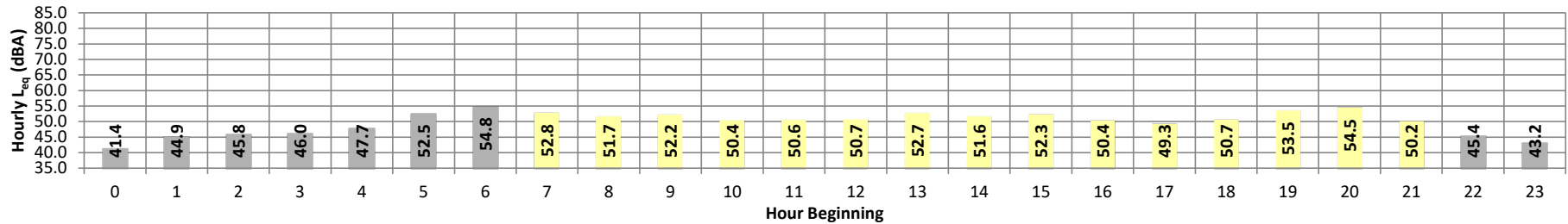
Date: Thursday, July 22, 2021
Project: West Campus Upper Plateau

Location: L2 - Located north of the Project site near single-family residence at 14210 Rancho Vista Road.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

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 | 41.4 | 49.6 | 38.7 | 49.3 | 48.9 | 46.5 | 44.3 | 40.4 | 39.8 | 39.1 | 39.0 | 38.8 | 41.4 | 10.0 | 51.4 |
| | 1 | 44.9 | 69.3 | 39.2 | 68.4 | 66.8 | 61.3 | 56.0 | 45.5 | 41.6 | 39.7 | 39.5 | 39.3 | 44.9 | 10.0 | 54.9 |
| | 2 | 45.8 | 55.6 | 40.3 | 54.8 | 54.1 | 52.0 | 50.5 | 44.5 | 42.2 | 40.9 | 40.7 | 40.4 | 45.8 | 10.0 | 55.8 |
| | 3 | 46.0 | 54.4 | 43.1 | 54.1 | 53.2 | 50.0 | 48.1 | 45.6 | 44.7 | 43.7 | 43.5 | 43.3 | 46.0 | 10.0 | 56.0 |
| | 4 | 47.7 | 58.1 | 44.4 | 57.9 | 57.4 | 55.6 | 54.4 | 49.7 | 46.0 | 44.9 | 44.7 | 44.5 | 47.7 | 10.0 | 57.7 |
| | 5 | 52.5 | 58.9 | 46.6 | 57.9 | 57.2 | 56.0 | 55.5 | 53.5 | 51.7 | 48.5 | 47.8 | 47.0 | 52.5 | 10.0 | 62.5 |
| Day | 6 | 54.8 | 65.4 | 45.9 | 64.9 | 64.1 | 61.5 | 59.5 | 55.8 | 53.1 | 48.5 | 47.6 | 46.4 | 54.8 | 10.0 | 64.8 |
| | 7 | 52.8 | 65.6 | 43.2 | 65.2 | 64.5 | 61.3 | 59.3 | 54.4 | 50.7 | 45.4 | 44.6 | 43.6 | 52.8 | 0.0 | 52.8 |
| | 8 | 51.7 | 69.1 | 46.2 | 68.7 | 68.5 | 67.8 | 67.2 | 61.7 | 57.9 | 52.2 | 50.4 | 47.3 | 51.7 | 0.0 | 51.7 |
| | 9 | 52.2 | 64.3 | 40.6 | 63.9 | 63.0 | 59.4 | 56.9 | 52.4 | 49.2 | 42.8 | 41.9 | 40.9 | 52.2 | 0.0 | 52.2 |
| | 10 | 50.4 | 59.3 | 41.0 | 58.9 | 58.3 | 56.1 | 54.5 | 51.0 | 47.8 | 43.1 | 42.1 | 41.3 | 50.4 | 0.0 | 50.4 |
| | 11 | 50.6 | 62.3 | 41.5 | 61.8 | 61.2 | 58.3 | 55.7 | 51.1 | 48.1 | 43.5 | 42.7 | 41.9 | 50.6 | 0.0 | 50.6 |
| | 12 | 50.7 | 74.0 | 41.1 | 73.3 | 72.3 | 68.9 | 66.2 | 57.2 | 52.5 | 44.0 | 42.7 | 41.6 | 50.7 | 0.0 | 50.7 |
| | 13 | 52.7 | 66.2 | 41.8 | 65.5 | 64.7 | 62.8 | 61.5 | 57.0 | 50.5 | 43.5 | 42.7 | 42.0 | 52.7 | 0.0 | 52.7 |
| | 14 | 51.6 | 62.2 | 43.2 | 61.2 | 60.1 | 57.2 | 55.5 | 51.8 | 48.6 | 44.6 | 44.0 | 43.4 | 51.6 | 0.0 | 51.6 |
| | 15 | 52.3 | 62.6 | 45.2 | 61.9 | 60.7 | 57.5 | 55.7 | 52.2 | 49.6 | 46.7 | 46.1 | 45.4 | 52.3 | 0.0 | 52.3 |
| | 16 | 50.4 | 67.2 | 43.8 | 66.6 | 65.8 | 62.4 | 57.5 | 50.2 | 47.2 | 44.5 | 44.2 | 43.9 | 50.4 | 0.0 | 50.4 |
| | 17 | 49.3 | 62.5 | 43.9 | 61.9 | 60.8 | 56.6 | 53.4 | 46.9 | 45.4 | 44.3 | 44.1 | 43.9 | 49.3 | 0.0 | 49.3 |
| | 18 | 50.7 | 64.5 | 42.3 | 64.0 | 63.1 | 61.1 | 59.7 | 53.7 | 48.0 | 43.4 | 42.9 | 42.5 | 50.7 | 0.0 | 50.7 |
| | 19 | 53.5 | 66.9 | 39.8 | 66.3 | 65.6 | 64.2 | 62.8 | 55.1 | 45.0 | 40.6 | 40.3 | 40.0 | 53.5 | 5.0 | 58.5 |
| | 20 | 54.5 | 65.8 | 37.9 | 65.4 | 64.5 | 61.7 | 59.8 | 53.1 | 45.4 | 39.3 | 38.5 | 38.1 | 54.5 | 5.0 | 59.5 |
| 21 | 50.2 | 60.6 | 37.5 | 59.8 | 59.0 | 56.4 | 54.8 | 51.0 | 44.3 | 38.7 | 38.0 | 37.6 | 50.2 | 5.0 | 55.2 | |
| Night | 22 | 45.4 | 58.1 | 37.9 | 57.4 | 56.1 | 52.1 | 48.5 | 43.1 | 40.1 | 38.5 | 38.2 | 38.1 | 45.4 | 10.0 | 55.4 |
| | 23 | 43.2 | 55.2 | 38.0 | 54.7 | 53.5 | 49.6 | 46.2 | 39.9 | 39.2 | 38.4 | 38.3 | 38.1 | 43.2 | 10.0 | 53.2 |
| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} (dBA) | | |
| Day | Min | 49.3 | 59.3 | 37.5 | 58.9 | 58.3 | 56.1 | 53.4 | 46.9 | 44.3 | 38.7 | 38.0 | 37.6 | 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| | Max | 54.5 | 74.0 | 46.2 | 73.3 | 72.3 | 68.9 | 67.2 | 61.7 | 57.9 | 52.2 | 50.4 | 47.3 | | | |
| Energy Average | | 51.8 | Average: | | 64.3 | 63.5 | 60.8 | 58.7 | 53.3 | 48.7 | 43.8 | 43.0 | 42.2 | | | |
| Night | Min | 41.4 | 49.6 | 37.9 | 49.3 | 48.9 | 46.5 | 44.3 | 39.9 | 39.2 | 38.4 | 38.2 | 38.1 | 50.9 | 51.8 | 49.0 |
| | Max | 54.8 | 69.3 | 46.6 | 68.4 | 66.8 | 61.5 | 59.5 | 55.8 | 53.1 | 48.5 | 47.8 | 47.0 | | | |
| Energy Average | | 49.0 | Average: | | 57.7 | 56.8 | 53.8 | 51.4 | 46.4 | 44.3 | 42.5 | 42.1 | 41.8 | | | |

24-Hour Noise Level Measurement Summary

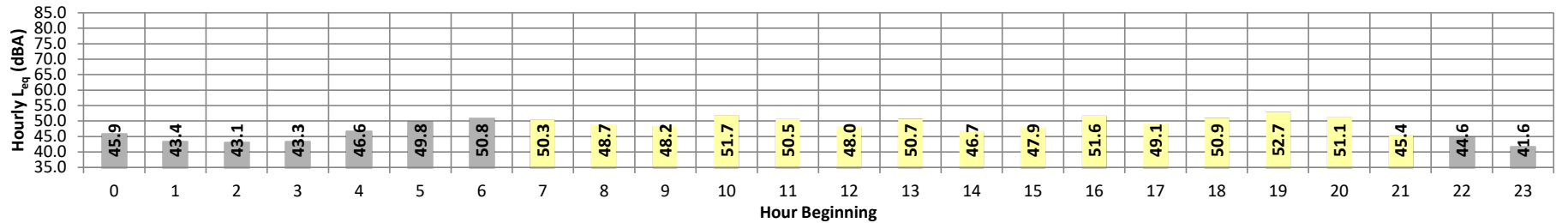
Date: Thursday, July 22, 2021
Project: West Campus Upper Plateau

Location: L3 - Located north of the Project site near single-family residence at 20630 Camino Del Sol.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} | Adj. | Adj. L_{eq} |
|------------------|-------------|----------------------------|-----------------------------|-----------------------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|----------------------------------|-----------------------|-------------------------|
| Night | 0 | 45.9 | 61.6 | 39.2 | 61.1 | 60.8 | 59.5 | 58.4 | 49.3 | 41.9 | 39.9 | 39.6 | 39.3 | 45.9 | 10.0 | 55.9 |
| | 1 | 43.4 | 51.6 | 38.7 | 50.5 | 49.8 | 48.5 | 47.7 | 43.9 | 40.8 | 39.4 | 39.2 | 38.8 | 43.4 | 10.0 | 53.4 |
| | 2 | 43.1 | 51.5 | 40.0 | 51.0 | 50.3 | 48.0 | 46.1 | 42.3 | 41.5 | 40.5 | 40.4 | 40.1 | 43.1 | 10.0 | 53.1 |
| | 3 | 43.3 | 50.8 | 40.2 | 50.6 | 50.2 | 48.3 | 46.3 | 42.6 | 41.7 | 40.8 | 40.6 | 40.3 | 43.3 | 10.0 | 53.3 |
| | 4 | 46.6 | 58.4 | 42.4 | 57.9 | 57.2 | 56.0 | 55.3 | 49.6 | 45.4 | 43.0 | 42.7 | 42.5 | 46.6 | 10.0 | 56.6 |
| | 5 | 49.8 | 63.7 | 44.1 | 62.8 | 62.0 | 60.2 | 58.8 | 53.6 | 50.1 | 44.7 | 44.5 | 44.2 | 49.8 | 10.0 | 59.8 |
| Day | 6 | 50.8 | 62.7 | 45.7 | 61.9 | 61.1 | 58.8 | 56.8 | 51.1 | 48.5 | 46.6 | 46.3 | 45.9 | 50.8 | 10.0 | 60.8 |
| | 7 | 50.3 | 65.5 | 41.5 | 64.8 | 63.7 | 60.9 | 59.1 | 53.0 | 47.8 | 42.5 | 42.1 | 41.7 | 50.3 | 0.0 | 50.3 |
| | 8 | 48.7 | 66.4 | 45.3 | 65.7 | 65.2 | 63.8 | 63.0 | 59.1 | 54.1 | 47.4 | 46.1 | 45.5 | 48.7 | 0.0 | 48.7 |
| | 9 | 48.2 | 65.9 | 38.8 | 64.8 | 63.4 | 60.9 | 59.0 | 52.4 | 46.8 | 40.3 | 39.6 | 39.1 | 48.2 | 0.0 | 48.2 |
| | 10 | 51.7 | 62.2 | 39.9 | 61.5 | 60.9 | 59.1 | 57.9 | 52.5 | 46.8 | 41.4 | 40.7 | 40.1 | 51.7 | 0.0 | 51.7 |
| | 11 | 50.5 | 62.1 | 42.8 | 61.7 | 61.1 | 58.7 | 57.4 | 54.2 | 49.9 | 44.5 | 43.6 | 43.1 | 50.5 | 0.0 | 50.5 |
| | 12 | 48.0 | 65.1 | 38.5 | 64.8 | 64.4 | 63.1 | 61.3 | 48.9 | 45.1 | 39.9 | 39.3 | 38.7 | 48.0 | 0.0 | 48.0 |
| | 13 | 50.7 | 67.1 | 41.2 | 66.7 | 66.2 | 64.2 | 62.2 | 55.8 | 46.6 | 42.1 | 41.7 | 41.3 | 50.7 | 0.0 | 50.7 |
| | 14 | 46.7 | 57.2 | 41.9 | 56.4 | 55.8 | 54.0 | 52.0 | 49.0 | 45.4 | 42.7 | 42.5 | 42.0 | 46.7 | 0.0 | 46.7 |
| | 15 | 47.9 | 55.4 | 44.2 | 54.9 | 54.3 | 52.6 | 51.3 | 48.0 | 46.2 | 44.8 | 44.6 | 44.3 | 47.9 | 0.0 | 47.9 |
| | 16 | 51.6 | 66.0 | 45.1 | 65.3 | 64.8 | 63.6 | 62.7 | 58.7 | 55.3 | 48.9 | 45.8 | 45.2 | 51.6 | 0.0 | 51.6 |
| | 17 | 49.1 | 60.4 | 44.4 | 59.4 | 58.9 | 57.8 | 57.0 | 52.7 | 47.8 | 45.1 | 44.8 | 44.5 | 49.1 | 0.0 | 49.1 |
| | 18 | 50.9 | 66.8 | 43.4 | 66.0 | 65.3 | 63.8 | 62.5 | 57.2 | 50.3 | 45.0 | 44.4 | 43.7 | 50.9 | 0.0 | 50.9 |
| | 19 | 52.7 | 69.6 | 41.2 | 68.8 | 68.1 | 66.5 | 65.1 | 58.5 | 50.2 | 42.7 | 42.1 | 41.4 | 52.7 | 5.0 | 57.7 |
| | 20 | 51.1 | 69.2 | 39.7 | 68.6 | 68.1 | 67.0 | 65.9 | 61.4 | 54.3 | 41.2 | 40.6 | 39.9 | 51.1 | 5.0 | 56.1 |
| 21 | 45.4 | 54.5 | 39.6 | 54.1 | 53.6 | 51.1 | 49.1 | 45.2 | 42.7 | 40.4 | 40.0 | 39.7 | 45.4 | 5.0 | 50.4 | |
| Night | 22 | 44.6 | 51.4 | 40.5 | 51.1 | 50.6 | 49.1 | 48.0 | 45.4 | 42.9 | 41.1 | 40.9 | 40.6 | 44.6 | 10.0 | 54.6 |
| | 23 | 41.6 | 47.8 | 38.6 | 47.3 | 46.8 | 45.7 | 44.6 | 41.6 | 40.4 | 39.2 | 39.0 | 38.8 | 41.6 | 10.0 | 51.6 |
| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} (dBA) | | |
| Day | Min | 45.4 | 54.5 | 38.5 | 54.1 | 53.6 | 51.1 | 49.1 | 45.2 | 42.7 | 39.9 | 39.3 | 38.7 | 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| | Max | 52.7 | 69.6 | 45.3 | 68.8 | 68.1 | 67.0 | 65.9 | 61.4 | 55.3 | 48.9 | 46.1 | 45.5 | | | |
| Energy Average | | 50.0 | Average: | | 62.9 | 62.2 | 60.5 | 59.0 | 53.8 | 48.6 | 43.3 | 42.5 | 42.0 | | | |
| Night | Min | 41.6 | 47.8 | 38.6 | 47.3 | 46.8 | 45.7 | 44.6 | 41.6 | 40.4 | 39.2 | 39.0 | 38.8 | 49.0 | 50.0 | 46.5 |
| | Max | 50.8 | 63.7 | 45.7 | 62.8 | 62.0 | 60.2 | 58.8 | 53.6 | 50.1 | 46.6 | 46.3 | 45.9 | | | |
| Energy Average | | 46.5 | Average: | | 54.9 | 54.3 | 52.7 | 51.3 | 46.6 | 43.7 | 41.7 | 41.4 | 41.2 | | | |

24-Hour Noise Level Measurement Summary

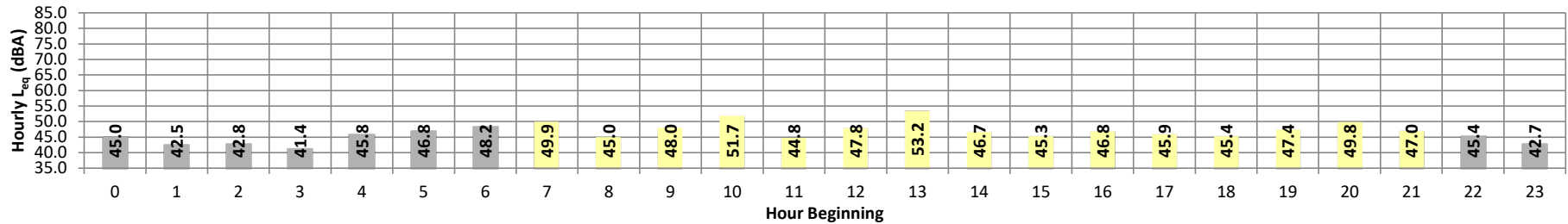
Date: Thursday, July 22, 2021
Project: West Campus Upper Plateau

Location: L4 - Located south of the Project site near single-family residence at 20870 Indigo Point.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} | Adj. | Adj. L_{eq} |
|------------------|-------------|----------------------------|-----------------------------|-----------------------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|----------------------------------|-----------------------|-------------------------|
| Night | 0 | 45.0 | 47.8 | 42.9 | 47.4 | 47.2 | 46.7 | 46.3 | 45.3 | 44.8 | 43.8 | 43.5 | 43.1 | 45.0 | 10.0 | 55.0 |
| | 1 | 42.5 | 45.2 | 41.2 | 45.0 | 44.7 | 44.0 | 43.6 | 42.8 | 42.2 | 41.6 | 41.5 | 41.3 | 42.5 | 10.0 | 52.5 |
| | 2 | 42.8 | 47.1 | 41.3 | 46.6 | 46.1 | 45.0 | 44.4 | 42.9 | 42.4 | 41.7 | 41.6 | 41.4 | 42.8 | 10.0 | 52.8 |
| | 3 | 41.4 | 43.5 | 40.2 | 43.3 | 43.1 | 42.7 | 42.5 | 41.7 | 41.1 | 40.5 | 40.4 | 40.3 | 41.4 | 10.0 | 51.4 |
| | 4 | 45.8 | 52.5 | 41.9 | 52.3 | 52.0 | 51.4 | 50.6 | 45.3 | 43.1 | 42.3 | 42.1 | 42.0 | 45.8 | 10.0 | 55.8 |
| | 5 | 46.8 | 60.3 | 43.0 | 59.7 | 58.7 | 55.2 | 52.3 | 45.3 | 44.1 | 43.4 | 43.3 | 43.1 | 46.8 | 10.0 | 56.8 |
| Day | 6 | 48.2 | 54.3 | 45.0 | 53.7 | 53.2 | 51.9 | 50.8 | 48.8 | 47.2 | 45.7 | 45.5 | 45.2 | 48.2 | 10.0 | 58.2 |
| | 7 | 49.9 | 71.0 | 43.2 | 70.9 | 70.7 | 70.2 | 68.2 | 60.4 | 53.7 | 44.7 | 43.9 | 43.4 | 49.9 | 0.0 | 49.9 |
| | 8 | 45.0 | 60.8 | 42.9 | 60.4 | 60.0 | 58.8 | 57.2 | 52.5 | 50.1 | 43.9 | 43.4 | 43.0 | 45.0 | 0.0 | 45.0 |
| | 9 | 48.0 | 70.7 | 42.1 | 70.0 | 69.3 | 64.5 | 61.1 | 53.1 | 47.4 | 43.4 | 42.8 | 42.3 | 48.0 | 0.0 | 48.0 |
| | 10 | 51.7 | 62.0 | 46.5 | 61.5 | 60.9 | 57.3 | 55.4 | 51.9 | 49.9 | 47.5 | 47.0 | 46.6 | 51.7 | 0.0 | 51.7 |
| | 11 | 44.8 | 56.3 | 38.6 | 55.6 | 54.9 | 52.2 | 49.9 | 46.5 | 43.0 | 39.3 | 39.0 | 38.7 | 44.8 | 0.0 | 44.8 |
| | 12 | 47.8 | 59.1 | 43.2 | 58.4 | 57.5 | 56.0 | 54.6 | 51.2 | 48.7 | 44.4 | 44.0 | 43.3 | 47.8 | 0.0 | 47.8 |
| | 13 | 53.2 | 77.2 | 48.7 | 76.8 | 76.0 | 73.4 | 71.6 | 63.9 | 59.1 | 51.6 | 50.5 | 49.1 | 53.2 | 0.0 | 53.2 |
| | 14 | 46.7 | 63.1 | 39.7 | 62.8 | 62.1 | 60.1 | 58.3 | 51.1 | 45.0 | 40.4 | 40.1 | 39.8 | 46.7 | 0.0 | 46.7 |
| | 15 | 45.3 | 57.6 | 41.6 | 57.0 | 56.1 | 53.6 | 51.7 | 48.0 | 44.2 | 42.3 | 42.0 | 41.7 | 45.3 | 0.0 | 45.3 |
| | 16 | 46.8 | 55.3 | 43.7 | 55.0 | 54.5 | 52.7 | 51.2 | 48.3 | 46.7 | 44.4 | 44.1 | 43.8 | 46.8 | 0.0 | 46.8 |
| | 17 | 45.9 | 52.9 | 42.6 | 52.6 | 52.4 | 50.5 | 48.7 | 46.0 | 44.7 | 43.1 | 42.9 | 42.7 | 45.9 | 0.0 | 45.9 |
| | 18 | 45.4 | 66.4 | 39.9 | 66.1 | 65.7 | 63.9 | 62.1 | 52.3 | 44.6 | 40.6 | 40.3 | 40.0 | 45.4 | 0.0 | 45.4 |
| | 19 | 47.4 | 65.4 | 38.5 | 65.0 | 64.7 | 63.6 | 62.3 | 56.0 | 48.4 | 39.9 | 39.2 | 38.7 | 47.4 | 5.0 | 52.4 |
| | 20 | 49.8 | 60.8 | 38.7 | 60.5 | 60.2 | 59.6 | 58.9 | 53.9 | 45.0 | 39.8 | 39.3 | 38.9 | 49.8 | 5.0 | 54.8 |
| 21 | 47.0 | 52.8 | 44.4 | 52.3 | 51.8 | 50.6 | 49.7 | 47.0 | 46.1 | 44.6 | 44.5 | 44.5 | 47.0 | 5.0 | 52.0 | |
| Night | 22 | 45.4 | 55.5 | 41.8 | 55.0 | 53.9 | 50.9 | 48.1 | 44.0 | 43.0 | 42.2 | 42.0 | 41.8 | 45.4 | 10.0 | 55.4 |
| | 23 | 42.7 | 45.5 | 41.5 | 45.2 | 44.9 | 44.2 | 43.7 | 42.9 | 42.5 | 41.9 | 41.8 | 41.6 | 42.7 | 10.0 | 52.7 |
| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} (dBA) | | |
| Day | Min | 44.8 | 52.8 | 38.5 | 52.3 | 51.8 | 50.5 | 48.7 | 46.0 | 43.0 | 39.3 | 39.0 | 38.7 | 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| | Max | 53.2 | 77.2 | 48.7 | 76.8 | 76.0 | 73.4 | 71.6 | 63.9 | 59.1 | 51.6 | 50.5 | 49.1 | | | |
| Energy Average | | 48.4 | Average: | | 61.7 | 61.1 | 59.1 | 57.4 | 52.1 | 47.8 | 43.3 | 42.9 | 42.4 | | | |
| Night | Min | 41.4 | 43.5 | 40.2 | 43.3 | 43.1 | 42.7 | 42.5 | 41.7 | 41.1 | 40.5 | 40.4 | 40.3 | 47.4 | 48.4 | 45.0 |
| | Max | 48.2 | 60.3 | 45.0 | 59.7 | 58.7 | 55.2 | 52.3 | 48.8 | 47.2 | 45.7 | 45.5 | 45.2 | | | |
| Energy Average | | 45.0 | Average: | | 49.8 | 49.3 | 48.0 | 46.9 | 44.3 | 43.4 | 42.6 | 42.4 | 42.2 | | | |

24-Hour Noise Level Measurement Summary

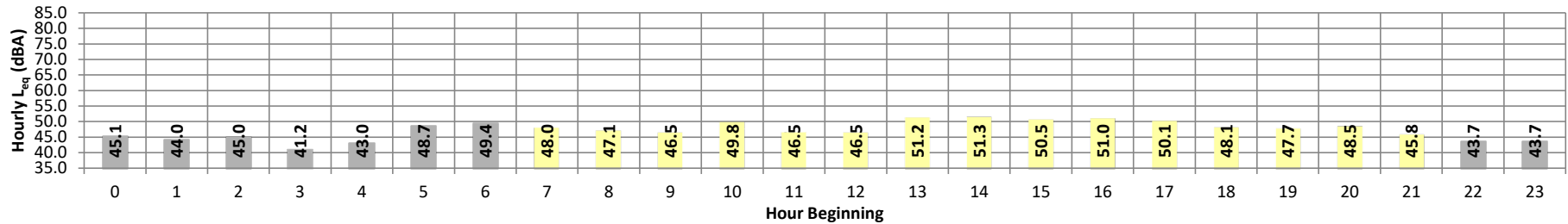
Date: Thursday, July 22, 2021
Project: West Campus Upper Plateau

Location: L5 - Located south of the Project site near single-family residence at 8256 Gardenia Vista Drive.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} | Adj. | Adj. L_{eq} | |
|----------------|------|----------|-----------|-----------|------|------|------|------|------|------|------|------|------|----------|------|---------------|------|
| Night | 0 | 45.1 | 47.6 | 43.8 | 47.4 | 47.2 | 46.8 | 46.5 | 45.5 | 44.8 | 44.1 | 44.0 | 43.8 | 45.1 | 10.0 | 55.1 | |
| | 1 | 44.0 | 47.9 | 42.5 | 47.7 | 47.5 | 46.0 | 45.1 | 44.2 | 43.7 | 42.9 | 42.8 | 42.6 | 44.0 | 10.0 | 54.0 | |
| | 2 | 45.0 | 49.8 | 43.1 | 49.5 | 49.0 | 48.1 | 47.2 | 45.3 | 44.3 | 43.5 | 43.4 | 43.2 | 45.0 | 10.0 | 55.0 | |
| | 3 | 41.2 | 44.4 | 39.9 | 43.9 | 43.4 | 42.6 | 42.3 | 41.5 | 40.9 | 40.3 | 40.2 | 40.0 | 41.2 | 10.0 | 51.2 | |
| | 4 | 43.0 | 52.6 | 41.7 | 52.4 | 52.3 | 51.6 | 51.6 | 46.5 | 43.2 | 42.1 | 41.9 | 41.8 | 43.0 | 10.0 | 53.0 | |
| | 5 | 48.7 | 53.5 | 47.5 | 53.1 | 52.6 | 51.2 | 50.1 | 48.5 | 48.2 | 47.7 | 47.7 | 47.5 | 48.7 | 10.0 | 58.7 | |
| Day | 6 | 49.4 | 57.8 | 45.9 | 57.3 | 56.5 | 54.5 | 52.8 | 48.7 | 47.5 | 46.3 | 46.2 | 46.0 | 49.4 | 10.0 | 59.4 | |
| | 7 | 48.0 | 66.5 | 42.4 | 66.4 | 65.9 | 63.8 | 62.1 | 50.4 | 46.6 | 43.3 | 43.1 | 42.6 | 48.0 | 0.0 | 48.0 | |
| | 8 | 47.1 | 68.5 | 49.7 | 68.1 | 67.7 | 66.3 | 64.1 | 59.5 | 56.3 | 51.4 | 50.7 | 50.0 | 47.1 | 0.0 | 47.1 | |
| | 9 | 46.5 | 61.5 | 41.2 | 61.2 | 60.8 | 58.7 | 57.0 | 51.1 | 47.8 | 42.2 | 41.8 | 41.4 | 46.5 | 0.0 | 46.5 | |
| | 10 | 49.8 | 59.6 | 40.9 | 59.1 | 58.4 | 56.5 | 55.0 | 51.0 | 46.6 | 42.5 | 41.9 | 41.2 | 49.8 | 0.0 | 49.8 | |
| | 11 | 46.5 | 58.2 | 39.6 | 57.7 | 56.9 | 54.1 | 51.9 | 47.3 | 43.1 | 40.3 | 40.0 | 39.7 | 46.5 | 0.0 | 46.5 | |
| | 12 | 46.5 | 70.3 | 40.6 | 67.8 | 66.1 | 61.6 | 58.1 | 50.1 | 46.1 | 41.4 | 41.1 | 40.7 | 46.5 | 0.0 | 46.5 | |
| | 13 | 51.2 | 79.2 | 46.2 | 78.5 | 77.5 | 74.3 | 72.0 | 64.5 | 58.7 | 49.0 | 47.6 | 46.5 | 51.2 | 0.0 | 51.2 | |
| | 14 | 51.3 | 65.8 | 44.5 | 65.4 | 64.9 | 63.2 | 61.4 | 56.3 | 51.4 | 45.7 | 45.1 | 44.7 | 51.3 | 0.0 | 51.3 | |
| | 15 | 50.5 | 69.4 | 55.4 | 69.0 | 68.6 | 67.5 | 66.8 | 64.7 | 62.8 | 57.6 | 56.7 | 55.7 | 50.5 | 0.0 | 50.5 | |
| | 16 | 51.0 | 60.8 | 44.5 | 60.3 | 59.7 | 58.0 | 56.8 | 52.4 | 49.3 | 45.7 | 45.1 | 44.6 | 51.0 | 0.0 | 51.0 | |
| | 17 | 50.1 | 59.8 | 44.2 | 58.9 | 57.9 | 55.4 | 53.9 | 50.5 | 48.4 | 45.4 | 44.9 | 44.4 | 50.1 | 0.0 | 50.1 | |
| | 18 | 48.1 | 69.0 | 41.8 | 68.7 | 68.2 | 66.2 | 64.0 | 54.4 | 47.7 | 42.9 | 42.5 | 42.0 | 48.1 | 0.0 | 48.1 | |
| | 19 | 47.7 | 68.5 | 39.6 | 68.2 | 68.0 | 67.1 | 65.3 | 56.9 | 47.9 | 40.6 | 40.2 | 39.7 | 47.7 | 5.0 | 52.7 | |
| | 20 | 48.5 | 64.6 | 42.5 | 64.3 | 63.9 | 63.2 | 62.7 | 56.9 | 48.9 | 43.2 | 42.9 | 42.6 | 48.5 | 5.0 | 53.5 | |
| 21 | 45.8 | 55.3 | 40.7 | 54.9 | 53.9 | 51.3 | 49.9 | 45.5 | 43.0 | 41.2 | 41.0 | 40.8 | 45.8 | 5.0 | 50.8 | | |
| Night | 22 | 43.7 | 51.7 | 40.2 | 51.3 | 50.6 | 48.5 | 47.0 | 43.5 | 41.8 | 40.7 | 40.5 | 40.3 | 43.7 | 10.0 | 53.7 | |
| | 23 | 43.7 | 49.8 | 41.7 | 49.5 | 48.8 | 46.9 | 45.9 | 43.5 | 42.9 | 42.2 | 42.0 | 41.8 | 43.7 | 10.0 | 53.7 | |
| Day | Min | 45.8 | 55.3 | 39.6 | 54.9 | 53.9 | 51.3 | 49.9 | 45.5 | 43.0 | 40.3 | 40.0 | 39.7 | 24-Hour | 48.0 | 49.0 | 45.6 |
| | Max | 51.3 | 79.2 | 55.4 | 78.5 | 77.5 | 74.3 | 72.0 | 64.7 | 62.8 | 57.6 | 56.7 | 55.7 | | | | |
| Energy Average | | 49.0 | Average: | | 64.6 | 63.9 | 61.8 | 60.1 | 54.1 | 49.6 | 44.8 | 44.3 | 43.8 | | | | |
| Night | Min | 41.2 | 44.4 | 39.9 | 43.9 | 43.4 | 42.6 | 42.3 | 41.5 | 40.9 | 40.3 | 40.2 | 40.0 | | | | |
| | Max | 49.4 | 57.8 | 47.5 | 57.3 | 56.5 | 54.5 | 52.8 | 48.7 | 48.2 | 47.7 | 47.7 | 47.5 | | | | |
| Energy Average | | 45.6 | Average: | | 50.2 | 49.8 | 48.5 | 47.6 | 45.2 | 44.2 | 43.3 | 43.2 | 43.0 | | | | |

24-Hour Noise Level Measurement Summary

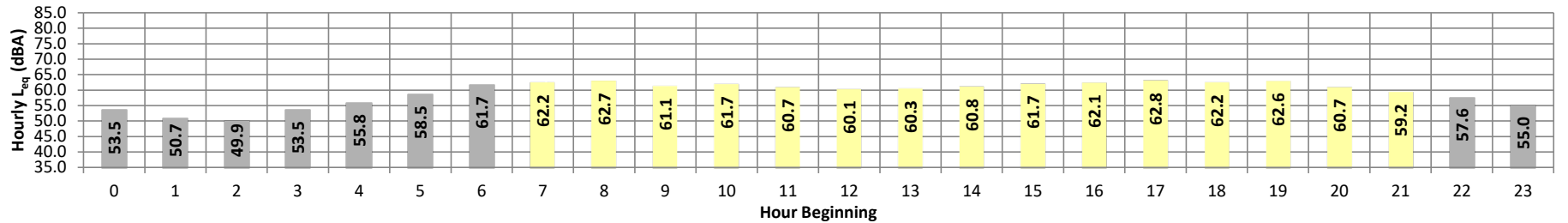
Date: Thursday, July 22, 2021
Project: West Campus Upper Plateau

Location: L6 - Located south of the Project site near single-family residence at 8360 Clover Creek Road.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} | Adj. | Adj. L_{eq} |
|----------------|------|----------|-----------|-----------|------|------|------|------|------|------|------|------|------|----------------|-----------------------|-------------------------|
| Night | 0 | 53.5 | 65.7 | 39.1 | 65.3 | 64.7 | 61.7 | 59.2 | 48.0 | 41.4 | 39.4 | 39.3 | 39.1 | 53.5 | 10.0 | 63.5 |
| | 1 | 50.7 | 63.4 | 39.6 | 63.0 | 62.3 | 58.6 | 55.5 | 45.0 | 40.7 | 39.9 | 39.8 | 39.7 | 50.7 | 10.0 | 60.7 |
| | 2 | 49.9 | 62.1 | 41.8 | 61.6 | 60.7 | 57.4 | 54.6 | 45.2 | 43.0 | 42.3 | 42.1 | 41.9 | 49.9 | 10.0 | 59.9 |
| | 3 | 53.5 | 67.1 | 40.0 | 66.5 | 65.6 | 61.8 | 57.8 | 44.2 | 41.2 | 40.4 | 40.3 | 40.1 | 53.5 | 10.0 | 63.5 |
| | 4 | 55.8 | 69.0 | 42.1 | 68.6 | 67.6 | 63.9 | 60.3 | 48.5 | 43.8 | 42.5 | 42.4 | 42.2 | 55.8 | 10.0 | 65.8 |
| | 5 | 58.5 | 72.7 | 43.5 | 72.2 | 71.3 | 67.7 | 64.9 | 54.6 | 47.9 | 44.0 | 43.8 | 43.6 | 58.5 | 10.0 | 68.5 |
| Day | 6 | 61.7 | 73.1 | 42.1 | 72.7 | 71.9 | 69.3 | 67.5 | 59.6 | 52.1 | 43.4 | 42.7 | 42.2 | 61.7 | 10.0 | 71.7 |
| | 7 | 62.2 | 73.8 | 41.5 | 73.4 | 72.5 | 70.0 | 67.9 | 59.9 | 52.4 | 43.8 | 42.7 | 41.9 | 62.2 | 0.0 | 62.2 |
| | 8 | 62.7 | 73.8 | 40.4 | 73.4 | 72.6 | 70.3 | 68.7 | 62.2 | 55.3 | 42.5 | 41.5 | 40.6 | 62.7 | 0.0 | 62.7 |
| | 9 | 61.1 | 72.7 | 40.1 | 72.3 | 71.4 | 68.9 | 67.3 | 59.8 | 51.4 | 41.8 | 41.1 | 40.3 | 61.1 | 0.0 | 61.1 |
| | 10 | 61.7 | 73.0 | 53.0 | 72.6 | 71.7 | 69.3 | 67.5 | 60.8 | 55.9 | 53.6 | 53.4 | 53.1 | 61.7 | 0.0 | 61.7 |
| | 11 | 60.7 | 71.6 | 50.0 | 71.2 | 70.2 | 67.9 | 66.2 | 59.5 | 53.6 | 50.6 | 50.4 | 50.1 | 60.7 | 0.0 | 60.7 |
| | 12 | 60.1 | 71.2 | 38.7 | 70.8 | 69.9 | 67.8 | 66.0 | 58.6 | 50.2 | 40.2 | 39.5 | 38.9 | 60.1 | 0.0 | 60.1 |
| | 13 | 60.3 | 72.3 | 41.9 | 71.9 | 71.2 | 69.4 | 67.9 | 61.4 | 53.1 | 44.6 | 43.5 | 42.2 | 60.3 | 0.0 | 60.3 |
| | 14 | 60.8 | 76.3 | 40.6 | 75.8 | 75.0 | 72.4 | 70.2 | 61.6 | 54.3 | 42.9 | 41.4 | 40.8 | 60.8 | 0.0 | 60.8 |
| | 15 | 61.7 | 73.2 | 41.7 | 72.7 | 71.8 | 69.3 | 67.7 | 61.2 | 53.4 | 43.4 | 42.4 | 41.8 | 61.7 | 0.0 | 61.7 |
| | 16 | 62.1 | 72.8 | 42.4 | 72.3 | 71.4 | 69.0 | 67.7 | 61.9 | 54.2 | 43.9 | 43.3 | 42.6 | 62.1 | 0.0 | 62.1 |
| | 17 | 62.8 | 73.8 | 41.9 | 73.3 | 72.5 | 70.1 | 68.7 | 63.3 | 56.1 | 43.9 | 42.7 | 42.1 | 62.8 | 0.0 | 62.8 |
| | 18 | 62.2 | 73.7 | 40.0 | 73.2 | 72.6 | 70.4 | 68.8 | 62.7 | 54.6 | 42.2 | 41.1 | 40.2 | 62.2 | 0.0 | 62.2 |
| | 19 | 62.6 | 72.7 | 40.9 | 72.4 | 71.7 | 70.0 | 68.5 | 62.4 | 55.1 | 43.3 | 42.0 | 41.0 | 62.6 | 5.0 | 67.6 |
| | 20 | 60.7 | 71.6 | 39.0 | 71.2 | 70.5 | 68.4 | 66.7 | 59.3 | 49.6 | 40.5 | 39.8 | 39.2 | 60.7 | 5.0 | 65.7 |
| 21 | 59.2 | 70.7 | 37.2 | 70.2 | 69.4 | 66.8 | 65.0 | 57.4 | 48.2 | 38.3 | 37.7 | 37.3 | 59.2 | 5.0 | 64.2 | |
| Night | 22 | 57.6 | 69.8 | 37.9 | 69.3 | 68.5 | 65.6 | 63.2 | 54.1 | 46.7 | 38.9 | 38.6 | 38.2 | 57.6 | 10.0 | 67.6 |
| | 23 | 55.0 | 67.7 | 37.8 | 67.3 | 66.3 | 63.3 | 60.6 | 49.0 | 41.0 | 38.3 | 38.1 | 37.9 | 55.0 | 10.0 | 65.0 |
| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} (dBA) | | |
| Day | Min | 59.2 | 70.7 | 37.2 | 70.2 | 69.4 | 66.8 | 65.0 | 57.4 | 48.2 | 38.3 | 37.7 | 37.3 | 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| | Max | 62.8 | 76.3 | 53.0 | 75.8 | 75.0 | 72.4 | 70.2 | 63.3 | 56.1 | 53.6 | 53.4 | 53.1 | | | |
| Energy Average | | 61.5 | Average: | | 72.5 | 71.6 | 69.3 | 67.6 | 60.8 | 53.2 | 43.7 | 42.8 | 42.1 | 60.2 | 61.5 | 56.6 |
| Night | Min | 49.9 | 62.1 | 37.8 | 61.6 | 60.7 | 57.4 | 54.6 | 44.2 | 40.7 | 38.3 | 38.1 | 37.9 | | | |
| | Max | 61.7 | 73.1 | 43.5 | 72.7 | 71.9 | 69.3 | 67.5 | 59.6 | 52.1 | 44.0 | 43.8 | 43.6 | | | |
| Energy Average | | 56.6 | Average: | | 67.4 | 66.5 | 63.3 | 60.4 | 49.8 | 44.2 | 41.0 | 40.8 | 40.6 | | | |

24-Hour Noise Level Measurement Summary

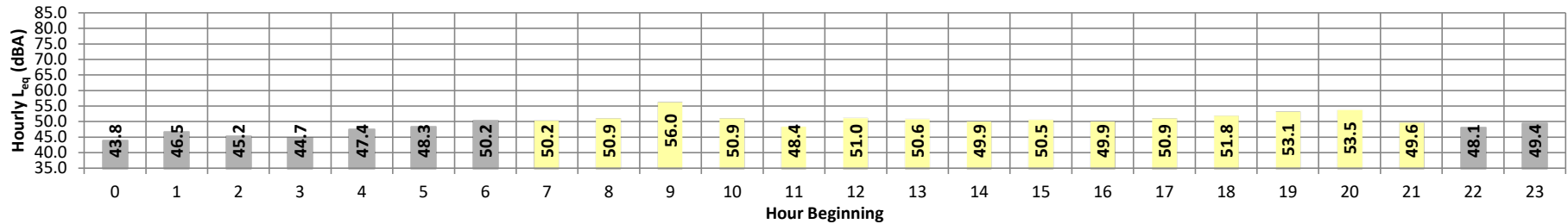
Date: Thursday, July 22, 2021
Project: West Campus Upper Plateau

Location: L7 - Located south of the Project site near The Grove
Community Church at 19900 Grove Community Drive.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} | Adj. | Adj. L_{eq} |
|----------------|------|----------|-----------|-----------|------|------|------|------|------|------|------|------|------|----------------|-----------------------|-------------------------|
| Night | 0 | 43.8 | 47.0 | 42.1 | 46.7 | 46.4 | 45.9 | 45.4 | 44.1 | 43.4 | 42.6 | 42.4 | 42.3 | 43.8 | 10.0 | 53.8 |
| | 1 | 46.5 | 51.9 | 44.3 | 51.6 | 51.3 | 50.2 | 49.2 | 46.3 | 45.6 | 44.8 | 44.7 | 44.5 | 46.5 | 10.0 | 56.5 |
| | 2 | 45.2 | 48.3 | 43.5 | 48.1 | 48.0 | 47.5 | 47.0 | 45.6 | 44.8 | 43.9 | 43.8 | 43.6 | 45.2 | 10.0 | 55.2 |
| | 3 | 44.7 | 48.6 | 43.2 | 48.4 | 48.1 | 47.3 | 46.4 | 44.9 | 44.3 | 43.6 | 43.5 | 43.3 | 44.7 | 10.0 | 54.7 |
| | 4 | 47.4 | 53.8 | 45.1 | 53.5 | 53.3 | 52.4 | 51.5 | 49.3 | 47.2 | 45.5 | 45.4 | 45.2 | 47.4 | 10.0 | 57.4 |
| | 5 | 48.3 | 54.9 | 45.8 | 54.4 | 53.9 | 53.0 | 52.3 | 49.9 | 47.5 | 46.3 | 46.1 | 45.9 | 48.3 | 10.0 | 58.3 |
| Day | 6 | 50.2 | 54.0 | 47.9 | 53.7 | 53.4 | 52.7 | 52.2 | 50.8 | 49.7 | 48.4 | 48.2 | 48.0 | 50.2 | 10.0 | 60.2 |
| | 7 | 50.2 | 56.3 | 46.5 | 55.9 | 55.5 | 54.3 | 53.3 | 50.8 | 49.0 | 47.2 | 46.9 | 46.7 | 50.2 | 0.0 | 50.2 |
| | 8 | 50.9 | 70.8 | 48.0 | 70.7 | 70.5 | 69.8 | 69.4 | 65.7 | 58.6 | 49.3 | 48.8 | 48.2 | 50.9 | 0.0 | 50.9 |
| | 9 | 56.0 | 62.0 | 52.5 | 61.7 | 61.3 | 60.6 | 59.9 | 58.1 | 56.2 | 53.9 | 53.5 | 52.7 | 56.0 | 0.0 | 56.0 |
| | 10 | 50.9 | 58.8 | 46.1 | 58.4 | 57.8 | 56.9 | 56.3 | 54.1 | 51.6 | 47.2 | 46.7 | 46.3 | 50.9 | 0.0 | 50.9 |
| | 11 | 48.4 | 57.6 | 42.7 | 57.1 | 56.4 | 54.8 | 53.8 | 49.2 | 46.4 | 43.7 | 43.2 | 42.8 | 48.4 | 0.0 | 48.4 |
| | 12 | 51.0 | 60.3 | 44.6 | 59.8 | 59.4 | 58.3 | 57.4 | 52.6 | 49.4 | 45.7 | 45.1 | 44.7 | 51.0 | 0.0 | 51.0 |
| | 13 | 50.6 | 62.7 | 44.9 | 62.2 | 61.7 | 60.6 | 59.9 | 57.3 | 51.7 | 46.2 | 45.7 | 45.2 | 50.6 | 0.0 | 50.6 |
| | 14 | 49.9 | 59.1 | 43.7 | 58.7 | 58.2 | 57.0 | 55.7 | 51.1 | 47.4 | 44.6 | 44.2 | 43.8 | 49.9 | 0.0 | 49.9 |
| | 15 | 50.5 | 61.3 | 43.5 | 60.7 | 60.1 | 58.9 | 58.1 | 54.3 | 48.3 | 44.4 | 44.0 | 43.7 | 50.5 | 0.0 | 50.5 |
| | 16 | 49.9 | 59.1 | 44.1 | 58.8 | 58.3 | 56.5 | 55.3 | 51.5 | 47.8 | 45.0 | 44.6 | 44.2 | 49.9 | 0.0 | 49.9 |
| | 17 | 50.9 | 58.8 | 44.9 | 58.4 | 58.0 | 56.8 | 55.8 | 50.4 | 48.3 | 45.9 | 45.5 | 45.1 | 50.9 | 0.0 | 50.9 |
| | 18 | 51.8 | 62.9 | 44.3 | 62.5 | 62.2 | 61.1 | 60.0 | 52.9 | 48.6 | 45.7 | 45.2 | 44.5 | 51.8 | 0.0 | 51.8 |
| | 19 | 53.1 | 66.4 | 43.1 | 66.0 | 65.6 | 64.5 | 62.8 | 54.9 | 48.1 | 44.5 | 44.0 | 43.4 | 53.1 | 5.0 | 58.1 |
| | 20 | 53.5 | 61.0 | 42.8 | 60.7 | 60.3 | 59.1 | 58.5 | 54.9 | 50.0 | 44.3 | 43.6 | 43.0 | 53.5 | 5.0 | 58.5 |
| 21 | 49.6 | 59.3 | 41.2 | 58.6 | 57.8 | 56.1 | 55.1 | 49.0 | 45.6 | 42.1 | 41.7 | 41.3 | 49.6 | 5.0 | 54.6 | |
| Night | 22 | 48.1 | 56.3 | 42.8 | 55.8 | 55.3 | 53.4 | 52.3 | 47.9 | 46.0 | 43.6 | 43.3 | 43.0 | 48.1 | 10.0 | 58.1 |
| | 23 | 49.4 | 59.8 | 43.4 | 59.3 | 58.4 | 56.0 | 54.0 | 47.5 | 45.5 | 44.0 | 43.7 | 43.5 | 49.4 | 10.0 | 59.4 |
| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} (dBA) | | |
| Day | Min | 48.4 | 56.3 | 41.2 | 55.9 | 55.5 | 54.3 | 53.3 | 49.0 | 45.6 | 42.1 | 41.7 | 41.3 | 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| | Max | 56.0 | 70.8 | 52.5 | 70.7 | 70.5 | 69.8 | 69.4 | 65.7 | 58.6 | 53.9 | 53.5 | 52.7 | | | |
| Energy Average | | 51.6 | Average: | | 60.7 | 60.2 | 59.0 | 58.1 | 53.8 | 49.8 | 46.0 | 45.5 | 45.0 | | | |
| Night | Min | 43.8 | 47.0 | 42.1 | 46.7 | 46.4 | 45.9 | 45.4 | 44.1 | 43.4 | 42.6 | 42.4 | 42.3 | 50.5 | 51.6 | 47.5 |
| | Max | 50.2 | 59.8 | 47.9 | 59.3 | 58.4 | 56.0 | 54.0 | 50.8 | 49.7 | 48.4 | 48.2 | 48.0 | | | |
| Energy Average | | 47.5 | Average: | | 52.4 | 52.0 | 50.9 | 50.0 | 47.4 | 46.0 | 44.8 | 44.6 | 44.4 | | | |

24-Hour Noise Level Measurement Summary

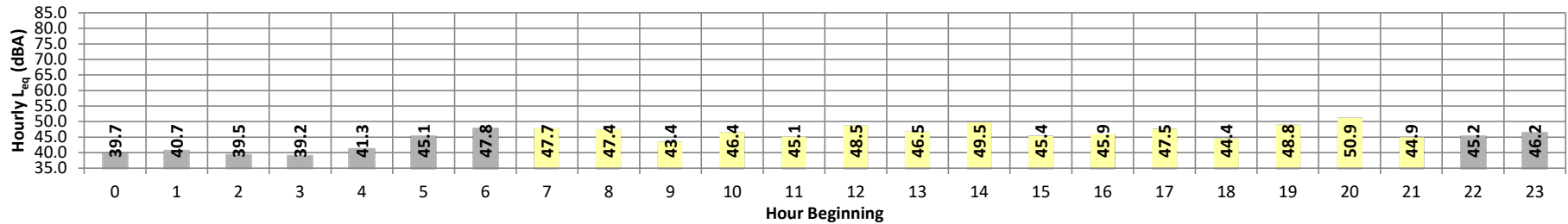
Date: Thursday, July 22, 2021
Project: West Campus Upper Plateau

Location: L8 - Located west of the Project site near single-family residence at 8079 La Crosse Way.

Meter: Piccolo II

JN: 14064
Analyst: A. Khan

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 | 39.7 | 41.3 | 38.7 | 41.1 | 41.0 | 40.7 | 40.5 | 40.0 | 39.5 | 39.1 | 39.0 | 38.8 | 39.7 | 10.0 | 49.7 |
| | 1 | 40.7 | 45.9 | 39.1 | 45.7 | 45.3 | 43.8 | 42.5 | 40.6 | 40.0 | 39.5 | 39.4 | 39.2 | 40.7 | 10.0 | 50.7 |
| | 2 | 39.5 | 40.9 | 38.6 | 40.7 | 40.6 | 40.2 | 40.1 | 39.7 | 39.4 | 39.0 | 38.9 | 38.8 | 39.5 | 10.0 | 49.5 |
| | 3 | 39.2 | 40.5 | 38.4 | 40.3 | 40.2 | 39.9 | 39.8 | 39.4 | 39.2 | 39.0 | 38.8 | 38.7 | 38.5 | 10.0 | 49.2 |
| | 4 | 41.3 | 50.7 | 39.7 | 50.5 | 50.3 | 49.7 | 48.9 | 45.6 | 41.6 | 40.2 | 40.1 | 39.9 | 41.3 | 10.0 | 51.3 |
| | 5 | 45.1 | 51.8 | 40.6 | 51.0 | 50.4 | 48.9 | 47.9 | 45.7 | 44.1 | 42.1 | 41.7 | 41.0 | 45.1 | 10.0 | 55.1 |
| Day | 6 | 47.8 | 63.6 | 50.4 | 62.9 | 62.4 | 61.0 | 60.0 | 57.7 | 55.4 | 51.9 | 51.4 | 50.8 | 47.8 | 10.0 | 57.8 |
| | 7 | 47.7 | 66.0 | 45.0 | 65.5 | 65.1 | 63.3 | 61.8 | 56.3 | 51.5 | 46.6 | 46.0 | 45.3 | 47.7 | 0.0 | 47.7 |
| | 8 | 47.4 | 74.0 | 44.4 | 73.5 | 73.0 | 71.9 | 71.4 | 66.7 | 60.0 | 45.3 | 44.9 | 44.6 | 47.4 | 0.0 | 47.4 |
| | 9 | 43.4 | 56.0 | 42.2 | 55.7 | 55.4 | 54.7 | 54.1 | 51.9 | 48.5 | 43.3 | 42.9 | 42.3 | 43.4 | 0.0 | 43.4 |
| | 10 | 46.4 | 57.0 | 42.3 | 56.5 | 56.1 | 54.9 | 54.3 | 51.7 | 48.5 | 43.1 | 42.8 | 42.5 | 46.4 | 0.0 | 46.4 |
| | 11 | 45.1 | 53.4 | 40.7 | 53.0 | 52.3 | 50.1 | 48.6 | 45.1 | 43.0 | 41.3 | 41.1 | 40.8 | 45.1 | 0.0 | 45.1 |
| | 12 | 48.5 | 54.2 | 43.8 | 53.7 | 53.2 | 52.2 | 51.5 | 49.4 | 47.5 | 45.2 | 44.8 | 44.2 | 48.5 | 0.0 | 48.5 |
| | 13 | 46.5 | 60.1 | 40.8 | 59.6 | 59.1 | 58.1 | 57.2 | 53.0 | 47.0 | 41.7 | 41.4 | 41.0 | 46.5 | 0.0 | 46.5 |
| | 14 | 49.5 | 57.6 | 45.9 | 57.3 | 56.7 | 54.9 | 53.9 | 50.0 | 48.7 | 46.9 | 46.5 | 46.1 | 49.5 | 0.0 | 49.5 |
| | 15 | 45.4 | 57.2 | 41.3 | 56.8 | 56.2 | 54.8 | 53.7 | 47.3 | 43.5 | 41.9 | 41.7 | 41.5 | 45.4 | 0.0 | 45.4 |
| | 16 | 45.9 | 52.5 | 41.9 | 52.1 | 51.6 | 49.9 | 48.6 | 46.3 | 44.9 | 42.6 | 42.3 | 42.0 | 45.9 | 0.0 | 45.9 |
| | 17 | 47.5 | 52.2 | 44.5 | 51.8 | 51.4 | 50.3 | 49.5 | 48.1 | 47.1 | 45.3 | 45.0 | 44.7 | 47.5 | 0.0 | 47.5 |
| | 18 | 44.4 | 56.8 | 40.8 | 56.3 | 55.8 | 54.8 | 53.8 | 48.0 | 42.9 | 41.4 | 41.2 | 41.0 | 44.4 | 0.0 | 44.4 |
| | 19 | 48.8 | 60.5 | 39.9 | 60.2 | 59.8 | 58.7 | 57.5 | 48.9 | 42.5 | 40.5 | 40.3 | 40.0 | 48.8 | 5.0 | 53.8 |
| | 20 | 50.9 | 58.2 | 48.5 | 57.0 | 56.0 | 54.0 | 53.0 | 51.6 | 49.7 | 49.0 | 48.8 | 48.6 | 50.9 | 5.0 | 55.9 |
| 21 | 44.9 | 48.1 | 44.7 | 47.0 | 46.1 | 45.1 | 44.9 | 44.8 | 44.8 | 44.7 | 44.7 | 44.7 | 44.9 | 5.0 | 49.9 | |
| Night | 22 | 45.2 | 45.4 | 45.2 | 45.3 | 45.3 | 45.3 | 45.3 | 45.3 | 45.2 | 45.2 | 45.2 | 45.2 | 45.2 | 10.0 | 55.2 |
| | 23 | 46.2 | 46.3 | 46.1 | 46.3 | 46.3 | 46.3 | 46.3 | 46.2 | 46.2 | 46.2 | 46.2 | 46.2 | 46.2 | 10.0 | 56.2 |
| Timeframe | Hour | L_{eq} | L_{max} | L_{min} | L1% | L2% | L5% | L8% | L25% | L50% | L90% | L95% | L99% | L_{eq} (dBA) | | |
| Day | Min | 43.4 | 48.1 | 39.9 | 47.0 | 46.1 | 45.1 | 44.9 | 44.8 | 42.5 | 40.5 | 40.3 | 40.0 | 24-Hour | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| | Max | 50.9 | 74.0 | 48.5 | 73.5 | 73.0 | 71.9 | 71.4 | 66.7 | 60.0 | 49.0 | 48.8 | 48.6 | | | |
| Energy Average | | 47.3 | Average: | | 57.1 | 56.5 | 55.2 | 54.3 | 50.6 | 47.3 | 43.9 | 43.6 | 43.3 | 46.3 | 47.3 | 43.9 |
| Night | Min | 39.2 | 40.5 | 38.4 | 40.3 | 40.2 | 39.9 | 39.8 | 39.4 | 39.2 | 38.8 | 38.7 | 38.5 | 46.3 | 47.3 | 43.9 |
| | Max | 47.8 | 63.6 | 50.4 | 62.9 | 62.4 | 61.0 | 60.0 | 57.7 | 55.4 | 51.9 | 51.4 | 50.8 | | | |
| Energy Average | | 43.9 | Average: | | 47.1 | 46.8 | 46.2 | 45.7 | 44.5 | 43.4 | 42.4 | 42.3 | 42.0 | | | |

APPENDIX 7.1:
OFF-SITE TRAFFIC NOISE CONTOURS

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| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 51,552 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,052 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.47 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.84 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.55 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.6 | 70.4 | 68.8 | 65.1 | 72.7 | 73.2 | |
| Medium Trucks: | 67.1 | 65.2 | 60.8 | 60.1 | 67.5 | 67.8 | |
| Heavy Trucks: | 73.8 | 70.9 | 69.9 | 68.7 | 75.5 | 75.8 | |
| Vehicle Noise: | 76.7 | 74.2 | 72.7 | 70.7 | 77.8 | 78.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 197 | 425 | 915 | 1,972 | |
| CNEL: | | | 208 | 448 | 966 | 2,080 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 53,547 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,248 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.30% Medium Trucks: 75.3% 7.0% 17.7% 2.11% Heavy Trucks: 60.4% 12.0% 27.6% 3.59% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.65 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.84 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.55 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.8 | 70.6 | 69.0 | 65.3 | 72.9 | 73.4 | |
| Medium Trucks: | 67.1 | 65.2 | 60.8 | 60.1 | 67.5 | 67.8 | |
| Heavy Trucks: | 73.8 | 70.9 | 69.9 | 68.7 | 75.5 | 75.8 | |
| Vehicle Noise: | 76.8 | 74.3 | 72.7 | 70.7 | 77.8 | 78.2 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 199 | 428 | 923 | 1,989 | |
| CNEL: | | | 210 | 452 | 974 | 2,099 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 59,217 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,803 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.08 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.24 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.95 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.2 | 71.1 | 69.4 | 65.7 | 73.3 | 73.8 | |
| Medium Trucks: | 67.7 | 65.8 | 61.4 | 60.7 | 68.1 | 68.4 | |
| Heavy Trucks: | 74.4 | 71.5 | 70.5 | 69.3 | 76.1 | 76.4 | |
| Vehicle Noise: | 77.3 | 74.8 | 73.3 | 71.3 | 78.4 | 78.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 216 | 466 | 1,004 | 2,163 | |
| CNEL: | | | 228 | 492 | 1,059 | 2,282 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 61,212 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,999 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.27% Medium Trucks: 75.3% 7.0% 17.7% 2.13% Heavy Trucks: 60.4% 12.0% 27.6% 3.60% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.23 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.24 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.95 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.3 | 71.2 | 69.5 | 65.9 | 73.5 | 73.9 | |
| Medium Trucks: | 67.7 | 65.8 | 61.4 | 60.7 | 68.1 | 68.4 | |
| Heavy Trucks: | 74.4 | 71.5 | 70.5 | 69.3 | 76.1 | 76.4 | |
| Vehicle Noise: | 77.4 | 74.9 | 73.3 | 71.3 | 78.4 | 78.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 218 | 469 | 1,011 | 2,179 | |
| CNEL: | | | 230 | 495 | 1,067 | 2,299 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 62,119 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,088 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.28 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.03 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.74 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 73.4 | 71.3 | 69.6 | 66.0 | 73.5 | 74.0 |
| Medium Trucks: | 67.9 | 66.0 | 61.6 | 60.9 | 68.3 | 68.6 |
| Heavy Trucks: | 74.6 | 71.7 | 70.7 | 69.5 | 76.3 | 76.6 |
| Vehicle Noise: | 77.5 | 75.1 | 73.5 | 71.5 | 78.6 | 78.9 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 223 | 481 | 1,036 | 2,233 | |
| CNEL: | 236 | 507 | 1,093 | 2,356 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 64,114 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,283 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.26% Medium Trucks: 75.3% 7.0% 17.7% 2.13% Heavy Trucks: 60.4% 12.0% 27.6% 3.61% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.43 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.03 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.74 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 73.5 | 71.4 | 69.7 | 66.1 | 73.7 | 74.1 |
| Medium Trucks: | 67.9 | 66.0 | 61.6 | 60.9 | 68.3 | 68.6 |
| Heavy Trucks: | 74.6 | 71.7 | 70.7 | 69.5 | 76.3 | 76.6 |
| Vehicle Noise: | 77.6 | 75.1 | 73.5 | 71.5 | 78.6 | 79.0 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 225 | 484 | 1,044 | 2,249 | |
| CNEL: | 237 | 511 | 1,101 | 2,373 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HY Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 72,525 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 7,107 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.96 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.36 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.07 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 74.1 | 71.9 | 70.3 | 66.6 | 74.2 | 74.7 |
| Medium Trucks: | 68.6 | 66.6 | 62.3 | 61.6 | 69.0 | 69.2 |
| Heavy Trucks: | 75.2 | 72.3 | 71.3 | 70.2 | 76.9 | 77.3 |
| Vehicle Noise: | 78.2 | 75.7 | 74.1 | 72.2 | 79.2 | 79.6 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 248 | 533 | 1,149 | 2,476 | |
| CNEL: | 261 | 563 | 1,212 | 2,612 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Alessandro Blvd. Road Segment: s/o Arlington Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 74,521 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 7,303 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.24% Medium Trucks: 75.3% 7.0% 17.7% 2.14% Heavy Trucks: 60.4% 12.0% 27.6% 3.63% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 6.08 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.36 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.07 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 74.2 | 72.1 | 70.4 | 66.8 | 74.3 | 74.8 |
| Medium Trucks: | 68.6 | 66.6 | 62.3 | 61.6 | 69.0 | 69.2 |
| Heavy Trucks: | 75.2 | 72.3 | 71.3 | 70.2 | 76.9 | 77.3 |
| Vehicle Noise: | 78.3 | 75.8 | 74.2 | 72.2 | 79.3 | 79.6 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 249 | 537 | 1,156 | 2,491 | |
| CNEL: | 263 | 566 | 1,220 | 2,628 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 48,548 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,758 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.21 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.10 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.81 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.3 | 70.2 | 68.5 | 64.9 | 72.5 | 72.9 | |
| Medium Trucks: | 66.8 | 64.9 | 60.6 | 59.8 | 67.2 | 67.5 | |
| Heavy Trucks: | 73.5 | 70.6 | 69.6 | 68.5 | 75.2 | 75.5 | |
| Vehicle Noise: | 76.5 | 74.0 | 72.4 | 70.4 | 77.5 | 77.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 189 | 408 | 879 | 1,894 | |
| CNEL: | | | 200 | 431 | 928 | 1,999 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 51,541 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,051 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.42% Medium Trucks: 75.3% 7.0% 17.7% 2.07% Heavy Trucks: 60.4% 12.0% 27.6% 3.51% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.49 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.10 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.81 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.6 | 70.5 | 68.8 | 65.2 | 72.7 | 73.2 | |
| Medium Trucks: | 66.8 | 64.9 | 60.6 | 59.8 | 67.2 | 67.5 | |
| Heavy Trucks: | 73.5 | 70.6 | 69.6 | 68.5 | 75.2 | 75.5 | |
| Vehicle Noise: | 76.6 | 74.1 | 72.5 | 70.5 | 77.6 | 77.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 192 | 414 | 891 | 1,920 | |
| CNEL: | | | 203 | 437 | 941 | 2,027 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 55,767 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,465 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.82 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.50 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.21 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.9 | 70.8 | 69.1 | 65.5 | 73.1 | 73.5 | |
| Medium Trucks: | 67.4 | 65.5 | 61.2 | 60.4 | 67.8 | 68.1 | |
| Heavy Trucks: | 74.1 | 71.2 | 70.2 | 69.1 | 75.8 | 76.1 | |
| Vehicle Noise: | 77.1 | 74.6 | 73.0 | 71.0 | 78.1 | 78.4 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 208 | 448 | 964 | 2,078 | |
| CNEL: | | | 219 | 472 | 1,017 | 2,192 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 58,760 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,758 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.38% Medium Trucks: 75.3% 7.0% 17.7% 2.08% Heavy Trucks: 60.4% 12.0% 27.6% 3.54% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.06 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.50 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.21 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.2 | 71.0 | 69.4 | 65.7 | 73.3 | 73.8 | |
| Medium Trucks: | 67.4 | 65.5 | 61.2 | 60.4 | 67.8 | 68.1 | |
| Heavy Trucks: | 74.1 | 71.2 | 70.2 | 69.1 | 75.8 | 76.1 | |
| Vehicle Noise: | 77.2 | 74.7 | 73.1 | 71.1 | 78.2 | 78.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 210 | 453 | 976 | 2,103 | |
| CNEL: | | | 222 | 478 | 1,030 | 2,219 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 62,261 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,102 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.29 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.02 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.73 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.4 | 71.3 | 69.6 | 66.0 | 73.5 | 74.0 | |
| Medium Trucks: | 67.9 | 66.0 | 61.7 | 60.9 | 68.3 | 68.6 | |
| Heavy Trucks: | 74.6 | 71.7 | 70.7 | 69.5 | 76.3 | 76.6 | |
| Vehicle Noise: | 77.5 | 75.1 | 73.5 | 71.5 | 78.6 | 78.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 224 | 482 | 1,038 | 2,236 | |
| CNEL: | | | 236 | 508 | 1,095 | 2,359 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 65,254 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,395 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.35% Medium Trucks: 75.3% 7.0% 17.7% 2.10% Heavy Trucks: 60.4% 12.0% 27.6% 3.55% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.51 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.02 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.73 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.6 | 71.5 | 69.8 | 66.2 | 73.8 | 74.2 | |
| Medium Trucks: | 67.9 | 66.0 | 61.7 | 60.9 | 68.3 | 68.6 | |
| Heavy Trucks: | 74.6 | 71.7 | 70.7 | 69.5 | 76.3 | 76.6 | |
| Vehicle Noise: | 77.6 | 75.2 | 73.6 | 71.6 | 78.6 | 79.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 226 | 487 | 1,049 | 2,260 | |
| CNEL: | | | 238 | 514 | 1,107 | 2,385 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 72,851 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 7,139 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 5.98 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.34 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.05 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.1 | 72.0 | 70.3 | 66.6 | 74.2 | 74.7 | |
| Medium Trucks: | 68.6 | 66.7 | 62.3 | 61.6 | 69.0 | 69.3 | |
| Heavy Trucks: | 75.3 | 72.4 | 71.4 | 70.2 | 77.0 | 77.3 | |
| Vehicle Noise: | 78.2 | 75.7 | 74.2 | 72.2 | 79.3 | 79.6 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 248 | 535 | 1,153 | 2,483 | |
| CNEL: | | | 262 | 564 | 1,216 | 2,620 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Alessandro Blvd. Road Segment: s/o Canyon Crest Dr. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 75,845 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 7,433 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.31% Medium Trucks: 75.3% 7.0% 17.7% 2.11% Heavy Trucks: 60.4% 12.0% 27.6% 3.58% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 6.16 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.34 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.05 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.3 | 72.1 | 70.5 | 66.8 | 74.4 | 74.9 | |
| Medium Trucks: | 68.6 | 66.7 | 62.3 | 61.6 | 69.0 | 69.3 | |
| Heavy Trucks: | 75.3 | 72.4 | 71.4 | 70.2 | 77.0 | 77.3 | |
| Vehicle Noise: | 78.3 | 75.8 | 74.2 | 72.2 | 79.3 | 79.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 251 | 540 | 1,163 | 2,506 | |
| CNEL: | | | 264 | 570 | 1,227 | 2,644 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 19,731 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,934 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 0.30 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -16.01 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -13.72 | 0.96 | -1.20 | -5.50 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.2 | 68.1 | 66.4 | 62.8 | 70.4 | 70.8 |
| Medium Trucks: | 64.8 | 62.8 | 58.5 | 57.8 | 65.2 | 65.4 |
| Heavy Trucks: | 71.4 | 68.5 | 67.5 | 66.4 | 73.1 | 73.4 |
| Vehicle Noise: | 74.4 | 71.9 | 70.3 | 68.4 | 75.4 | 75.8 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 101 | 218 | 469 | 1,010 | |
| CNEL: | 107 | 230 | 495 | 1,066 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 20,064 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,966 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.18% Medium Trucks: 75.3% 7.0% 17.7% 2.16% Heavy Trucks: 60.4% 12.0% 27.6% 3.66% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 0.38 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -16.01 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -13.72 | 0.96 | -1.20 | -5.50 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.3 | 68.2 | 66.5 | 62.9 | 70.5 | 70.9 |
| Medium Trucks: | 64.8 | 62.8 | 58.5 | 57.8 | 65.2 | 65.4 |
| Heavy Trucks: | 71.4 | 68.5 | 67.5 | 66.4 | 73.1 | 73.4 |
| Vehicle Noise: | 74.4 | 71.9 | 70.3 | 68.4 | 75.4 | 75.8 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 101 | 218 | 471 | 1,014 | |
| CNEL: | 107 | 231 | 497 | 1,070 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 22,665 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,221 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 0.91 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -15.41 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -13.12 | 0.96 | -1.20 | -5.50 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.8 | 68.7 | 67.0 | 63.4 | 71.0 | 71.4 |
| Medium Trucks: | 65.4 | 63.4 | 59.1 | 58.4 | 65.8 | 66.0 |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 |
| Vehicle Noise: | 75.0 | 72.5 | 70.9 | 69.0 | 76.0 | 76.4 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 111 | 239 | 514 | 1,108 | |
| CNEL: | 117 | 252 | 543 | 1,169 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 22,998 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,254 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.16% Medium Trucks: 75.3% 7.0% 17.7% 2.17% Heavy Trucks: 60.4% 12.0% 27.6% 3.67% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 0.97 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -15.41 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -13.12 | 0.96 | -1.20 | -5.50 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.9 | 68.8 | 67.1 | 63.5 | 71.1 | 71.5 |
| Medium Trucks: | 65.4 | 63.4 | 59.1 | 58.4 | 65.8 | 66.0 |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 |
| Vehicle Noise: | 75.0 | 72.5 | 70.9 | 69.0 | 76.0 | 76.4 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 111 | 240 | 516 | 1,112 | |
| CNEL: | 117 | 253 | 544 | 1,173 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 33,567 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,290 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.61 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.71 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.41 | 0.96 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.6 | 70.4 | 68.7 | 65.1 | 72.7 | 73.1 | |
| Medium Trucks: | 67.1 | 65.1 | 60.8 | 60.1 | 67.5 | 67.7 | |
| Heavy Trucks: | 73.7 | 70.8 | 69.8 | 68.7 | 75.4 | 75.8 | |
| Vehicle Noise: | 76.7 | 74.2 | 72.6 | 70.7 | 77.7 | 78.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 144 | 310 | 668 | 1,440 | |
| CNEL: | | | 152 | 327 | 705 | 1,519 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 33,900 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,322 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.14% Medium Trucks: 75.3% 7.0% 17.7% 2.18% Heavy Trucks: 60.4% 12.0% 27.6% 3.69% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.66 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.71 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.41 | 0.96 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.6 | 70.5 | 68.8 | 65.2 | 72.7 | 73.2 | |
| Medium Trucks: | 67.1 | 65.1 | 60.8 | 60.1 | 67.5 | 67.7 | |
| Heavy Trucks: | 73.7 | 70.8 | 69.8 | 68.7 | 75.4 | 75.8 | |
| Vehicle Noise: | 76.7 | 74.2 | 72.6 | 70.7 | 77.7 | 78.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 144 | 311 | 670 | 1,443 | |
| CNEL: | | | 152 | 328 | 707 | 1,522 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 39,015 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,823 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.26 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.05 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.76 | 0.96 | -1.20 | -5.50 | 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: | 73.2 | 71.1 | 69.4 | 65.8 | 73.3 | 73.8 | |
| Medium Trucks: | 67.7 | 65.8 | 61.5 | 60.7 | 68.1 | 68.4 | |
| Heavy Trucks: | 74.4 | 71.5 | 70.5 | 69.3 | 76.1 | 76.4 | |
| Vehicle Noise: | 77.3 | 74.9 | 73.3 | 71.3 | 78.4 | 78.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 159 | 343 | 739 | 1,592 | |
| CNEL: | | | 168 | 362 | 779 | 1,679 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Trautwein Rd. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 39,348 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,856 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 24 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.13% Medium Trucks: 75.3% 7.0% 17.7% 2.18% Heavy Trucks: 60.4% 12.0% 27.6% 3.69% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 42.626 Medium Trucks: 42.418 Heavy Trucks: 42.438 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.30 | 0.94 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.05 | 0.97 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.76 | 0.96 | -1.20 | -5.50 | 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: | 73.2 | 71.1 | 69.4 | 65.8 | 73.4 | 73.8 | |
| Medium Trucks: | 67.7 | 65.8 | 61.5 | 60.7 | 68.1 | 68.4 | |
| Heavy Trucks: | 74.4 | 71.5 | 70.5 | 69.3 | 76.1 | 76.4 | |
| Vehicle Noise: | 77.4 | 74.9 | 73.3 | 71.3 | 78.4 | 78.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 159 | 344 | 740 | 1,595 | |
| CNEL: | | | 168 | 362 | 781 | 1,682 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 3,375 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 331 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -5.15 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -21.46 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -19.17 | 2.83 | -1.20 | -5.69 | 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 | 56.0 | 54.4 | 50.7 | 58.3 | 58.8 | |
| Medium Trucks: | 53.6 | 51.7 | 47.4 | 46.7 | 54.1 | 54.3 | |
| Heavy Trucks: | 62.4 | 59.5 | 58.5 | 57.3 | 64.1 | 64.4 | |
| Vehicle Noise: | 64.2 | 61.6 | 60.1 | 58.5 | 65.4 | 65.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 16 | 35 | 76 | 164 | | |
| | CNEL: | 17 | 37 | 80 | 172 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 4,040 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 396 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 95.05% Medium Trucks: 75.3% 7.0% 17.7% 1.84% Heavy Trucks: 60.4% 12.0% 27.6% 3.11% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -4.32 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -21.46 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -19.17 | 2.83 | -1.20 | -5.69 | 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: | 59.0 | 56.9 | 55.2 | 51.6 | 59.1 | 59.6 | |
| Medium Trucks: | 53.6 | 51.7 | 47.4 | 46.7 | 54.1 | 54.3 | |
| Heavy Trucks: | 62.4 | 59.5 | 58.5 | 57.3 | 64.1 | 64.4 | |
| Vehicle Noise: | 64.4 | 61.8 | 60.4 | 58.6 | 65.6 | 65.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 17 | 36 | 78 | 168 | | |
| | CNEL: | 18 | 38 | 82 | 177 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 3,877 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 380 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -4.54 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -20.86 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -18.57 | 2.83 | -1.20 | -5.69 | 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: | 58.8 | 56.6 | 55.0 | 51.3 | 58.9 | 59.4 | |
| Medium Trucks: | 54.3 | 52.3 | 48.0 | 47.3 | 54.7 | 54.9 | |
| Heavy Trucks: | 63.0 | 60.1 | 59.1 | 57.9 | 64.7 | 65.0 | |
| Vehicle Noise: | 64.8 | 62.2 | 60.7 | 59.1 | 66.0 | 66.4 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 18 | 39 | 83 | 180 | | |
| | CNEL: | 19 | 41 | 88 | 189 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 4,542 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 445 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.94% Medium Trucks: 75.3% 7.0% 17.7% 1.88% Heavy Trucks: 60.4% 12.0% 27.6% 3.18% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -3.82 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -20.86 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -18.57 | 2.83 | -1.20 | -5.69 | 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: | 59.5 | 57.4 | 55.7 | 52.1 | 59.7 | 60.1 | |
| Medium Trucks: | 54.3 | 52.3 | 48.0 | 47.3 | 54.7 | 54.9 | |
| Heavy Trucks: | 63.0 | 60.1 | 59.1 | 57.9 | 64.7 | 65.0 | |
| Vehicle Noise: | 65.0 | 62.4 | 60.9 | 59.2 | 66.2 | 66.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 18 | 40 | 85 | 184 | | |
| | CNEL: | 19 | 42 | 90 | 194 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 5,685 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 557 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -2.88 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -19.20 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -16.90 | 2.83 | -1.20 | -5.69 | 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: | 60.4 | 58.3 | 56.6 | 53.0 | 60.6 | 61.0 | |
| Medium Trucks: | 55.9 | 54.0 | 49.7 | 48.9 | 56.3 | 56.6 | |
| Heavy Trucks: | 64.6 | 61.7 | 60.7 | 59.6 | 66.4 | 66.7 | |
| Vehicle Noise: | 66.4 | 63.8 | 62.4 | 60.8 | 67.7 | 68.0 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|--|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | | 23 | 50 | 108 | 232 | | |
| CNEL: | | 24 | 53 | 113 | 244 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 6,350 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 622 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.70% Medium Trucks: 75.3% 7.0% 17.7% 1.97% Heavy Trucks: 60.4% 12.0% 27.6% 3.34% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -2.37 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -19.20 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -16.90 | 2.83 | -1.20 | -5.69 | 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: | 61.0 | 58.8 | 57.1 | 53.5 | 61.1 | 61.5 | |
| Medium Trucks: | 55.9 | 54.0 | 49.7 | 48.9 | 56.3 | 56.6 | |
| Heavy Trucks: | 64.6 | 61.7 | 60.7 | 59.6 | 66.4 | 66.7 | |
| Vehicle Noise: | 66.6 | 64.0 | 62.5 | 60.8 | 67.8 | 68.1 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|--|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | | 24 | 51 | 109 | 236 | | |
| CNEL: | | 25 | 53 | 115 | 248 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HY Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 6,716 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 658 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -2.16 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -18.48 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -16.18 | 2.83 | -1.20 | -5.69 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 61.2 | 59.0 | 57.4 | 53.7 | 61.3 | 61.8 | |
| Medium Trucks: | 56.6 | 54.7 | 50.4 | 49.7 | 57.1 | 57.3 | |
| Heavy Trucks: | 65.4 | 62.5 | 61.5 | 60.3 | 67.1 | 67.4 | |
| Vehicle Noise: | 67.2 | 64.6 | 63.1 | 61.5 | 68.4 | 68.8 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|--|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | | 26 | 56 | 120 | 259 | | |
| CNEL: | | 27 | 59 | 127 | 273 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Barton St. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 7,381 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 723 vehicles Vehicle Speed: 30 mph Near/Far Lane Distance: 18 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 33.0 feet Centerline Dist. to Observer: 33.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.61% Medium Trucks: 75.3% 7.0% 17.7% 2.00% Heavy Trucks: 60.4% 12.0% 27.6% 3.39% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 32.140 Medium Trucks: 31.864 Heavy Trucks: 31.891 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 61.75 | -1.72 | 2.78 | -1.20 | -4.52 | 0.000 | 0.000 |
| Medium Trucks: | 73.48 | -18.48 | 2.83 | -1.20 | -4.86 | 0.000 | 0.000 |
| Heavy Trucks: | 79.92 | -16.18 | 2.83 | -1.20 | -5.69 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 61.6 | 59.5 | 57.8 | 54.2 | 61.7 | 62.2 | |
| Medium Trucks: | 56.6 | 54.7 | 50.4 | 49.7 | 57.1 | 57.3 | |
| Heavy Trucks: | 65.4 | 62.5 | 61.5 | 60.3 | 67.1 | 67.4 | |
| Vehicle Noise: | 67.3 | 64.7 | 63.2 | 61.6 | 68.5 | 68.8 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|--|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | | 26 | 57 | 122 | 263 | | |
| CNEL: | | 28 | 60 | 128 | 277 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 13,087 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,283 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -1.02 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.34 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -15.04 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.0 | 64.9 | 63.2 | 59.6 | 67.2 | 67.6 | |
| Medium Trucks: | 61.7 | 59.8 | 55.5 | 54.8 | 62.2 | 62.4 | |
| Heavy Trucks: | 68.8 | 65.9 | 64.9 | 63.8 | 70.5 | 70.9 | |
| Vehicle Noise: | 71.5 | 69.0 | 67.5 | 65.6 | 72.6 | 72.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| | Ldn: | 82 | 177 | 381 | 820 | | |
| | CNEL: | 86 | 186 | 401 | 865 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 13,855 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,358 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 93.66% Medium Trucks: 75.3% 7.0% 17.7% 2.08% Heavy Trucks: 60.4% 12.0% 27.6% 4.26% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -0.79 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.34 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.21 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.3 | 65.1 | 63.5 | 59.8 | 67.4 | 67.9 | |
| Medium Trucks: | 61.7 | 59.8 | 55.5 | 54.8 | 62.2 | 62.4 | |
| Heavy Trucks: | 69.7 | 66.8 | 65.8 | 64.6 | 71.4 | 71.7 | |
| Vehicle Noise: | 72.1 | 69.5 | 68.0 | 66.2 | 73.2 | 73.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| | Ldn: | 90 | 194 | 417 | 899 | | |
| | CNEL: | 95 | 204 | 440 | 947 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 15,033 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,473 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -0.42 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.74 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.44 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.6 | 65.5 | 63.8 | 60.2 | 67.8 | 68.2 | |
| Medium Trucks: | 62.3 | 60.4 | 56.1 | 55.4 | 62.8 | 63.0 | |
| Heavy Trucks: | 69.4 | 66.5 | 65.5 | 64.4 | 71.1 | 71.5 | |
| Vehicle Noise: | 72.1 | 69.6 | 68.1 | 66.2 | 73.2 | 73.6 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| | Ldn: | 90 | 194 | 418 | 900 | | |
| | CNEL: | 95 | 204 | 440 | 949 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 15,801 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,548 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 93.72% Medium Trucks: 75.3% 7.0% 17.7% 2.09% Heavy Trucks: 60.4% 12.0% 27.6% 4.19% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -0.22 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.74 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.71 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.8 | 65.7 | 64.0 | 60.4 | 68.0 | 68.4 | |
| Medium Trucks: | 62.3 | 60.4 | 56.1 | 55.4 | 62.8 | 63.0 | |
| Heavy Trucks: | 70.2 | 67.3 | 66.3 | 65.1 | 71.9 | 72.2 | |
| Vehicle Noise: | 72.6 | 70.1 | 68.6 | 66.7 | 73.7 | 74.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| | Ldn: | 97 | 210 | 452 | 975 | | |
| | CNEL: | 103 | 221 | 477 | 1,027 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: OYC Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 16,647 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,631 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.02 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.29 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.00 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 68.1 | 65.9 | 64.3 | 60.6 | 68.2 | 68.7 | |
| Medium Trucks: | 62.8 | 60.9 | 56.5 | 55.8 | 63.2 | 63.5 | |
| Heavy Trucks: | 69.9 | 67.0 | 66.0 | 64.8 | 71.6 | 71.9 | |
| Vehicle Noise: | 72.6 | 70.1 | 68.5 | 66.6 | 73.6 | 74.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 96 | 207 | 447 | 963 | |
| CNEL: | | | 102 | 219 | 471 | 1,015 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: OYCP Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 17,415 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,707 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 93.75% Medium Trucks: 75.3% 7.0% 17.7% 2.10% Heavy Trucks: 60.4% 12.0% 27.6% 4.15% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.20 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.29 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.33 | 0.83 | -1.20 | -5.38 | 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: | 68.3 | 66.1 | 64.5 | 60.8 | 68.4 | 68.9 | |
| Medium Trucks: | 62.8 | 60.9 | 56.5 | 55.8 | 63.2 | 63.5 | |
| Heavy Trucks: | 70.5 | 67.7 | 66.6 | 65.5 | 72.3 | 72.6 | |
| Vehicle Noise: | 73.0 | 70.5 | 69.0 | 67.1 | 74.1 | 74.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 104 | 223 | 481 | 1,036 | |
| CNEL: | | | 109 | 235 | 507 | 1,092 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: HY Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 19,473 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,908 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.70 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.61 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.32 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 68.8 | 66.6 | 65.0 | 61.3 | 68.9 | 69.4 | |
| Medium Trucks: | 63.5 | 61.5 | 57.2 | 56.5 | 63.9 | 64.1 | |
| Heavy Trucks: | 70.6 | 67.7 | 66.7 | 65.5 | 72.3 | 72.6 | |
| Vehicle Noise: | 73.2 | 70.7 | 69.2 | 67.3 | 74.3 | 74.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 107 | 230 | 496 | 1,069 | |
| CNEL: | | | 113 | 243 | 523 | 1,127 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: HYP Road Name: Sycamore Canyon Blvd. Road Segment: n/o Cottonwood Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 20,241 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,984 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 93.79% Medium Trucks: 75.3% 7.0% 17.7% 2.11% Heavy Trucks: 60.4% 12.0% 27.6% 4.09% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.86 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.61 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.74 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 68.9 | 66.8 | 65.1 | 61.5 | 69.1 | 69.5 | |
| Medium Trucks: | 63.5 | 61.5 | 57.2 | 56.5 | 63.9 | 64.1 | |
| Heavy Trucks: | 71.1 | 68.2 | 67.2 | 66.1 | 72.8 | 73.2 | |
| Vehicle Noise: | 73.6 | 71.1 | 69.6 | 67.7 | 74.7 | 75.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 114 | 245 | 528 | 1,138 | |
| CNEL: | | | 120 | 258 | 557 | 1,200 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 12,903 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,264 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -1.08 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.40 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -15.11 | -0.13 | -1.20 | -5.37 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 66.0 | 63.9 | 62.2 | 58.6 | 66.2 | 66.6 | |
| Medium Trucks: | 60.7 | 58.8 | 54.5 | 53.7 | 61.1 | 61.4 | |
| Heavy Trucks: | 67.8 | 64.9 | 63.9 | 62.8 | 69.5 | 69.8 | |
| Vehicle Noise: | 70.5 | 68.0 | 66.4 | 64.6 | 71.6 | 71.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 71 | 154 | 332 | 714 | |
| CNEL: | | | 75 | 162 | 350 | 753 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 20,093 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,969 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 95.17% Medium Trucks: 75.3% 7.0% 17.7% 1.41% Heavy Trucks: 60.4% 12.0% 27.6% 3.41% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.89 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.40 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.56 | -0.13 | -1.20 | -5.37 | 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 | 65.9 | 64.2 | 60.6 | 68.1 | 68.6 | |
| Medium Trucks: | 60.7 | 58.8 | 54.5 | 53.7 | 61.1 | 61.4 | |
| Heavy Trucks: | 69.4 | 66.5 | 65.5 | 64.3 | 71.1 | 71.4 | |
| Vehicle Noise: | 72.1 | 69.6 | 68.1 | 66.1 | 73.1 | 73.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 91 | 195 | 421 | 907 | |
| CNEL: | | | 96 | 206 | 444 | 957 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 14,821 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,453 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -0.48 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.80 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.50 | -0.13 | -1.20 | -5.37 | 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 | 64.5 | 62.8 | 59.2 | 66.8 | 67.2 | |
| Medium Trucks: | 61.3 | 59.4 | 55.1 | 54.3 | 61.7 | 62.0 | |
| Heavy Trucks: | 68.4 | 65.5 | 64.5 | 63.4 | 70.1 | 70.4 | |
| Vehicle Noise: | 71.1 | 68.6 | 67.0 | 65.2 | 72.2 | 72.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 78 | 169 | 364 | 784 | |
| CNEL: | | | 83 | 178 | 383 | 826 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 22,011 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,157 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 95.08% Medium Trucks: 75.3% 7.0% 17.7% 1.48% Heavy Trucks: 60.4% 12.0% 27.6% 3.44% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 1.28 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.80 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.13 | -0.13 | -1.20 | -5.37 | 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: | 68.4 | 66.3 | 64.6 | 61.0 | 68.5 | 69.0 | |
| Medium Trucks: | 61.3 | 59.4 | 55.1 | 54.3 | 61.7 | 62.0 | |
| Heavy Trucks: | 69.8 | 66.9 | 65.9 | 64.8 | 71.5 | 71.8 | |
| Vehicle Noise: | 72.5 | 70.0 | 68.5 | 66.5 | 73.6 | 73.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 97 | 209 | 450 | 969 | |
| CNEL: | | | 102 | 220 | 475 | 1,023 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 15,703 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,539 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -0.23 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.55 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.25 | -0.13 | -1.20 | -5.37 | 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: | 66.9 | 64.7 | 63.1 | 59.4 | 67.0 | 67.5 | |
| Medium Trucks: | 61.6 | 59.6 | 55.3 | 54.6 | 62.0 | 62.2 | |
| Heavy Trucks: | 68.7 | 65.8 | 64.8 | 63.6 | 70.4 | 70.7 | |
| Vehicle Noise: | 71.4 | 68.9 | 67.3 | 65.4 | 72.4 | 72.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 81 | 175 | 378 | 814 | |
| CNEL: | | | 86 | 185 | 399 | 859 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 22,893 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,244 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 95.04% Medium Trucks: 75.3% 7.0% 17.7% 1.51% Heavy Trucks: 60.4% 12.0% 27.6% 3.45% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 1.45 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.55 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.95 | -0.13 | -1.20 | -5.37 | 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: | 68.6 | 66.4 | 64.7 | 61.1 | 68.7 | 69.2 | |
| Medium Trucks: | 61.6 | 59.6 | 55.3 | 54.6 | 62.0 | 62.2 | |
| Heavy Trucks: | 70.0 | 67.1 | 66.1 | 64.9 | 71.7 | 72.0 | |
| Vehicle Noise: | 72.7 | 70.2 | 68.7 | 66.7 | 73.8 | 74.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 100 | 215 | 463 | 997 | |
| CNEL: | | | 105 | 227 | 488 | 1,052 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 19,422 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,903 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.69 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.62 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.33 | -0.13 | -1.20 | -5.37 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.8 | 65.7 | 64.0 | 60.4 | 67.9 | 68.4 | |
| Medium Trucks: | 62.5 | 60.6 | 56.3 | 55.5 | 62.9 | 63.2 | |
| Heavy Trucks: | 69.6 | 66.7 | 65.7 | 64.6 | 71.3 | 71.6 | |
| Vehicle Noise: | 72.3 | 69.8 | 68.2 | 66.3 | 73.4 | 73.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 94 | 202 | 436 | 938 | |
| CNEL: | | | 99 | 213 | 459 | 989 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Meridian Pkwy. Road Segment: n/o Van Buren Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 26,612 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,608 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 50 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 56.0 feet Centerline Dist. to Observer: 56.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.91% Medium Trucks: 75.3% 7.0% 17.7% 1.60% Heavy Trucks: 60.4% 12.0% 27.6% 3.49% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 50.359 Medium Trucks: 50.183 Heavy Trucks: 50.200 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.10 | -0.15 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.62 | -0.13 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.24 | -0.13 | -1.20 | -5.37 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.2 | 67.1 | 65.4 | 61.8 | 69.4 | 69.8 | |
| Medium Trucks: | 62.5 | 60.6 | 56.3 | 55.5 | 62.9 | 63.2 | |
| Heavy Trucks: | 70.7 | 67.8 | 66.8 | 65.6 | 72.4 | 72.7 | |
| Vehicle Noise: | 73.4 | 69.9 | 67.4 | 65.4 | 74.5 | 74.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 111 | 239 | 515 | 1,110 | |
| CNEL: | | | 117 | 252 | 544 | 1,171 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 9,913 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 972 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 0.32 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -15.99 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -13.70 | 1.31 | -1.20 | -5.50 | 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: | 59.1 | 57.0 | 55.3 | 51.7 | 59.3 | 59.7 | |
| Medium Trucks: | 54.9 | 53.0 | 48.7 | 47.9 | 55.3 | 55.6 | |
| Heavy Trucks: | 64.4 | 61.5 | 60.5 | 59.3 | 66.1 | 66.4 | |
| Vehicle Noise: | 65.9 | 63.2 | 61.8 | 60.3 | 67.2 | 67.5 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|-------|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 29 | 62 | 133 | 287 | | |
| | CNEL: | 30 | 65 | 140 | 301 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 10,579 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,037 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.45% Medium Trucks: 75.3% 7.0% 17.7% 2.06% Heavy Trucks: 60.4% 12.0% 27.6% 3.49% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 0.62 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -15.99 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -13.70 | 1.31 | -1.20 | -5.50 | 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: | 59.4 | 57.3 | 55.6 | 52.0 | 59.6 | 60.0 | |
| Medium Trucks: | 54.9 | 53.0 | 48.7 | 47.9 | 55.3 | 55.6 | |
| Heavy Trucks: | 64.4 | 61.5 | 60.5 | 59.3 | 66.1 | 66.4 | |
| Vehicle Noise: | 65.9 | 63.3 | 61.9 | 60.3 | 67.3 | 67.6 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|-------|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 29 | 62 | 134 | 289 | | |
| | CNEL: | 30 | 65 | 141 | 304 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 11,387 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,116 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 0.93 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -15.39 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -13.10 | 1.31 | -1.20 | -5.50 | 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 | 57.6 | 55.9 | 52.3 | 59.9 | 60.3 | |
| Medium Trucks: | 55.5 | 53.6 | 49.3 | 48.5 | 55.9 | 56.2 | |
| Heavy Trucks: | 65.0 | 62.1 | 61.1 | 59.9 | 66.7 | 67.0 | |
| Vehicle Noise: | 66.5 | 63.8 | 62.5 | 60.9 | 67.8 | 68.1 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|-------|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 31 | 68 | 146 | 314 | | |
| | CNEL: | 33 | 71 | 153 | 331 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 12,053 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,181 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.40% Medium Trucks: 75.3% 7.0% 17.7% 2.08% Heavy Trucks: 60.4% 12.0% 27.6% 3.52% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 1.19 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -15.39 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -13.10 | 1.31 | -1.20 | -5.50 | 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: | 60.0 | 57.9 | 56.2 | 52.6 | 60.1 | 60.6 | |
| Medium Trucks: | 55.5 | 53.6 | 49.3 | 48.5 | 55.9 | 56.2 | |
| Heavy Trucks: | 65.0 | 62.1 | 61.1 | 59.9 | 66.7 | 67.0 | |
| Vehicle Noise: | 66.5 | 63.9 | 62.5 | 60.9 | 67.9 | 68.2 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|-------|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 32 | 68 | 147 | 316 | | |
| | CNEL: | 33 | 72 | 154 | 333 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 12,893 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,264 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 1.47 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -14.85 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -12.56 | 1.31 | -1.20 | -5.50 | 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: | 60.3 | 58.1 | 56.5 | 52.8 | 60.4 | 60.9 |
| Medium Trucks: | 56.1 | 54.1 | 49.8 | 49.1 | 56.5 | 56.7 |
| Heavy Trucks: | 65.5 | 62.6 | 61.6 | 60.5 | 67.2 | 67.5 |
| Vehicle Noise: | 67.0 | 64.4 | 63.0 | 61.4 | 68.3 | 68.7 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 34 | 74 | 158 | 341 | |
| CNEL: | 36 | 77 | 167 | 359 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 13,559 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,329 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.37% Medium Trucks: 75.3% 7.0% 17.7% 2.09% Heavy Trucks: 60.4% 12.0% 27.6% 3.54% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 1.70 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -14.85 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -12.56 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 60.5 | 58.4 | 56.7 | 53.1 | 60.7 | 61.1 |
| Medium Trucks: | 56.1 | 54.1 | 49.8 | 49.1 | 56.5 | 56.7 |
| Heavy Trucks: | 65.5 | 62.6 | 61.6 | 60.5 | 67.2 | 67.5 |
| Vehicle Noise: | 67.1 | 64.4 | 63.0 | 61.5 | 68.4 | 68.7 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 34 | 74 | 159 | 343 | |
| CNEL: | 36 | 78 | 168 | 361 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HY Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 15,094 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,479 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 2.15 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -14.17 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -11.87 | 1.31 | -1.20 | -5.50 | 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: | 61.0 | 58.8 | 57.1 | 53.5 | 61.1 | 61.6 |
| Medium Trucks: | 56.7 | 54.8 | 50.5 | 49.8 | 57.2 | 57.4 |
| Heavy Trucks: | 66.2 | 63.3 | 62.3 | 61.2 | 67.9 | 68.2 |
| Vehicle Noise: | 67.7 | 65.1 | 63.7 | 62.1 | 69.0 | 69.4 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 38 | 82 | 176 | 379 | |
| CNEL: | 40 | 86 | 185 | 399 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Day St. Road Segment: n/o Alessandro Blvd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 15,759 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,544 vehicles Vehicle Speed: 25 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.33% Medium Trucks: 75.3% 7.0% 17.7% 2.10% Heavy Trucks: 60.4% 12.0% 27.6% 3.57% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 58.73 | 2.35 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -14.17 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -11.87 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 61.2 | 59.0 | 57.3 | 53.7 | 61.3 | 61.8 |
| Medium Trucks: | 56.7 | 54.8 | 50.5 | 49.8 | 57.2 | 57.4 |
| Heavy Trucks: | 66.2 | 63.3 | 62.3 | 61.2 | 67.9 | 68.2 |
| Vehicle Noise: | 67.7 | 65.1 | 63.7 | 62.1 | 69.1 | 69.4 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 38 | 82 | 177 | 381 | |
| CNEL: | 40 | 86 | 186 | 401 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 10,147 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 994 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | -1.62 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.93 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -15.64 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 65.0 | 62.8 | 61.2 | 57.5 | 65.1 | 65.6 | |
| Medium Trucks: | 59.9 | 58.0 | 53.6 | 52.9 | 60.3 | 60.6 | |
| Heavy Trucks: | 67.5 | 64.6 | 63.6 | 62.4 | 69.2 | 69.5 | |
| Vehicle Noise: | 69.9 | 67.3 | 65.8 | 64.0 | 71.0 | 71.3 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 51 | 111 | 238 | 513 | |
| CNEL: | | | 54 | 116 | 251 | 541 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 10,812 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,060 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.44% Medium Trucks: 75.3% 7.0% 17.7% 2.06% Heavy Trucks: 60.4% 12.0% 27.6% 3.50% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | -1.32 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.93 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -15.64 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 65.3 | 63.1 | 61.5 | 57.8 | 65.4 | 65.9 | |
| Medium Trucks: | 59.9 | 58.0 | 53.6 | 52.9 | 60.3 | 60.6 | |
| Heavy Trucks: | 67.5 | 64.6 | 63.6 | 62.4 | 69.2 | 69.5 | |
| Vehicle Noise: | 70.0 | 67.4 | 65.9 | 64.1 | 71.1 | 71.4 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 52 | 112 | 241 | 519 | |
| CNEL: | | | 55 | 118 | 254 | 547 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 11,656 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,142 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | -1.01 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.33 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -15.04 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 65.6 | 63.4 | 61.8 | 58.1 | 65.7 | 66.2 | |
| Medium Trucks: | 60.5 | 58.6 | 54.2 | 53.5 | 60.9 | 61.2 | |
| Heavy Trucks: | 68.1 | 65.2 | 64.2 | 63.0 | 69.8 | 70.1 | |
| Vehicle Noise: | 70.5 | 67.9 | 66.4 | 64.6 | 71.6 | 71.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 56 | 121 | 261 | 563 | |
| CNEL: | | | 59 | 128 | 275 | 593 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 12,321 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,207 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.40% Medium Trucks: 75.3% 7.0% 17.7% 2.08% Heavy Trucks: 60.4% 12.0% 27.6% 3.52% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | -0.76 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.33 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -15.04 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 65.8 | 63.7 | 62.0 | 58.4 | 66.0 | 66.4 | |
| Medium Trucks: | 60.5 | 58.6 | 54.2 | 53.5 | 60.9 | 61.2 | |
| Heavy Trucks: | 68.1 | 65.2 | 64.2 | 63.0 | 69.8 | 70.1 | |
| Vehicle Noise: | 70.6 | 68.0 | 66.5 | 64.7 | 71.7 | 72.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 57 | 122 | 264 | 569 | |
| CNEL: | | | 60 | 129 | 278 | 599 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 12,508 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,226 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | -0.71 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.02 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -14.73 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 65.9 | 63.7 | 62.1 | 58.4 | 66.0 | 66.5 | |
| Medium Trucks: | 60.8 | 58.9 | 54.6 | 53.8 | 61.2 | 61.5 | |
| Heavy Trucks: | 68.4 | 65.5 | 64.5 | 63.3 | 70.1 | 70.4 | |
| Vehicle Noise: | 70.8 | 68.2 | 66.7 | 64.9 | 71.9 | 72.2 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 59 | 127 | 274 | 590 | |
| CNEL: | | | 62 | 134 | 288 | 621 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 13,173 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,291 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.38% Medium Trucks: 75.3% 7.0% 17.7% 2.09% Heavy Trucks: 60.4% 12.0% 27.6% 3.54% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | -0.47 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.02 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -14.73 | 1.31 | -1.20 | -5.50 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 66.1 | 64.0 | 62.3 | 58.7 | 66.3 | 66.7 | |
| Medium Trucks: | 60.8 | 58.9 | 54.6 | 53.8 | 61.2 | 61.5 | |
| Heavy Trucks: | 68.4 | 65.5 | 64.5 | 63.3 | 70.1 | 70.4 | |
| Vehicle Noise: | 70.9 | 68.3 | 66.8 | 65.0 | 72.0 | 72.3 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 60 | 128 | 276 | 595 | |
| CNEL: | | | 63 | 135 | 291 | 628 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 14,646 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,435 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | -0.02 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -16.34 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -14.04 | 1.31 | -1.20 | -5.50 | 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 | 64.4 | 62.8 | 59.1 | 66.7 | 67.2 | |
| Medium Trucks: | 61.5 | 59.6 | 55.2 | 54.5 | 61.9 | 62.2 | |
| Heavy Trucks: | 69.1 | 66.2 | 65.2 | 64.0 | 70.8 | 71.1 | |
| Vehicle Noise: | 71.5 | 68.9 | 67.4 | 65.6 | 72.6 | 72.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 66 | 141 | 304 | 655 | |
| CNEL: | | | 69 | 149 | 320 | 690 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Frederick St. Road Segment: n/o Cactus Av. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 15,311 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,500 vehicles Vehicle Speed: 40 mph Near/Far Lane Distance: 36 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 44.0 feet Centerline Dist. to Observer: 44.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.33% Medium Trucks: 75.3% 7.0% 17.7% 2.10% Heavy Trucks: 60.4% 12.0% 27.6% 3.56% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 40.460 Medium Trucks: 40.241 Heavy Trucks: 40.262 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 66.51 | 0.18 | 1.28 | -1.20 | -4.61 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -16.34 | 1.31 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -14.04 | 1.31 | -1.20 | -5.50 | 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 | 64.6 | 63.0 | 59.3 | 66.9 | 67.4 | |
| Medium Trucks: | 61.5 | 59.6 | 55.2 | 54.5 | 61.9 | 62.2 | |
| Heavy Trucks: | 69.1 | 66.2 | 65.2 | 64.0 | 70.8 | 71.1 | |
| Vehicle Noise: | 71.5 | 69.0 | 67.5 | 65.6 | 72.6 | 73.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 66 | 142 | 307 | 661 | |
| CNEL: | | | 70 | 150 | 323 | 696 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 42,275 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,143 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.20 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -13.12 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.82 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.9 | 70.8 | 69.1 | 65.4 | 73.0 | 73.5 | |
| Medium Trucks: | 67.2 | 65.3 | 61.0 | 60.2 | 67.6 | 67.9 | |
| Heavy Trucks: | 73.5 | 70.6 | 69.6 | 68.5 | 75.2 | 75.5 | |
| Vehicle Noise: | 76.7 | 74.3 | 72.7 | 70.6 | 77.7 | 78.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 196 | 422 | 910 | 1,961 | |
| CNEL: | | | 207 | 446 | 961 | 2,069 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 46,599 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,567 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.63% Medium Trucks: 75.3% 7.0% 17.7% 1.99% Heavy Trucks: 60.4% 12.0% 27.6% 3.38% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.65 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -13.12 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.82 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.3 | 71.2 | 69.5 | 65.9 | 73.5 | 73.9 | |
| Medium Trucks: | 67.2 | 65.3 | 61.0 | 60.2 | 67.6 | 67.9 | |
| Heavy Trucks: | 73.5 | 70.6 | 69.6 | 68.5 | 75.2 | 75.5 | |
| Vehicle Noise: | 76.9 | 74.5 | 72.9 | 70.8 | 77.9 | 78.2 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 201 | 433 | 932 | 2,009 | |
| CNEL: | | | 212 | 457 | 985 | 2,121 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 48,561 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,759 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.80 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.52 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.22 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.5 | 71.4 | 69.7 | 66.0 | 73.6 | 74.1 | |
| Medium Trucks: | 67.8 | 65.9 | 61.6 | 60.8 | 68.2 | 68.5 | |
| Heavy Trucks: | 74.1 | 71.2 | 70.2 | 69.1 | 75.8 | 76.1 | |
| Vehicle Noise: | 77.3 | 74.9 | 73.3 | 71.2 | 78.3 | 78.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 215 | 463 | 998 | 2,150 | |
| CNEL: | | | 227 | 489 | 1,054 | 2,270 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 52,885 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,183 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.56% Medium Trucks: 75.3% 7.0% 17.7% 2.02% Heavy Trucks: 60.4% 12.0% 27.6% 3.42% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.19 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.52 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.22 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.9 | 71.7 | 70.1 | 66.4 | 74.0 | 74.5 | |
| Medium Trucks: | 67.8 | 65.9 | 61.6 | 60.8 | 68.2 | 68.5 | |
| Heavy Trucks: | 74.1 | 71.2 | 70.2 | 69.1 | 75.8 | 76.1 | |
| Vehicle Noise: | 77.5 | 75.1 | 73.4 | 71.4 | 78.5 | 78.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 220 | 473 | 1,019 | 2,196 | |
| CNEL: | | | 232 | 500 | 1,077 | 2,319 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 49,805 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,881 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.91 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.41 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.11 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.6 | 71.5 | 69.8 | 66.2 | 73.7 | 74.2 | |
| Medium Trucks: | 67.9 | 66.0 | 61.7 | 60.9 | 68.3 | 68.6 | |
| Heavy Trucks: | 74.2 | 71.3 | 70.3 | 69.2 | 75.9 | 76.2 | |
| Vehicle Noise: | 77.4 | 75.0 | 73.4 | 71.3 | 78.4 | 78.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 219 | 471 | 1,015 | 2,187 | |
| CNEL: | | | 231 | 497 | 1,071 | 2,308 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 54,129 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,305 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.55% Medium Trucks: 75.3% 7.0% 17.7% 2.02% Heavy Trucks: 60.4% 12.0% 27.6% 3.43% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.29 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.41 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.11 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.0 | 71.8 | 70.2 | 66.5 | 74.1 | 74.6 | |
| Medium Trucks: | 67.9 | 66.0 | 61.7 | 60.9 | 68.3 | 68.6 | |
| Heavy Trucks: | 74.2 | 71.3 | 70.3 | 69.2 | 75.9 | 76.2 | |
| Vehicle Noise: | 77.6 | 75.2 | 73.5 | 71.5 | 78.6 | 78.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 223 | 481 | 1,036 | 2,233 | |
| CNEL: | | | 236 | 508 | 1,094 | 2,357 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 58,590 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,742 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.62 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -11.70 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -9.41 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.3 | 72.2 | 70.5 | 66.9 | 74.4 | 74.9 | |
| Medium Trucks: | 68.6 | 66.7 | 62.4 | 61.6 | 69.0 | 69.3 | |
| Heavy Trucks: | 74.9 | 72.0 | 71.0 | 69.9 | 76.6 | 76.9 | |
| Vehicle Noise: | 78.1 | 75.7 | 74.1 | 72.1 | 79.1 | 79.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 244 | 525 | 1,131 | 2,437 | |
| CNEL: | | | 257 | 554 | 1,194 | 2,572 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Alessandro Blvd. Road Segment: w/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 62,914 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,166 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.48% Medium Trucks: 75.3% 7.0% 17.7% 2.05% Heavy Trucks: 60.4% 12.0% 27.6% 3.47% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.94 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -11.70 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -9.41 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.6 | 72.5 | 70.8 | 67.2 | 74.8 | 75.2 | |
| Medium Trucks: | 68.6 | 66.7 | 62.4 | 61.6 | 69.0 | 69.3 | |
| Heavy Trucks: | 74.9 | 72.0 | 71.0 | 69.9 | 76.6 | 76.9 | |
| Vehicle Noise: | 78.3 | 75.8 | 74.2 | 72.2 | 79.2 | 79.6 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 248 | 534 | 1,151 | 2,480 | |
| CNEL: | | | 262 | 564 | 1,216 | 2,619 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 42,360 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,151 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.21 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -13.11 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.81 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.9 | 70.8 | 69.1 | 65.5 | 73.0 | 73.5 | |
| Medium Trucks: | 67.2 | 65.3 | 61.0 | 60.2 | 67.6 | 67.9 | |
| Heavy Trucks: | 73.5 | 70.6 | 69.6 | 68.5 | 75.2 | 75.5 | |
| Vehicle Noise: | 76.7 | 74.3 | 72.7 | 70.6 | 77.7 | 78.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 196 | 423 | 911 | 1,963 | |
| CNEL: | | | 207 | 446 | 962 | 2,072 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 46,351 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,542 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.59% Medium Trucks: 75.3% 7.0% 17.7% 2.01% Heavy Trucks: 60.4% 12.0% 27.6% 3.41% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.62 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -13.11 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.81 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.3 | 71.2 | 69.5 | 65.9 | 73.5 | 73.9 | |
| Medium Trucks: | 67.2 | 65.3 | 61.0 | 60.2 | 67.6 | 67.9 | |
| Heavy Trucks: | 73.5 | 70.6 | 69.6 | 68.5 | 75.2 | 75.5 | |
| Vehicle Noise: | 76.9 | 74.5 | 72.9 | 70.8 | 77.9 | 78.2 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 201 | 433 | 932 | 2,008 | |
| CNEL: | | | 212 | 457 | 984 | 2,120 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 48,659 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,769 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.81 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.51 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.21 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.5 | 71.4 | 69.7 | 66.1 | 73.6 | 74.1 | |
| Medium Trucks: | 67.8 | 65.9 | 61.6 | 60.8 | 68.2 | 68.5 | |
| Heavy Trucks: | 74.1 | 71.2 | 70.2 | 69.1 | 75.8 | 76.1 | |
| Vehicle Noise: | 77.3 | 74.9 | 73.3 | 71.2 | 78.3 | 78.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 215 | 464 | 999 | 2,153 | |
| CNEL: | | | 227 | 490 | 1,055 | 2,273 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 52,650 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,160 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.53% Medium Trucks: 75.3% 7.0% 17.7% 2.03% Heavy Trucks: 60.4% 12.0% 27.6% 3.44% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.17 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.51 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.21 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.9 | 71.7 | 70.1 | 66.4 | 74.0 | 74.5 | |
| Medium Trucks: | 67.8 | 65.9 | 61.6 | 60.8 | 68.2 | 68.5 | |
| Heavy Trucks: | 74.1 | 71.2 | 70.2 | 69.1 | 75.8 | 76.1 | |
| Vehicle Noise: | 77.5 | 75.0 | 73.4 | 71.4 | 78.5 | 78.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 220 | 473 | 1,019 | 2,196 | |
| CNEL: | | | 232 | 500 | 1,076 | 2,319 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 50,399 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,939 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 3.96 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.35 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.06 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 73.7 | 71.5 | 69.8 | 66.2 | 73.8 | 74.2 | |
| Medium Trucks: | 68.0 | 66.0 | 61.7 | 61.0 | 68.4 | 68.6 | |
| Heavy Trucks: | 74.3 | 71.4 | 70.4 | 69.2 | 76.0 | 76.3 | |
| Vehicle Noise: | 77.5 | 75.0 | 73.4 | 71.4 | 78.5 | 78.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 220 | 475 | 1,023 | 2,204 | |
| CNEL: | | | 233 | 501 | 1,080 | 2,327 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 54,390 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,330 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.51% Medium Trucks: 75.3% 7.0% 17.7% 2.04% Heavy Trucks: 60.4% 12.0% 27.6% 3.45% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.31 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -12.35 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -10.06 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.0 | 71.9 | 70.2 | 66.6 | 74.1 | 74.6 | |
| Medium Trucks: | 68.0 | 66.0 | 61.7 | 61.0 | 68.4 | 68.6 | |
| Heavy Trucks: | 74.3 | 71.4 | 70.4 | 69.2 | 76.0 | 76.3 | |
| Vehicle Noise: | 77.6 | 75.2 | 73.6 | 71.5 | 78.6 | 79.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 225 | 484 | 1,043 | 2,246 | |
| CNEL: | | | 237 | 511 | 1,101 | 2,372 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 59,226 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,804 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.66 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -11.65 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -9.36 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.4 | 72.2 | 70.5 | 66.9 | 74.5 | 74.9 | |
| Medium Trucks: | 68.7 | 66.7 | 62.4 | 61.7 | 69.1 | 69.3 | |
| Heavy Trucks: | 75.0 | 72.1 | 71.1 | 69.9 | 76.7 | 77.0 | |
| Vehicle Noise: | 78.2 | 75.7 | 74.1 | 72.1 | 79.2 | 79.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 245 | 529 | 1,139 | 2,455 | |
| CNEL: | | | 259 | 558 | 1,203 | 2,591 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Alessandro Blvd. Road Segment: e/o Barton St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 63,217 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,195 vehicles Vehicle Speed: 55 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.45% Medium Trucks: 75.3% 7.0% 17.7% 2.06% Heavy Trucks: 60.4% 12.0% 27.6% 3.49% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 71.78 | 4.96 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 82.40 | -11.65 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 86.40 | -9.36 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.7 | 72.5 | 70.8 | 67.2 | 74.8 | 75.2 | |
| Medium Trucks: | 68.7 | 66.7 | 62.4 | 61.7 | 69.1 | 69.3 | |
| Heavy Trucks: | 75.0 | 72.1 | 71.1 | 69.9 | 76.7 | 77.0 | |
| Vehicle Noise: | 78.3 | 75.9 | 74.3 | 72.2 | 79.3 | 79.6 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 249 | 537 | 1,158 | 2,494 | |
| CNEL: | | | 263 | 567 | 1,223 | 2,634 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 44,072 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,319 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.25 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.07 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.77 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.6 | 68.5 | 66.8 | 63.2 | 70.8 | 71.2 | |
| Medium Trucks: | 65.3 | 63.4 | 59.1 | 58.3 | 65.7 | 66.0 | |
| Heavy Trucks: | 72.4 | 69.5 | 68.5 | 67.4 | 74.1 | 74.4 | |
| Vehicle Noise: | 75.1 | 72.6 | 71.0 | 69.1 | 76.2 | 76.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 155 | 334 | 719 | 1,549 | |
| CNEL: | | | 163 | 352 | 758 | 1,633 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 50,059 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,906 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.79% Medium Trucks: 75.3% 7.0% 17.7% 1.93% Heavy Trucks: 60.4% 12.0% 27.6% 3.28% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.84 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.07 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.77 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.2 | 69.1 | 67.4 | 63.8 | 71.3 | 71.8 | |
| Medium Trucks: | 65.3 | 63.4 | 59.1 | 58.3 | 65.7 | 66.0 | |
| Heavy Trucks: | 72.4 | 69.5 | 68.5 | 67.4 | 74.1 | 74.4 | |
| Vehicle Noise: | 75.3 | 72.8 | 71.3 | 69.3 | 76.4 | 76.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 159 | 343 | 739 | 1,591 | |
| CNEL: | | | 168 | 362 | 779 | 1,679 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 50,625 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,961 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.85 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.46 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.17 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.2 | 69.1 | 67.4 | 63.8 | 71.4 | 71.8 | |
| Medium Trucks: | 65.9 | 64.0 | 59.7 | 58.9 | 66.3 | 66.6 | |
| Heavy Trucks: | 73.0 | 70.1 | 69.1 | 68.0 | 74.7 | 75.0 | |
| Vehicle Noise: | 75.7 | 73.2 | 71.6 | 69.7 | 76.8 | 77.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 170 | 366 | 788 | 1,698 | |
| CNEL: | | | 179 | 386 | 831 | 1,791 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 56,612 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,548 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.70% Medium Trucks: 75.3% 7.0% 17.7% 1.96% Heavy Trucks: 60.4% 12.0% 27.6% 3.33% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 5.37 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.46 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.17 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.7 | 69.6 | 67.9 | 64.3 | 71.9 | 72.3 | |
| Medium Trucks: | 65.9 | 64.0 | 59.7 | 58.9 | 66.3 | 66.6 | |
| Heavy Trucks: | 73.0 | 70.1 | 69.1 | 68.0 | 74.7 | 75.0 | |
| Vehicle Noise: | 75.9 | 73.4 | 71.8 | 69.9 | 76.9 | 77.3 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 174 | 375 | 807 | 1,739 | |
| CNEL: | | | 183 | 395 | 852 | 1,835 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 52,834 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,178 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 5.04 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.28 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.98 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.4 | 69.3 | 67.6 | 64.0 | 71.6 | 72.0 | |
| Medium Trucks: | 66.1 | 64.2 | 59.9 | 59.1 | 66.5 | 66.8 | |
| Heavy Trucks: | 73.2 | 70.3 | 69.3 | 68.2 | 74.9 | 75.2 | |
| Vehicle Noise: | 75.9 | 73.4 | 71.8 | 69.9 | 77.0 | 77.3 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 175 | 376 | 811 | 1,748 | |
| CNEL: | | | 184 | 397 | 855 | 1,843 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 58,821 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,764 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.68% Medium Trucks: 75.3% 7.0% 17.7% 1.97% Heavy Trucks: 60.4% 12.0% 27.6% 3.35% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 5.53 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.28 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.98 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.9 | 69.8 | 68.1 | 64.5 | 72.0 | 72.5 | |
| Medium Trucks: | 66.1 | 64.2 | 59.9 | 59.1 | 66.5 | 66.8 | |
| Heavy Trucks: | 73.2 | 70.3 | 69.3 | 68.2 | 74.9 | 75.2 | |
| Vehicle Noise: | 76.1 | 73.6 | 72.0 | 70.1 | 77.1 | 77.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 179 | 385 | 830 | 1,788 | |
| CNEL: | | | 189 | 406 | 875 | 1,886 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 62,393 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,115 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 5.76 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.56 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.26 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.1 | 70.0 | 68.3 | 64.7 | 72.3 | 72.7 | |
| Medium Trucks: | 66.8 | 64.9 | 60.6 | 59.8 | 67.2 | 67.5 | |
| Heavy Trucks: | 73.9 | 71.0 | 70.0 | 68.9 | 75.6 | 75.9 | |
| Vehicle Noise: | 76.6 | 74.1 | 72.5 | 70.7 | 77.7 | 78.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 195 | 421 | 906 | 1,952 | |
| CNEL: | | | 206 | 444 | 956 | 2,059 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Alessandro Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 68,380 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,701 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.60% Medium Trucks: 75.3% 7.0% 17.7% 2.00% Heavy Trucks: 60.4% 12.0% 27.6% 3.40% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 6.18 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.56 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.26 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 72.6 | 70.4 | 68.7 | 65.1 | 72.7 | 73.1 | |
| Medium Trucks: | 66.8 | 64.9 | 60.6 | 59.8 | 67.2 | 67.5 | |
| Heavy Trucks: | 73.9 | 71.0 | 70.0 | 68.9 | 75.6 | 75.9 | |
| Vehicle Noise: | 76.8 | 74.3 | 72.7 | 70.8 | 77.8 | 78.2 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 199 | 429 | 924 | 1,990 | |
| CNEL: | | | 210 | 452 | 975 | 2,100 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 26,874 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,634 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.10 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.21 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.92 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 68.9 | 66.7 | 65.0 | 61.4 | 69.0 | 69.4 | |
| Medium Trucks: | 63.5 | 61.6 | 57.3 | 56.6 | 64.0 | 64.2 | |
| Heavy Trucks: | 70.6 | 67.7 | 66.7 | 65.6 | 72.4 | 72.7 | |
| Vehicle Noise: | 73.3 | 70.8 | 69.3 | 67.4 | 74.4 | 74.8 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 132 | 284 | 612 | 1,319 | |
| CNEL: | 139 | 300 | 645 | 1,390 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 28,205 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,764 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.36% Medium Trucks: 75.3% 7.0% 17.7% 2.09% Heavy Trucks: 60.4% 12.0% 27.6% 3.55% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.33 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.21 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.92 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.1 | 66.9 | 65.3 | 61.6 | 69.2 | 69.7 | |
| Medium Trucks: | 63.5 | 61.6 | 57.3 | 56.6 | 64.0 | 64.2 | |
| Heavy Trucks: | 70.6 | 67.7 | 66.7 | 65.6 | 72.4 | 72.7 | |
| Vehicle Noise: | 73.4 | 70.9 | 69.4 | 67.4 | 74.5 | 74.8 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 133 | 287 | 618 | 1,332 | |
| CNEL: | 140 | 303 | 652 | 1,405 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 30,870 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,025 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.71 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.61 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.32 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.5 | 67.3 | 65.6 | 62.0 | 69.6 | 70.0 | |
| Medium Trucks: | 64.1 | 62.2 | 57.9 | 57.2 | 64.6 | 64.8 | |
| Heavy Trucks: | 71.2 | 68.3 | 67.3 | 66.2 | 73.0 | 73.3 | |
| Vehicle Noise: | 73.9 | 71.4 | 69.9 | 68.0 | 75.0 | 75.4 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 145 | 312 | 671 | 1,446 | |
| CNEL: | 152 | 329 | 708 | 1,525 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 32,201 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,156 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.32% Medium Trucks: 75.3% 7.0% 17.7% 2.11% Heavy Trucks: 60.4% 12.0% 27.6% 3.57% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.90 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.61 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.32 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.6 | 67.5 | 65.8 | 62.2 | 69.8 | 70.2 | |
| Medium Trucks: | 64.1 | 62.2 | 57.9 | 57.2 | 64.6 | 64.8 | |
| Heavy Trucks: | 71.2 | 68.3 | 67.3 | 66.2 | 73.0 | 73.3 | |
| Vehicle Noise: | 74.0 | 71.5 | 69.9 | 68.0 | 75.1 | 75.4 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 146 | 314 | 677 | 1,459 | |
| CNEL: | 154 | 331 | 714 | 1,539 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 36,990 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,625 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 3.49 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.83 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.53 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.2 | 68.1 | 66.4 | 62.8 | 70.4 | 70.8 | |
| Medium Trucks: | 64.9 | 63.0 | 58.7 | 58.0 | 65.4 | 65.6 | |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 | |
| Vehicle Noise: | 74.7 | 72.2 | 70.7 | 68.8 | 75.8 | 76.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 163 | 352 | 757 | 1,632 | | | |
| CNEL: | 172 | 371 | 798 | 1,720 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 38,321 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,755 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.28% Medium Trucks: 75.3% 7.0% 17.7% 2.12% Heavy Trucks: 60.4% 12.0% 27.6% 3.60% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 3.65 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.83 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.53 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.4 | 68.3 | 66.6 | 63.0 | 70.5 | 71.0 | |
| Medium Trucks: | 64.9 | 63.0 | 58.7 | 58.0 | 65.4 | 65.6 | |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 | |
| Vehicle Noise: | 74.8 | 72.3 | 70.7 | 68.8 | 75.8 | 76.2 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 164 | 354 | 763 | 1,643 | | | |
| CNEL: | 173 | 373 | 804 | 1,733 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 43,210 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,235 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.17 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.15 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.86 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.9 | 68.8 | 67.1 | 63.5 | 71.1 | 71.5 | |
| Medium Trucks: | 65.6 | 63.7 | 59.4 | 58.6 | 66.0 | 66.3 | |
| Heavy Trucks: | 72.7 | 69.8 | 68.8 | 67.7 | 74.4 | 74.7 | |
| Vehicle Noise: | 75.4 | 72.9 | 71.3 | 69.4 | 76.5 | 76.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 181 | 390 | 840 | 1,810 | | | |
| CNEL: | 191 | 411 | 886 | 1,908 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Alessandro Blvd. Road Segment: w/o Day St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 44,540 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,365 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.25% Medium Trucks: 75.3% 7.0% 17.7% 2.13% Heavy Trucks: 60.4% 12.0% 27.6% 3.61% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.31 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.15 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.86 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.1 | 68.9 | 67.2 | 63.6 | 71.2 | 71.6 | |
| Medium Trucks: | 65.6 | 63.7 | 59.4 | 58.6 | 66.0 | 66.3 | |
| Heavy Trucks: | 72.7 | 69.8 | 68.8 | 67.7 | 74.4 | 74.7 | |
| Vehicle Noise: | 75.4 | 72.9 | 71.4 | 69.5 | 76.5 | 76.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 182 | 392 | 845 | 1,821 | | | |
| CNEL: | 192 | 414 | 891 | 1,920 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 19,011 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,863 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.60 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.72 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.42 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.0 | 64.8 | 63.2 | 59.5 | 67.1 | 67.6 | |
| Medium Trucks: | 61.7 | 59.7 | 55.4 | 54.7 | 62.1 | 62.3 | |
| Heavy Trucks: | 68.8 | 65.9 | 64.9 | 63.7 | 70.5 | 70.8 | |
| Vehicle Noise: | 71.4 | 68.9 | 67.4 | 65.5 | 72.5 | 72.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 88 | 190 | 410 | 884 | |
| CNEL: | | | 93 | 201 | 433 | 932 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 35,724 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,501 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 91.96% Medium Trucks: 75.3% 7.0% 17.7% 1.17% Heavy Trucks: 60.4% 12.0% 27.6% 6.87% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 3.24 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.72 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.03 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.6 | 67.5 | 65.8 | 62.2 | 69.8 | 70.2 | |
| Medium Trucks: | 61.7 | 59.7 | 55.4 | 54.7 | 62.1 | 62.3 | |
| Heavy Trucks: | 74.2 | 71.3 | 70.2 | 69.1 | 75.9 | 76.2 | |
| Vehicle Noise: | 75.6 | 73.0 | 71.7 | 70.0 | 77.0 | 77.3 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 175 | 376 | 810 | 1,746 | |
| CNEL: | | | 184 | 396 | 853 | 1,838 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 21,838 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,140 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 1.20 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.12 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.82 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.6 | 65.4 | 63.8 | 60.1 | 67.7 | 68.2 | |
| Medium Trucks: | 62.3 | 60.3 | 56.0 | 55.3 | 62.7 | 62.9 | |
| Heavy Trucks: | 69.4 | 66.5 | 65.5 | 64.3 | 71.1 | 71.4 | |
| Vehicle Noise: | 72.0 | 69.5 | 68.0 | 66.1 | 73.1 | 73.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 97 | 209 | 450 | 970 | |
| CNEL: | | | 102 | 220 | 475 | 1,022 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 38,551 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,778 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 92.12% Medium Trucks: 75.3% 7.0% 17.7% 1.24% Heavy Trucks: 60.4% 12.0% 27.6% 6.64% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 3.58 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.12 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.84 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.9 | 67.8 | 66.1 | 62.5 | 70.1 | 70.5 | |
| Medium Trucks: | 62.3 | 60.3 | 56.0 | 55.3 | 62.7 | 62.9 | |
| Heavy Trucks: | 74.3 | 71.4 | 70.4 | 69.3 | 76.0 | 76.4 | |
| Vehicle Noise: | 75.9 | 73.2 | 71.9 | 70.3 | 77.2 | 77.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 181 | 389 | 839 | 1,807 | |
| CNEL: | | | 190 | 410 | 883 | 1,903 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 21,888 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,145 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 1.21 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.11 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.81 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 67.6 | 65.4 | 63.8 | 60.1 | 67.7 | 68.2 | |
| Medium Trucks: | 62.3 | 60.3 | 56.0 | 55.3 | 62.7 | 62.9 | |
| Heavy Trucks: | 69.4 | 66.5 | 65.5 | 64.3 | 71.1 | 71.4 | |
| Vehicle Noise: | 72.1 | 69.6 | 68.0 | 66.1 | 73.1 | 73.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 97 | 209 | 451 | 971 | |
| CNEL: | | | 102 | 221 | 475 | 1,024 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 38,601 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,783 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 92.12% Medium Trucks: 75.3% 7.0% 17.7% 1.25% Heavy Trucks: 60.4% 12.0% 27.6% 6.64% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 3.58 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.11 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.84 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.0 | 67.8 | 66.1 | 62.5 | 70.1 | 70.5 | |
| Medium Trucks: | 62.3 | 60.3 | 56.0 | 55.3 | 62.7 | 62.9 | |
| Heavy Trucks: | 74.3 | 71.4 | 70.4 | 69.3 | 76.0 | 76.4 | |
| Vehicle Noise: | 75.9 | 73.2 | 71.9 | 70.3 | 77.2 | 77.5 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 181 | 390 | 839 | 1,808 | |
| CNEL: | | | 190 | 410 | 884 | 1,904 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 28,137 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,757 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.30 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.01 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.72 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 68.7 | 66.5 | 64.9 | 61.2 | 68.8 | 69.3 | |
| Medium Trucks: | 63.4 | 61.4 | 57.1 | 56.4 | 63.8 | 64.0 | |
| Heavy Trucks: | 70.5 | 67.6 | 66.6 | 65.4 | 72.2 | 72.5 | |
| Vehicle Noise: | 73.1 | 70.6 | 69.1 | 67.2 | 74.2 | 74.6 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 115 | 247 | 533 | 1,148 | |
| CNEL: | | | 121 | 261 | 562 | 1,211 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Cactus Av. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 44,850 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,395 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 92.39% Medium Trucks: 75.3% 7.0% 17.7% 1.38% Heavy Trucks: 60.4% 12.0% 27.6% 6.23% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.25 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.01 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.46 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.6 | 68.5 | 66.8 | 63.2 | 70.8 | 71.2 | |
| Medium Trucks: | 63.4 | 61.4 | 57.1 | 56.4 | 63.8 | 64.0 | |
| Heavy Trucks: | 74.7 | 71.8 | 70.8 | 69.7 | 76.4 | 76.7 | |
| Vehicle Noise: | 76.4 | 73.7 | 72.4 | 70.7 | 77.6 | 78.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 194 | 418 | 901 | 1,941 | |
| CNEL: | | | 204 | 440 | 949 | 2,044 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 26,874 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,634 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.10 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.21 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.92 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 68.9 | 66.7 | 65.0 | 61.4 | 69.0 | 69.4 | |
| Medium Trucks: | 63.5 | 61.6 | 57.3 | 56.6 | 64.0 | 64.2 | |
| Heavy Trucks: | 70.6 | 67.7 | 66.7 | 65.6 | 72.4 | 72.7 | |
| Vehicle Noise: | 73.3 | 70.8 | 69.3 | 67.4 | 74.4 | 74.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 132 | 284 | 612 | 1,319 | |
| CNEL: | | | 139 | 300 | 645 | 1,390 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 28,932 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,835 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.29% Medium Trucks: 75.3% 7.0% 17.7% 2.04% Heavy Trucks: 60.4% 12.0% 27.6% 3.67% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.43 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.21 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.66 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.2 | 67.0 | 65.4 | 61.7 | 69.3 | 69.8 | |
| Medium Trucks: | 63.5 | 61.6 | 57.3 | 56.6 | 64.0 | 64.2 | |
| Heavy Trucks: | 70.9 | 68.0 | 67.0 | 65.9 | 72.6 | 72.9 | |
| Vehicle Noise: | 73.6 | 71.1 | 69.5 | 67.6 | 74.7 | 75.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 137 | 296 | 637 | 1,372 | |
| CNEL: | | | 145 | 312 | 671 | 1,446 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 30,870 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,025 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.71 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.61 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.32 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.5 | 67.3 | 65.6 | 62.0 | 69.6 | 70.0 | |
| Medium Trucks: | 64.1 | 62.2 | 57.9 | 57.2 | 64.6 | 64.8 | |
| Heavy Trucks: | 71.2 | 68.3 | 67.3 | 66.2 | 73.0 | 73.3 | |
| Vehicle Noise: | 73.9 | 71.4 | 69.9 | 68.0 | 75.0 | 75.4 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 145 | 312 | 671 | 1,446 | |
| CNEL: | | | 152 | 329 | 708 | 1,525 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 32,928 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,227 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.26% Medium Trucks: 75.3% 7.0% 17.7% 2.06% Heavy Trucks: 60.4% 12.0% 27.6% 3.68% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 2.99 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.61 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.09 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 69.7 | 67.6 | 65.9 | 62.3 | 69.9 | 70.3 | |
| Medium Trucks: | 64.1 | 62.2 | 57.9 | 57.2 | 64.6 | 64.8 | |
| Heavy Trucks: | 71.5 | 68.6 | 67.6 | 66.4 | 73.2 | 73.5 | |
| Vehicle Noise: | 74.2 | 71.7 | 70.1 | 68.2 | 75.2 | 75.6 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 150 | 323 | 695 | 1,497 | |
| CNEL: | | | 158 | 340 | 733 | 1,579 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 36,990 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,625 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 3.49 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.83 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.53 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.2 | 68.1 | 66.4 | 62.8 | 70.4 | 70.8 | |
| Medium Trucks: | 64.9 | 63.0 | 58.7 | 58.0 | 65.4 | 65.6 | |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 | |
| Vehicle Noise: | 74.7 | 72.2 | 70.7 | 68.8 | 75.8 | 76.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 163 | 352 | 757 | 1,632 | |
| CNEL: | | | 172 | 371 | 798 | 1,720 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 39,048 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,827 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.23% Medium Trucks: 75.3% 7.0% 17.7% 2.08% Heavy Trucks: 60.4% 12.0% 27.6% 3.69% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 3.73 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.83 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.34 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.5 | 68.3 | 66.7 | 63.0 | 70.6 | 71.1 | |
| Medium Trucks: | 64.9 | 63.0 | 58.7 | 58.0 | 65.4 | 65.6 | |
| Heavy Trucks: | 72.2 | 69.3 | 68.3 | 67.2 | 73.9 | 74.2 | |
| Vehicle Noise: | 74.9 | 72.4 | 70.9 | 69.0 | 76.0 | 76.3 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 168 | 362 | 779 | 1,679 | |
| CNEL: | | | 177 | 382 | 822 | 1,771 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 43,210 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,235 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.17 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.15 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.86 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.9 | 68.8 | 67.1 | 63.5 | 71.1 | 71.5 | |
| Medium Trucks: | 65.6 | 63.7 | 59.4 | 58.6 | 66.0 | 66.3 | |
| Heavy Trucks: | 72.7 | 69.8 | 68.8 | 67.7 | 74.4 | 74.7 | |
| Vehicle Noise: | 75.4 | 72.9 | 71.3 | 69.4 | 76.5 | 76.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 181 | 390 | 840 | 1,810 | |
| CNEL: | | | 191 | 411 | 886 | 1,908 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Cactus Av. Road Segment: w/o Elsworth St. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 45,267 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,436 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 82 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 67.0 feet Centerline Dist. to Observer: 67.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.21% Medium Trucks: 75.3% 7.0% 17.7% 2.10% Heavy Trucks: 60.4% 12.0% 27.6% 3.69% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 53.226 Medium Trucks: 53.059 Heavy Trucks: 53.076 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 4.37 | -0.51 | -1.20 | -4.71 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.15 | -0.49 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.69 | -0.49 | -1.20 | -5.29 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.1 | 69.0 | 67.3 | 63.7 | 71.3 | 71.7 | |
| Medium Trucks: | 65.6 | 63.7 | 59.4 | 58.6 | 66.0 | 66.3 | |
| Heavy Trucks: | 72.9 | 70.0 | 69.0 | 67.8 | 74.6 | 74.9 | |
| Vehicle Noise: | 75.6 | 73.1 | 71.5 | 69.6 | 76.6 | 77.0 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 186 | 400 | 861 | 1,855 | |
| CNEL: | | | 196 | 421 | 908 | 1,956 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 8,884 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 871 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -2.70 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -19.02 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -16.73 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 65.4 | 63.2 | 61.5 | 57.9 | 65.5 | 65.9 | |
| Medium Trucks: | 60.1 | 58.1 | 53.8 | 53.1 | 60.5 | 60.7 | |
| Heavy Trucks: | 67.2 | 64.3 | 63.3 | 62.1 | 68.9 | 69.2 | |
| Vehicle Noise: | 69.8 | 67.3 | 65.8 | 63.9 | 70.9 | 71.3 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|----|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | 63 | 136 | 294 | 634 | | | |
| CNEL: | 67 | 144 | 310 | 668 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 8,884 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 871 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -2.70 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -19.02 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -16.73 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 65.4 | 63.2 | 61.5 | 57.9 | 65.5 | 65.9 | |
| Medium Trucks: | 60.1 | 58.1 | 53.8 | 53.1 | 60.5 | 60.7 | |
| Heavy Trucks: | 67.2 | 64.3 | 63.3 | 62.1 | 68.9 | 69.2 | |
| Vehicle Noise: | 69.8 | 67.3 | 65.8 | 63.9 | 70.9 | 71.3 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|----|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | 63 | 136 | 294 | 634 | | | |
| CNEL: | 67 | 144 | 310 | 668 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 10,205 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,000 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -2.10 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.42 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -16.12 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 66.0 | 63.8 | 62.1 | 58.5 | 66.1 | 66.5 | |
| Medium Trucks: | 60.7 | 58.7 | 54.4 | 53.7 | 61.1 | 61.3 | |
| Heavy Trucks: | 67.8 | 64.9 | 63.9 | 62.7 | 69.5 | 69.8 | |
| Vehicle Noise: | 70.4 | 67.9 | 66.4 | 64.5 | 71.5 | 71.9 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|----|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | 69 | 150 | 323 | 695 | | | |
| CNEL: | 73 | 158 | 340 | 733 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 10,205 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,000 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| | | | | VehicleType | Day | Evening | Night |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -2.10 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.42 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -16.12 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 66.0 | 63.8 | 62.1 | 58.5 | 66.1 | 66.5 | |
| Medium Trucks: | 60.7 | 58.7 | 54.4 | 53.7 | 61.1 | 61.3 | |
| Heavy Trucks: | 67.8 | 64.9 | 63.9 | 62.7 | 69.5 | 69.8 | |
| Vehicle Noise: | 70.4 | 67.9 | 66.4 | 64.5 | 71.5 | 71.9 | |

| Centerline Distance to Noise Contour (in feet) | | | | | | | |
|--|----|--------|--------|--------|--------|--|--|
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| Ldn: | 69 | 150 | 323 | 695 | | | |
| CNEL: | 73 | 158 | 340 | 733 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: OYC Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 10,277 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,007 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| | | | VehicleType | Day | Evening | Night | Daily |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -2.07 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.39 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -16.09 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 66.0 | 63.9 | 62.2 | 58.5 | 66.1 | 66.6 | |
| Medium Trucks: | 60.7 | 58.8 | 54.4 | 53.7 | 61.1 | 61.4 | |
| Heavy Trucks: | 67.8 | 64.9 | 63.9 | 62.7 | 69.5 | 69.8 | |
| Vehicle Noise: | 70.5 | 68.0 | 66.4 | 64.5 | 71.6 | 71.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 70 | 150 | 324 | 698 | |
| CNEL: | | | 74 | 159 | 342 | 736 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: OYCP Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 10,277 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,007 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| | | | VehicleType | Day | Evening | Night | Daily |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | -2.07 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.39 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -16.09 | 0.83 | -1.20 | -5.38 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 66.0 | 63.9 | 62.2 | 58.5 | 66.1 | 66.6 | |
| Medium Trucks: | 60.7 | 58.8 | 54.4 | 53.7 | 61.1 | 61.4 | |
| Heavy Trucks: | 67.8 | 64.9 | 63.9 | 62.7 | 69.5 | 69.8 | |
| Vehicle Noise: | 70.5 | 68.0 | 66.4 | 64.5 | 71.6 | 71.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 70 | 150 | 324 | 698 | |
| CNEL: | | | 74 | 159 | 342 | 736 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: HY Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 18,352 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,798 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| | | | VehicleType | Day | Evening | Night | Daily |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.45 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.87 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.58 | 0.83 | -1.20 | -5.38 | 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: | 68.5 | 66.4 | 64.7 | 61.1 | 68.7 | 69.1 | |
| Medium Trucks: | 63.2 | 61.3 | 57.0 | 56.2 | 63.6 | 63.9 | |
| Heavy Trucks: | 70.3 | 67.4 | 66.4 | 65.3 | 72.0 | 72.3 | |
| Vehicle Noise: | 73.0 | 70.5 | 68.9 | 67.0 | 74.1 | 74.4 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 103 | 221 | 477 | 1,028 | |
| CNEL: | | | 108 | 233 | 503 | 1,083 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|---|--|---------|---------------|------------|
| Scenario: HYP Road Name: Orange Terrace Pkwy. Road Segment: e/o Trautwein Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | |
| Average Daily Traffic (Adt): 18,352 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 1,798 vehicles Vehicle Speed: 45 mph Near/Far Lane Distance: 68 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | |
| Site Data | | | Vehicle Mix | | | | |
| | | | VehicleType | Day | Evening | Night | Daily |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 55.0 feet Centerline Dist. to Observer: 55.0 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 | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | |
| | | | Noise Source Elevations (in feet) | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | |
| | | | Autos: 43.520 Medium Trucks: 43.316 Heavy Trucks: 43.336 | | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 68.46 | 0.45 | 0.80 | -1.20 | -4.67 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.87 | 0.83 | -1.20 | -4.87 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.58 | 0.83 | -1.20 | -5.38 | 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: | 68.5 | 66.4 | 64.7 | 61.1 | 68.7 | 69.1 | |
| Medium Trucks: | 63.2 | 61.3 | 57.0 | 56.2 | 63.6 | 63.9 | |
| Heavy Trucks: | 70.3 | 67.4 | 66.4 | 65.3 | 72.0 | 72.3 | |
| Vehicle Noise: | 73.0 | 70.5 | 68.9 | 67.0 | 74.1 | 74.4 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | | | 103 | 221 | 477 | 1,028 | |
| CNEL: | | | 108 | 233 | 503 | 1,083 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 32,691 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,204 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.50 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.82 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.53 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.6 | 68.5 | 66.8 | 63.2 | 70.8 | 71.2 | |
| Medium Trucks: | 65.1 | 63.2 | 58.9 | 58.1 | 65.5 | 65.8 | |
| Heavy Trucks: | 71.8 | 68.9 | 67.9 | 66.7 | 73.5 | 73.8 | |
| Vehicle Noise: | 74.7 | 72.3 | 70.7 | 68.7 | 75.8 | 76.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 146 | 314 | 676 | 1,455 | | |
| | CNEL: | 154 | 331 | 713 | 1,535 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 34,686 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,399 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.42% Medium Trucks: 75.3% 7.0% 17.7% 2.07% Heavy Trucks: 60.4% 12.0% 27.6% 3.51% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.77 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.82 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.53 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.9 | 68.7 | 67.1 | 63.4 | 71.0 | 71.5 | |
| Medium Trucks: | 65.1 | 63.2 | 58.9 | 58.1 | 65.5 | 65.8 | |
| Heavy Trucks: | 71.8 | 68.9 | 67.9 | 66.7 | 73.5 | 73.8 | |
| Vehicle Noise: | 74.9 | 72.4 | 70.8 | 68.8 | 75.9 | 76.2 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 148 | 318 | 685 | 1,475 | | |
| | CNEL: | 156 | 335 | 723 | 1,557 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EA Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 37,552 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,680 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.10 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.22 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.92 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.2 | 69.1 | 67.4 | 63.8 | 71.4 | 71.8 | |
| Medium Trucks: | 65.7 | 63.8 | 59.5 | 58.7 | 66.1 | 66.4 | |
| Heavy Trucks: | 72.4 | 69.5 | 68.5 | 67.3 | 74.1 | 74.4 | |
| Vehicle Noise: | 75.3 | 72.9 | 71.3 | 69.3 | 76.4 | 76.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 160 | 344 | 741 | 1,596 | | |
| | CNEL: | 168 | 363 | 782 | 1,684 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 39,547 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,876 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.38% Medium Trucks: 75.3% 7.0% 17.7% 2.09% Heavy Trucks: 60.4% 12.0% 27.6% 3.54% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.34 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.22 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.92 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.4 | 69.3 | 67.6 | 64.0 | 71.6 | 72.0 | |
| Medium Trucks: | 65.7 | 63.8 | 59.5 | 58.7 | 66.1 | 66.4 | |
| Heavy Trucks: | 72.4 | 69.5 | 68.5 | 67.3 | 74.1 | 74.4 | |
| Vehicle Noise: | 75.4 | 73.0 | 71.4 | 69.4 | 76.5 | 76.8 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | |
| | Ldn: | 162 | 348 | 750 | 1,615 | | |
| | CNEL: | 170 | 367 | 791 | 1,704 | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 46,276 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,535 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.01 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.31 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.02 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.1 | 70.0 | 68.3 | 64.7 | 72.3 | 72.7 |
| Medium Trucks: | 66.6 | 64.7 | 60.4 | 59.6 | 67.0 | 67.3 |
| Heavy Trucks: | 73.3 | 70.4 | 69.4 | 68.2 | 75.0 | 75.3 |
| Vehicle Noise: | 76.3 | 73.8 | 72.2 | 70.2 | 77.3 | 77.6 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 183 | 395 | 852 | 1,835 | |
| CNEL: | 194 | 417 | 898 | 1,936 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 48,271 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,731 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.32% Medium Trucks: 75.3% 7.0% 17.7% 2.11% Heavy Trucks: 60.4% 12.0% 27.6% 3.57% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.20 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.31 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.02 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.3 | 70.2 | 68.5 | 64.9 | 72.5 | 72.9 |
| Medium Trucks: | 66.6 | 64.7 | 60.4 | 59.6 | 67.0 | 67.3 |
| Heavy Trucks: | 73.3 | 70.4 | 69.4 | 68.2 | 75.0 | 75.3 |
| Vehicle Noise: | 76.3 | 73.9 | 72.3 | 70.3 | 77.3 | 77.7 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 185 | 399 | 860 | 1,852 | |
| CNEL: | 195 | 421 | 907 | 1,955 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HY Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 54,110 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,303 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.68 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.63 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.34 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.8 | 70.7 | 69.0 | 65.4 | 72.9 | 73.4 |
| Medium Trucks: | 67.3 | 65.4 | 61.0 | 60.3 | 67.7 | 68.0 |
| Heavy Trucks: | 74.0 | 71.1 | 70.1 | 68.9 | 75.7 | 76.0 |
| Vehicle Noise: | 76.9 | 74.5 | 72.9 | 70.9 | 78.0 | 78.3 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 204 | 439 | 945 | 2,037 | |
| CNEL: | 215 | 463 | 997 | 2,148 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Van Buren Blvd. Road Segment: w/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 56,106 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,498 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.29% Medium Trucks: 75.3% 7.0% 17.7% 2.12% Heavy Trucks: 60.4% 12.0% 27.6% 3.59% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.85 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.63 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.34 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 73.0 | 70.8 | 69.2 | 65.5 | 73.1 | 73.6 |
| Medium Trucks: | 67.3 | 65.4 | 61.0 | 60.3 | 67.7 | 68.0 |
| Heavy Trucks: | 74.0 | 71.1 | 70.1 | 68.9 | 75.7 | 76.0 |
| Vehicle Noise: | 77.0 | 74.5 | 72.9 | 71.0 | 78.0 | 78.4 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 205 | 442 | 953 | 2,053 | |
| CNEL: | 217 | 467 | 1,006 | 2,167 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 30,101 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,950 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.14 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.18 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.88 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.3 | 68.1 | 66.4 | 62.8 | 70.4 | 70.8 |
| Medium Trucks: | 64.7 | 62.8 | 58.5 | 57.8 | 65.2 | 65.4 |
| Heavy Trucks: | 71.4 | 68.5 | 67.5 | 66.4 | 73.1 | 73.4 |
| Vehicle Noise: | 74.4 | 71.9 | 70.3 | 68.4 | 75.4 | 75.8 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 138 | 297 | 639 | 1,377 | |
| CNEL: | 145 | 313 | 675 | 1,453 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 32,762 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,211 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.56% Medium Trucks: 75.3% 7.0% 17.7% 2.02% Heavy Trucks: 60.4% 12.0% 27.6% 3.42% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.53 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.18 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.88 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.6 | 68.5 | 66.8 | 63.2 | 70.8 | 71.2 |
| Medium Trucks: | 64.7 | 62.8 | 58.5 | 57.8 | 65.2 | 65.4 |
| Heavy Trucks: | 71.4 | 68.5 | 67.5 | 66.4 | 73.1 | 73.4 |
| Vehicle Noise: | 74.5 | 72.1 | 70.5 | 68.5 | 75.5 | 75.9 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 140 | 303 | 652 | 1,405 | |
| CNEL: | 148 | 319 | 688 | 1,482 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 34,577 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,389 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.74 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.58 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.28 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.9 | 68.7 | 67.0 | 63.4 | 71.0 | 71.4 |
| Medium Trucks: | 65.4 | 63.4 | 59.1 | 58.4 | 65.8 | 66.0 |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 |
| Vehicle Noise: | 75.0 | 72.5 | 70.9 | 69.0 | 76.0 | 76.4 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 151 | 326 | 701 | 1,511 | |
| CNEL: | 159 | 343 | 740 | 1,594 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 37,237 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,649 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.50% Medium Trucks: 75.3% 7.0% 17.7% 2.04% Heavy Trucks: 60.4% 12.0% 27.6% 3.46% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.08 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.58 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.28 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 71.2 | 69.1 | 67.4 | 63.8 | 71.3 | 71.8 |
| Medium Trucks: | 65.4 | 63.4 | 59.1 | 58.4 | 65.8 | 66.0 |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 |
| Vehicle Noise: | 75.1 | 72.7 | 71.1 | 69.1 | 76.1 | 76.5 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 154 | 331 | 713 | 1,537 | |
| CNEL: | 162 | 349 | 753 | 1,622 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 44,791 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,389 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.86 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.45 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.16 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.0 | 69.8 | 68.2 | 64.5 | 72.1 | 72.6 |
| Medium Trucks: | 66.5 | 64.5 | 60.2 | 59.5 | 66.9 | 67.1 |
| Heavy Trucks: | 73.1 | 70.3 | 69.2 | 68.1 | 74.9 | 75.2 |
| Vehicle Noise: | 76.1 | 73.6 | 72.0 | 70.1 | 77.1 | 77.5 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 180 | 387 | 833 | 1,795 | |
| CNEL: | 189 | 408 | 879 | 1,894 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 47,451 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 4,650 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.41% Medium Trucks: 75.3% 7.0% 17.7% 2.07% Heavy Trucks: 60.4% 12.0% 27.6% 3.52% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.13 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.45 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.16 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.2 | 70.1 | 68.4 | 64.8 | 72.4 | 72.8 |
| Medium Trucks: | 66.5 | 64.5 | 60.2 | 59.5 | 66.9 | 67.1 |
| Heavy Trucks: | 73.1 | 70.3 | 69.2 | 68.1 | 74.9 | 75.2 |
| Vehicle Noise: | 76.2 | 73.7 | 72.2 | 70.2 | 77.2 | 77.6 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 182 | 392 | 844 | 1,819 | |
| CNEL: | 192 | 414 | 891 | 1,920 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HY Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 52,492 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,144 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.55 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.76 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.47 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.7 | 70.5 | 68.9 | 65.2 | 72.8 | 73.3 |
| Medium Trucks: | 67.2 | 65.2 | 60.9 | 60.2 | 67.6 | 67.8 |
| Heavy Trucks: | 73.8 | 70.9 | 69.9 | 68.8 | 75.5 | 75.9 |
| Vehicle Noise: | 76.8 | 74.3 | 72.7 | 70.8 | 77.8 | 78.2 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 200 | 430 | 926 | 1,996 | |
| CNEL: | 211 | 454 | 977 | 2,105 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Van Buren Blvd. Road Segment: e/o Wood Rd. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 55,153 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,405 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.36% Medium Trucks: 75.3% 7.0% 17.7% 2.09% Heavy Trucks: 60.4% 12.0% 27.6% 3.55% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 4.78 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.76 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.47 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.9 | 70.8 | 69.1 | 65.5 | 73.0 | 73.5 |
| Medium Trucks: | 67.2 | 65.2 | 60.9 | 60.2 | 67.6 | 67.8 |
| Heavy Trucks: | 73.8 | 70.9 | 69.9 | 68.8 | 75.5 | 75.9 |
| Vehicle Noise: | 76.9 | 74.4 | 72.8 | 70.8 | 77.9 | 78.3 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 202 | 435 | 937 | 2,018 | |
| CNEL: | 213 | 459 | 989 | 2,130 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 30,048 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 2,945 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.13 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.19 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.89 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.2 | 68.1 | 66.4 | 62.8 | 70.4 | 70.8 |
| Medium Trucks: | 64.7 | 62.8 | 58.5 | 57.8 | 65.2 | 65.4 |
| Heavy Trucks: | 71.4 | 68.5 | 67.5 | 66.4 | 73.1 | 73.4 |
| Vehicle Noise: | 74.4 | 71.9 | 70.3 | 68.3 | 75.4 | 75.8 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 138 | 296 | 639 | 1,376 | |
| CNEL: | 145 | 313 | 674 | 1,452 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 34,704 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,401 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.87% Medium Trucks: 75.3% 7.0% 17.7% 1.90% Heavy Trucks: 60.4% 12.0% 27.6% 3.23% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.79 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.19 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.89 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.9 | 68.8 | 67.1 | 63.5 | 71.0 | 71.5 |
| Medium Trucks: | 64.7 | 62.8 | 58.5 | 57.8 | 65.2 | 65.4 |
| Heavy Trucks: | 71.4 | 68.5 | 67.5 | 66.4 | 73.1 | 73.4 |
| Vehicle Noise: | 74.6 | 72.2 | 70.6 | 68.5 | 75.6 | 76.0 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 142 | 307 | 661 | 1,423 | |
| CNEL: | 150 | 324 | 697 | 1,502 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 34,516 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,383 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.73 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.58 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.29 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 70.8 | 68.7 | 67.0 | 63.4 | 71.0 | 71.4 |
| Medium Trucks: | 65.3 | 63.4 | 59.1 | 58.4 | 65.8 | 66.0 |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 |
| Vehicle Noise: | 75.0 | 72.5 | 70.9 | 69.0 | 76.0 | 76.4 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 151 | 325 | 700 | 1,509 | |
| CNEL: | 159 | 343 | 739 | 1,592 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 39,172 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,839 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.78% Medium Trucks: 75.3% 7.0% 17.7% 1.94% Heavy Trucks: 60.4% 12.0% 27.6% 3.28% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.31 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.58 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.29 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 71.4 | 69.3 | 67.6 | 64.0 | 71.6 | 72.0 |
| Medium Trucks: | 65.3 | 63.4 | 59.1 | 58.4 | 65.8 | 66.0 |
| Heavy Trucks: | 72.0 | 69.1 | 68.1 | 67.0 | 73.7 | 74.0 |
| Vehicle Noise: | 75.2 | 72.8 | 71.2 | 69.1 | 76.2 | 76.6 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 155 | 335 | 721 | 1,554 | |
| CNEL: | 164 | 353 | 762 | 1,641 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | | |
|---|-------|--------------|---|-------------|---------|---------------|------------|--|
| Scenario: OYC Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | | |
| Average Daily Traffic (Adt): 51,616 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,058 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | | |
| Site Data | | | Vehicle Mix | | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | | |
| | | | Noise Source Elevations (in feet) | | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | | |
| | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | | | |
| FHWA Noise Model Calculations | | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten | |
| Autos: | 70.20 | 4.48 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 | |
| Medium Trucks: | 81.00 | -11.84 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 | |
| Heavy Trucks: | 85.38 | -9.54 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 | |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 72.6 | 70.5 | 68.8 | 65.2 | 72.7 | 73.2 |
| Medium Trucks: | 67.1 | 65.2 | 60.8 | 60.1 | 67.5 | 67.8 |
| Heavy Trucks: | 73.8 | 70.9 | 69.9 | 68.7 | 75.5 | 75.8 |
| Vehicle Noise: | 76.7 | 74.2 | 72.7 | 70.7 | 77.8 | 78.1 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 197 | 425 | 916 | 1,973 | |
| CNEL: | 208 | 449 | 966 | 2,082 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | | |
|---|-------|--------------|---|-------------|---------|---------------|------------|--|
| Scenario: OYCP Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | | |
| Average Daily Traffic (Adt): 56,272 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,515 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | | |
| Site Data | | | Vehicle Mix | | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | Autos: 71.9% 12.2% 15.9% 94.57% Medium Trucks: 75.3% 7.0% 17.7% 2.02% Heavy Trucks: 60.4% 12.0% 27.6% 3.42% | | | | | |
| | | | Noise Source Elevations (in feet) | | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | | |
| | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | | | |
| FHWA Noise Model Calculations | | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten | |
| Autos: | 70.20 | 4.88 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 | |
| Medium Trucks: | 81.00 | -11.84 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 | |
| Heavy Trucks: | 85.38 | -9.54 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 | |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 73.0 | 70.9 | 69.2 | 65.5 | 73.1 | 73.6 |
| Medium Trucks: | 67.1 | 65.2 | 60.8 | 60.1 | 67.5 | 67.8 |
| Heavy Trucks: | 73.8 | 70.9 | 69.9 | 68.7 | 75.5 | 75.8 |
| Vehicle Noise: | 76.9 | 74.4 | 72.8 | 70.8 | 77.9 | 78.2 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 201 | 434 | 934 | 2,013 | |
| CNEL: | 212 | 458 | 986 | 2,125 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | | |
|---|-------|--------------|---|-------------|---------|---------------|------------|--|
| Scenario: HY | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | | | |
| Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | | | | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | | |
| Average Daily Traffic (Adt): 60,749 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 5,953 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | | |
| Site Data | | | Vehicle Mix | | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | | | |
| | | | Noise Source Elevations (in feet) | | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | | |
| | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | | | |
| FHWA Noise Model Calculations | | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten | |
| Autos: | 70.20 | 5.19 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 | |
| Medium Trucks: | 81.00 | -11.13 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 | |
| Heavy Trucks: | 85.38 | -8.84 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 | |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 73.3 | 71.2 | 69.5 | 65.9 | 73.4 | 73.9 |
| Medium Trucks: | 67.8 | 65.9 | 61.6 | 60.8 | 68.2 | 68.5 |
| Heavy Trucks: | 74.5 | 71.6 | 70.6 | 69.4 | 76.2 | 76.5 |
| Vehicle Noise: | 77.4 | 75.0 | 73.4 | 71.4 | 78.5 | 78.8 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 220 | 474 | 1,021 | 2,200 | |
| CNEL: | 232 | 500 | 1,077 | 2,321 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | | |
|---|-------|--------------|---|-------------|---------|---------------|------------|--|
| Scenario: HYP | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | | | |
| Road Name: Van Buren Blvd. Road Segment: e/o Orange Terrace Pkwy. | | | | | | | | |
| SITE SPECIFIC INPUT DATA | | | NOISE MODEL INPUTS | | | | | |
| Highway Data | | | Site Conditions (Hard = 10, Soft = 15) | | | | | |
| Average Daily Traffic (Adt): 65,405 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 6,410 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 42 feet | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | | | |
| Site Data | | | Vehicle Mix | | | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | Autos: 71.9% 12.2% 15.9% 94.50% Medium Trucks: 75.3% 7.0% 17.7% 2.04% Heavy Trucks: 60.4% 12.0% 27.6% 3.46% | | | | | |
| | | | Noise Source Elevations (in feet) | | | | | |
| | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | | | |
| | | | Lane Equivalent Distance (in feet) | | | | | |
| | | | Autos: 56.427 Medium Trucks: 56.270 Heavy Trucks: 56.285 | | | | | |
| FHWA Noise Model Calculations | | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten | |
| Autos: | 70.20 | 5.53 | -0.89 | -1.20 | -4.69 | 0.000 | 0.000 | |
| Medium Trucks: | 81.00 | -11.13 | -0.87 | -1.20 | -4.88 | 0.000 | 0.000 | |
| Heavy Trucks: | 85.38 | -8.84 | -0.87 | -1.20 | -5.34 | 0.000 | 0.000 | |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
| Autos: | 73.6 | 71.5 | 69.8 | 66.2 | 73.8 | 74.2 |
| Medium Trucks: | 67.8 | 65.9 | 61.6 | 60.8 | 68.2 | 68.5 |
| Heavy Trucks: | 74.5 | 71.6 | 70.6 | 69.4 | 76.2 | 76.5 |
| Vehicle Noise: | 77.6 | 75.1 | 73.5 | 71.5 | 78.6 | 78.9 |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 224 | 482 | 1,038 | 2,237 | |
| CNEL: | 236 | 509 | 1,096 | 2,361 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 33,413 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,274 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.59 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.73 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.43 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.7 | 68.5 | 66.9 | 63.2 | 70.8 | 71.3 | |
| Medium Trucks: | 65.2 | 63.2 | 58.9 | 58.2 | 65.6 | 65.8 | |
| Heavy Trucks: | 71.9 | 69.0 | 67.9 | 66.8 | 73.6 | 73.9 | |
| Vehicle Noise: | 74.8 | 72.3 | 70.7 | 68.8 | 75.8 | 76.2 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 147 | 317 | 683 | 1,472 | |
| CNEL: | 155 | 335 | 721 | 1,553 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: E+P Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 35,281 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,458 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 93.81% Medium Trucks: 75.3% 7.0% 17.7% 2.08% Heavy Trucks: 60.4% 12.0% 27.6% 4.11% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 2.82 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.73 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.77 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 70.9 | 68.8 | 67.1 | 63.5 | 71.0 | 71.5 | |
| Medium Trucks: | 65.2 | 63.2 | 58.9 | 58.2 | 65.6 | 65.8 | |
| Heavy Trucks: | 72.5 | 69.6 | 68.6 | 67.5 | 74.2 | 74.5 | |
| Vehicle Noise: | 75.2 | 72.7 | 71.2 | 69.3 | 76.3 | 76.7 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 158 | 341 | 734 | 1,582 | |
| CNEL: | 167 | 359 | 774 | 1,668 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EA Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 38,381 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,761 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.19 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.12 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.83 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.3 | 69.1 | 67.5 | 63.8 | 71.4 | 71.9 | |
| Medium Trucks: | 65.8 | 63.8 | 59.5 | 58.8 | 66.2 | 66.4 | |
| Heavy Trucks: | 72.5 | 69.6 | 68.5 | 67.4 | 74.2 | 74.5 | |
| Vehicle Noise: | 75.4 | 72.9 | 71.4 | 69.4 | 76.4 | 76.8 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 161 | 348 | 749 | 1,614 | |
| CNEL: | 170 | 367 | 791 | 1,703 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|-------|--------------|----------|---|---------|---------------|------------|
| Scenario: EAP Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 40,249 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 3,944 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 93.84% Medium Trucks: 75.3% 7.0% 17.7% 2.09% Heavy Trucks: 60.4% 12.0% 27.6% 4.06% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 3.39 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.12 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.25 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |

| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
|---|---------------|---------|-------------|-----------|------|------|--|
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 71.5 | 69.3 | 67.7 | 64.0 | 71.6 | 72.1 | |
| Medium Trucks: | 65.8 | 63.8 | 59.5 | 58.8 | 66.2 | 66.4 | |
| Heavy Trucks: | 73.0 | 70.1 | 69.1 | 68.0 | 74.7 | 75.1 | |
| Vehicle Noise: | 75.8 | 73.3 | 71.7 | 69.8 | 76.9 | 77.2 | |

| Centerline Distance to Noise Contour (in feet) | | | | | |
|--|--------|--------|--------|--------|--|
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | |
| Ldn: | 172 | 370 | 798 | 1,720 | |
| CNEL: | 181 | 391 | 842 | 1,814 | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYC Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 81,701 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 8,007 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 6.47 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.84 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -7.55 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.6 | 72.4 | 70.8 | 67.1 | 74.7 | 75.2 | |
| Medium Trucks: | 69.1 | 67.1 | 62.8 | 62.1 | 69.5 | 69.7 | |
| Heavy Trucks: | 75.7 | 72.8 | 71.8 | 70.7 | 77.4 | 77.8 | |
| Vehicle Noise: | 78.7 | 76.2 | 74.6 | 72.7 | 79.7 | 80.1 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 267 | 576 | 1,240 | 2,672 | | | |
| CNEL: | 282 | 607 | 1,308 | 2,818 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: OYCP Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 83,569 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 8,190 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 93.96% Medium Trucks: 75.3% 7.0% 17.7% 2.15% Heavy Trucks: 60.4% 12.0% 27.6% 3.89% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 6.57 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.84 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -7.26 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 74.7 | 72.5 | 70.8 | 67.2 | 74.8 | 75.2 | |
| Medium Trucks: | 69.1 | 67.1 | 62.8 | 62.1 | 69.5 | 69.7 | |
| Heavy Trucks: | 76.0 | 73.1 | 72.1 | 71.0 | 77.7 | 78.0 | |
| Vehicle Noise: | 78.9 | 76.4 | 74.8 | 72.9 | 79.9 | 80.3 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 275 | 593 | 1,278 | 2,754 | | | |
| CNEL: | 291 | 626 | 1,348 | 2,905 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HY Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 95,267 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 9,336 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 94.08% Medium Trucks: 75.3% 7.0% 17.7% 2.20% Heavy Trucks: 60.4% 12.0% 27.6% 3.73% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 7.14 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.18 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.88 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 75.2 | 73.1 | 71.4 | 67.8 | 75.4 | 75.8 | |
| Medium Trucks: | 69.7 | 67.8 | 63.5 | 62.7 | 70.2 | 70.4 | |
| Heavy Trucks: | 76.4 | 73.5 | 72.5 | 71.4 | 78.1 | 78.4 | |
| Vehicle Noise: | 79.4 | 76.9 | 75.3 | 73.3 | 80.4 | 80.7 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 296 | 638 | 1,374 | 2,960 | | | |
| CNEL: | 312 | 673 | 1,449 | 3,122 | | | |

Wednesday, September 28, 2022

| FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021) | | | | | | | |
|---|---------------|--------------|-------------|---|---------|---------------|------------|
| Scenario: HYP Road Name: Van Buren Blvd. Road Segment: e/o Meridian Pkwy. | | | | Project Name: West Campus Upper Plate Job Number: 14064 | | | |
| SITE SPECIFIC INPUT DATA | | | | NOISE MODEL INPUTS | | | |
| Highway Data | | | | Site Conditions (Hard = 10, Soft = 15) | | | |
| Average Daily Traffic (Adt): 97,135 vehicles Peak Hour Percentage: 9.80% Peak Hour Volume: 9,519 vehicles Vehicle Speed: 50 mph Near/Far Lane Distance: 41 feet | | | | Autos: 15 Medium Trucks (2 Axles): 15 Heavy Trucks (3+ Axles): 15 | | | |
| Site Data | | | | Vehicle Mix | | | |
| Barrier Height: 0.0 feet Barrier Type (0-Wall, 1-Berm): 0.0 Centerline Dist. to Barrier: 60.0 feet Centerline Dist. to Observer: 60.0 feet Barrier Distance to Observer: 0.0 feet Observer Height (Above Pad): 5.0 feet Pad Elevation: 0.0 feet Road Elevation: 0.0 feet Road Grade: 0.0% Left View: -90.0 degrees Right View: 90.0 degrees | | | | Autos: 71.9% 12.2% 15.9% 93.98% Medium Trucks: 75.3% 7.0% 17.7% 2.15% Heavy Trucks: 60.4% 12.0% 27.6% 3.87% | | | |
| | | | | Noise Source Elevations (in feet) | | | |
| | | | | Autos: 0.000 Medium Trucks: 2.297 Heavy Trucks: 8.004 Grade Adjustment: 0.0 | | | |
| | | | | Lane Equivalent Distance (in feet) | | | |
| | | | | Autos: 56.611 Medium Trucks: 56.454 Heavy Trucks: 56.469 | | | |
| FHWA Noise Model Calculations | | | | | | | |
| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
| Autos: | 70.20 | 7.22 | -0.91 | -1.20 | -4.69 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.18 | -0.89 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.64 | -0.90 | -1.20 | -5.34 | 0.000 | 0.000 |
| Unmitigated Noise Levels (without Topo and barrier attenuation) | | | | | | | |
| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL | |
| Autos: | 75.3 | 73.2 | 71.5 | 67.9 | 75.5 | 75.9 | |
| Medium Trucks: | 69.7 | 67.8 | 63.5 | 62.7 | 70.2 | 70.4 | |
| Heavy Trucks: | 76.6 | 73.8 | 72.7 | 71.6 | 78.4 | 78.7 | |
| Vehicle Noise: | 79.5 | 77.0 | 75.5 | 73.5 | 80.6 | 80.9 | |
| Centerline Distance to Noise Contour (in feet) | | | | | | | |
| | 70 dBA | 65 dBA | 60 dBA | 55 dBA | | | |
| Ldn: | 304 | 655 | 1,410 | 3,038 | | | |
| CNEL: | 320 | 690 | 1,488 | 3,205 | | | |

Wednesday, September 28, 2022

APPENDIX 9.1:
CADNAA OPERATIONAL NOISE MODEL INPUTS

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14064 - West Campus Upper Plateau

CadnaA Noise Prediction Model: 14064_12.cna

Date: 14.12.22

Analyst: B. Lawson

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 | |
| Reference Time Day (min) | 960.00 |
| Reference Time Night (min) | 480.00 |
| Daytime Penalty (dB) | 0.00 |
| Recr. Time Penalty (dB) | 5.00 |
| Night-time Penalty (dB) | 10.00 |
| DTM | |
| Standard Height (m) | 0.00 |
| Model of Terrain | Triangulation |
| Reflection | |
| max. Order of Reflection | 2 |
| Search Radius Src | 100.00 |
| Search Radius Rcvr | 100.00 |
| Max. Distance Source - Rcvr | 1000.00 1000.00 |
| Min. Distance Rcvr - Reflector | 1.00 1.00 |
| Min. Distance Source - Reflector | 0.10 |
| Industrial (ISO 9613) | |
| Lateral Diffraction | some Obj |
| Obst. within Area Src do not shield | On |
| Screening | |
| | Incl. Ground Att. over Barrier |
| | Dz with limit (20/25) |
| Barrier Coefficients C1,2,3 | 3.0 20.0 0.0 |
| Temperature #(Unit,TEMP) | 10 |
| rel. Humidity (%) | 70 |
| Ground Absorption G | 0.50 |
| Wind Speed for Dir. #(Unit,SPEED) | 3.0 |
| Roads (TNM) | |
| Railways (FTA/FRA) | |
| Aircraft (???) | |
| Strictly acc. to AzB | |

Receiver Noise Levels

| Name | M. | ID | Level Lr | | | Limit. Value | | | Land Use | | | Height | Coordinates | | | |
|-----------|----|-----|----------|-------|-------|--------------|-------|-------|----------|------|------------|--------|-------------|------------|------------|---------|
| | | | Day | Night | CNEL | Day | Night | CNEL | Type | Auto | Noise Type | | X | Y | Z | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | | (ft) | (ft) | (ft) | (ft) | |
| RECEIVERS | | R1 | 47.7 | 45.9 | 52.8 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6239395.68 | 2277518.39 | 1655.67 |
| RECEIVERS | | R2 | 44.3 | 42.8 | 49.6 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6240840.00 | 2277494.60 | 1651.48 |
| RECEIVERS | | R3 | 40.3 | 38.0 | 44.9 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6242300.90 | 2277400.66 | 1634.81 |
| RECEIVERS | | R4 | 43.4 | 38.9 | 46.3 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6244773.77 | 2274154.49 | 1645.02 |
| RECEIVERS | | R5 | 34.0 | 31.0 | 38.0 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6243135.43 | 2273499.44 | 1712.25 |
| RECEIVERS | | R6 | 46.7 | 44.1 | 51.1 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6241549.82 | 2272804.45 | 1773.00 |
| RECEIVERS | | R7 | 41.5 | 40.1 | 46.9 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6240610.52 | 2272148.50 | 1776.64 |
| RECEIVERS | | R8 | 47.4 | 43.7 | 50.9 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6238684.09 | 2273020.65 | 1696.99 |
| RECEIVERS | | R9 | 38.5 | 35.1 | 42.2 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6237166.99 | 2274522.15 | 1657.00 |
| RECEIVERS | | R10 | 40.5 | 38.0 | 44.9 | 55.0 | 45.0 | 0.0 | | | | 5.00 | r | 6238570.92 | 2277016.29 | 1641.37 |

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) | |
| POINTSOURCE | | AC00 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6241832.21 | 2276036.91 | 1749.06 |
| POINTSOURCE | | AC01 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6242245.92 | 2275780.68 | 1749.06 |
| POINTSOURCE | | AC01 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6241881.06 | 2274721.43 | 1821.17 |
| POINTSOURCE | | AC02 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6242248.59 | 2276026.24 | 1749.06 |
| POINTSOURCE | | AC02 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6241960.31 | 2274837.65 | 1821.17 |
| POINTSOURCE | | AC03 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6242256.60 | 2276279.80 | 1749.06 |
| POINTSOURCE | | AC03 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6241807.11 | 2274832.37 | 1821.17 |
| POINTSOURCE | | AC04 | 88.9 | 88.9 | 88.9 | Lw | 88.9 | 585.00 | 0.00 | 252.00 | 5.00 | g | 6240932.71 | 2275852.74 | 1759.70 |

Table with 18 columns: Name, M., ID, Result. PWL (Day, Evening, Night), Lw / Li (Type, Value, norm.), Operating Time (Day, Special, Night), Height (ft), and Coordinates (X, Y, Z). Rows include POINTSOURCE (SPORTS39-SPORTS78) and TRASH (TRASH01-TRASH19).

Line Source(s)

Table with 18 columns: Name, M., ID, Result. PWL (Day, Evening, Night), Result. PWL* (Day, Evening, Night), Lw / Li (Type, Value, norm.), Operating Time (Day, Special, Night), Moving Pt. Src (Number, Speed), and Height (ft). Rows include LINESOURCE (TRUCK01-TRUCK11).

| Name | M. | ID | Result. PWL | | | Result. PWL' | | | Lw / Li | | | Operating Time | | | Moving Pt. Src | | | Height | | |
|------------|----|---------|-------------|---------|-------|--------------|---------|-------|---------|-------|-------|----------------|---------|-------|----------------|---------|-------|--------|------|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | Number | | | Speed | (ft) | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | Day | Evening | Night | (mph) | | |
| LINESOURCE | | TRUCK12 | 104.5 | 89.4 | 95.5 | 85.7 | 70.6 | 76.7 | PWL-Pt | 93.2 | | | | | 1777.0 | 55.0 | 222.0 | 6.2 | 8 | r |
| LINESOURCE | | TRUCK13 | 118.5 | 103.4 | 109.5 | 85.7 | 70.6 | 76.7 | PWL-Pt | 93.2 | | | | | 1777.0 | 55.0 | 222.0 | 6.2 | 8 | r |
| LINESOURCE | | TRUCK14 | 120.3 | 105.2 | 111.2 | 85.7 | 70.6 | 76.7 | PWL-Pt | 93.2 | | | | | 1777.0 | 55.0 | 222.0 | 6.2 | 8 | r |
| LINESOURCE | | TRUCK15 | 102.3 | 87.2 | 93.2 | 85.7 | 70.6 | 76.7 | PWL-Pt | 93.2 | | | | | 1777.0 | 55.0 | 222.0 | 6.2 | 8 | r |

| Name | ID | Height | | Coordinates | | | |
|------------|---------|--------|------|-------------|------------|---------|---------|
| | | Begin | End | x | y | z | Ground |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) |
| LINESOURCE | TRUCK01 | 8.00 | r | 6242442.37 | 2275605.20 | 1716.61 | 1708.61 |
| | | | | 6242447.65 | 2275421.86 | 1727.44 | 1719.43 |
| | | | | 6242391.35 | 2275244.31 | 1741.03 | 1733.03 |
| LINESOURCE | TRUCK02 | 8.00 | r | 6241624.56 | 2275601.96 | 1750.03 | 1742.03 |
| | | | | 6241625.14 | 2275298.49 | 1763.05 | 1755.05 |
| LINESOURCE | TRUCK03 | 8.00 | r | 6242369.67 | 2276494.22 | 1706.29 | 1698.29 |
| | | | | 6241499.65 | 2276499.68 | 1704.71 | 1696.71 |
| LINESOURCE | TRUCK04 | 8.00 | r | 6241645.52 | 2276277.47 | 1711.44 | 1703.44 |
| | | | | 6241647.10 | 2276491.31 | 1698.27 | 1690.27 |
| LINESOURCE | TRUCK05 | 8.00 | r | 6241346.81 | 2275195.83 | 1770.03 | 1762.03 |
| | | | | 6241351.03 | 2275299.76 | 1766.00 | 1758.00 |
| LINESOURCE | TRUCK06 | 8.00 | r | 6239619.09 | 2274281.60 | 1732.35 | 1724.35 |
| | | | | 6239461.39 | 2274277.62 | 1733.00 | 1725.00 |
| | | | | 6239443.16 | 2274265.90 | 1732.87 | 1724.87 |
| | | | | 6239435.35 | 2274255.48 | 1732.59 | 1724.59 |
| | | | | 6239430.14 | 2274229.44 | 1731.94 | 1723.94 |
| | | | | 6239427.62 | 2274075.45 | 1725.07 | 1717.07 |
| LINESOURCE | TRUCK07 | 8.00 | r | 6239617.40 | 2275166.68 | 1718.49 | 1710.49 |
| | | | | 6239434.05 | 2275170.85 | 1716.91 | 1708.91 |
| | | | | 6239430.06 | 2275251.38 | 1722.12 | 1714.12 |
| | | | | 6239422.25 | 2275311.27 | 1723.32 | 1715.31 |
| LINESOURCE | TRUCK08 | 8.00 | r | 6240976.24 | 2276330.07 | 1725.02 | 1717.02 |
| | | | | 6241502.00 | 2276329.19 | 1709.73 | 1701.73 |
| LINESOURCE | TRUCK09 | 8.00 | r | 6241021.83 | 2275562.96 | 1774.15 | 1766.15 |
| | | | | 6241351.78 | 2275564.93 | 1748.12 | 1740.12 |
| | | | | 6241351.03 | 2275299.76 | 1766.00 | 1758.00 |
| LINESOURCE | TRUCK10 | 8.00 | r | 6239829.54 | 2276329.76 | 1697.73 | 1689.73 |
| | | | | 6239356.00 | 2276320.90 | 1679.54 | 1671.54 |
| LINESOURCE | TRUCK11 | 8.00 | r | 6239806.70 | 2275557.97 | 1713.88 | 1705.88 |
| | | | | 6239157.93 | 2275561.08 | 1696.15 | 1688.15 |
| LINESOURCE | TRUCK12 | 8.00 | r | 6239433.38 | 2275559.06 | 1706.07 | 1698.07 |
| | | | | 6239425.70 | 2275308.68 | 1723.56 | 1715.56 |
| LINESOURCE | TRUCK13 | 8.00 | r | 6245311.50 | 2275489.15 | 1609.78 | 1601.78 |
| | | | | 6244654.37 | 2275259.39 | 1623.01 | 1615.01 |
| | | | | 6244493.54 | 2275222.62 | 1617.21 | 1609.21 |
| | | | | 6244102.94 | 2275176.67 | 1649.11 | 1641.11 |
| | | | | 6243091.97 | 2275107.74 | 1704.97 | 1696.97 |
| | | | | 6242885.18 | 2275112.34 | 1716.88 | 1708.88 |
| | | | | 6242352.13 | 2275254.79 | 1743.22 | 1735.22 |
| | | | | 6242131.56 | 2275296.15 | 1747.27 | 1739.27 |
| | | | | 6239153.81 | 2275309.93 | 1696.77 | 1688.77 |
| LINESOURCE | TRUCK14 | 8.00 | r | 6241502.02 | 2275299.06 | 1758.16 | 1750.16 |
| | | | | 6241499.65 | 2276499.68 | 1704.71 | 1696.71 |
| | | | | 6239346.81 | 2276504.71 | 1678.61 | 1670.61 |
| | | | | 6239356.00 | 2276320.90 | 1679.54 | 1671.54 |
| | | | | 6239356.00 | 2276160.06 | 1681.30 | 1673.30 |
| | | | | 6239282.48 | 2275930.30 | 1692.80 | 1684.79 |
| | | | | 6239163.00 | 2275627.01 | 1693.10 | 1685.10 |
| | | | | 6239153.81 | 2275507.53 | 1698.69 | 1690.69 |
| | | | | 6239153.81 | 2275309.93 | 1696.77 | 1688.77 |
| | | | | 6239144.62 | 2274073.80 | 1713.78 | 1705.78 |
| | | | | 6241506.60 | 2274087.59 | 1759.32 | 1751.32 |
| | | | | 6241502.08 | 2275299.06 | 1758.16 | 1750.16 |
| LINESOURCE | TRUCK15 | 8.00 | r | 6242369.67 | 2276494.22 | 1706.29 | 1698.29 |
| | | | | 6242425.06 | 2276485.54 | 1705.22 | 1697.22 |
| | | | | 6242439.20 | 2276449.17 | 1708.80 | 1700.80 |
| | | | | 6242435.16 | 2276395.82 | 1714.17 | 1706.17 |

Area Source(s)

| Name | M. | ID | Result. PWL | | | Result. PWL' | | | Lw / Li | | | Operating Time | | | Height (ft) | |
|------------|----|--------|-------------|---------|-------|--------------|---------|-------|---------|-------|-------|----------------|---------|-------|-------------|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | | |
| AREASOURCE | | DOCK01 | 111.5 | 111.5 | 111.5 | 70.2 | 70.2 | 70.2 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK02 | 111.5 | 111.5 | 111.5 | 71.0 | 71.0 | 71.0 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK03 | 111.5 | 111.5 | 111.5 | 62.5 | 62.5 | 62.5 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK04 | 111.5 | 111.5 | 111.5 | 69.2 | 69.2 | 69.2 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK05 | 111.5 | 111.5 | 111.5 | 66.8 | 66.8 | 66.8 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK06 | 111.5 | 111.5 | 111.5 | 76.7 | 76.7 | 76.7 | Lw | 111.5 | | | | | 8 | r |

| Name | M. | ID | Result. PWL | | | Result. PWL" | | | Lw / Li | | | Operating Time | | | Height (ft) | |
|------------|----|--------|-------------|---------|-------|--------------|---------|-------|---------|-------|-------|----------------|---------|-------|-------------|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | | |
| AREASOURCE | | DOCK07 | 111.5 | 111.5 | 111.5 | 76.7 | 76.7 | 76.7 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK08 | 111.5 | 111.5 | 111.5 | 77.4 | 77.4 | 77.4 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK09 | 111.5 | 111.5 | 111.5 | 74.6 | 74.6 | 74.6 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK10 | 111.5 | 111.5 | 111.5 | 76.7 | 76.7 | 76.7 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK11 | 111.5 | 111.5 | 111.5 | 77.1 | 77.1 | 77.1 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK12 | 111.5 | 111.5 | 111.5 | 77.8 | 77.8 | 77.8 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK13 | 111.5 | 111.5 | 111.5 | 80.1 | 80.1 | 80.1 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK14 | 111.5 | 111.5 | 111.5 | 81.6 | 81.6 | 81.6 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK15 | 111.5 | 111.5 | 111.5 | 80.2 | 80.2 | 80.2 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK16 | 111.5 | 111.5 | 111.5 | 80.1 | 80.1 | 80.1 | Lw | 111.5 | | | | | 8 | r |
| AREASOURCE | | DOCK17 | 111.5 | 111.5 | 111.5 | 77.7 | 77.7 | 77.7 | Lw | 111.5 | | | | | 8 | r |

| Name | ID | Height | | Coordinates | | | |
|------------|--------|--------|------|-------------|------------|---------|---------|
| | | Begin | End | x | y | z | Ground |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) |
| AREASOURCE | DOCK01 | 8.00 | r | 6242523.17 | 2276395.82 | 1711.66 | 1703.66 |
| | | | | 6242523.17 | 2275606.76 | 1712.23 | 1704.23 |
| | | | | 6242387.75 | 2275604.15 | 1722.46 | 1714.46 |
| | | | | 6242343.48 | 2275601.55 | 1727.32 | 1719.32 |
| | | | | 6242342.22 | 2276395.82 | 1711.75 | 1703.75 |
| AREASOURCE | DOCK02 | 8.00 | r | 6241744.52 | 2275596.34 | 1765.34 | 1757.34 |
| | | | | 6241697.65 | 2275596.34 | 1758.16 | 1750.16 |
| | | | | 6241562.23 | 2275606.76 | 1745.52 | 1737.52 |
| | | | | 6241560.27 | 2276275.40 | 1709.80 | 1701.80 |
| | | | | 6241738.08 | 2276275.40 | 1713.38 | 1705.38 |
| AREASOURCE | DOCK03 | 8.00 | r | 6239614.28 | 2275247.35 | 1724.81 | 1716.81 |
| | | | | 6241290.20 | 2275247.35 | 1769.56 | 1761.56 |
| | | | | 6241290.20 | 2275195.83 | 1771.09 | 1763.09 |
| | | | | 6241441.53 | 2275195.83 | 1765.71 | 1757.71 |
| | | | | 6241443.59 | 2274196.67 | 1760.32 | 1752.32 |
| | | | | 6241390.43 | 2274139.16 | 1760.31 | 1752.31 |
| | | | | 6239617.64 | 2274135.69 | 1735.00 | 1727.00 |
| | | | | 6239619.52 | 2274325.51 | 1730.94 | 1722.94 |
| | | | | 6239619.52 | 2274380.19 | 1729.51 | 1721.51 |
| | | | | 6241314.84 | 2274377.59 | 1756.65 | 1748.65 |
| | | | | 6241307.02 | 2275067.69 | 1770.89 | 1762.89 |
| | | | | 6239619.52 | 2275057.28 | 1710.29 | 1702.29 |
| | | | | 6239619.52 | 2275111.97 | 1712.97 | 1704.97 |
| AREASOURCE | DOCK04 | 8.00 | r | 6239830.54 | 2276312.32 | 1698.71 | 1690.71 |
| | | | | 6239831.67 | 2276402.33 | 1694.06 | 1686.06 |
| | | | | 6240970.20 | 2276403.84 | 1719.20 | 1711.20 |
| | | | | 6240972.08 | 2276319.85 | 1725.39 | 1717.39 |
| | | | | 6240977.46 | 2276242.53 | 1730.32 | 1722.32 |
| | | | | 6239826.75 | 2276245.99 | 1701.63 | 1693.63 |
| AREASOURCE | DOCK05 | 8.00 | r | 6239804.22 | 2275719.17 | 1713.00 | 1705.00 |
| | | | | 6241017.31 | 2275719.17 | 1770.25 | 1762.25 |
| | | | | 6241019.05 | 2275632.41 | 1772.00 | 1764.00 |
| | | | | 6241025.98 | 2275459.22 | 1775.22 | 1767.22 |
| | | | | 6239807.69 | 2275454.02 | 1717.84 | 1709.84 |
| | | | | 6239805.96 | 2275635.61 | 1712.95 | 1704.95 |
| AREASOURCE | DOCK06 | 8.00 | r | 6239445.01 | 2276763.44 | 1678.33 | 1670.33 |
| | | | | 6239828.98 | 2276761.88 | 1677.58 | 1669.58 |
| | | | | 6239827.42 | 2276676.38 | 1681.41 | 1673.41 |
| | | | | 6239446.56 | 2276681.05 | 1681.52 | 1673.52 |
| AREASOURCE | DOCK07 | 8.00 | r | 6240222.28 | 2276761.88 | 1683.98 | 1675.98 |
| | | | | 6240604.69 | 2276763.44 | 1703.73 | 1695.73 |
| | | | | 6240606.25 | 2276681.05 | 1706.32 | 1698.32 |
| | | | | 6240217.61 | 2276676.38 | 1688.13 | 1680.13 |
| AREASOURCE | DOCK08 | 8.00 | r | 6240997.99 | 2276755.66 | 1697.55 | 1689.55 |
| | | | | 6241327.55 | 2276757.22 | 1694.90 | 1686.90 |
| | | | | 6241329.10 | 2276673.27 | 1700.26 | 1692.26 |
| | | | | 6240994.88 | 2276674.83 | 1702.70 | 1694.70 |
| AREASOURCE | DOCK09 | 8.00 | r | 6241801.68 | 2276758.77 | 1690.63 | 1682.63 |
| | | | | 6242407.95 | 2276761.88 | 1675.80 | 1667.80 |
| | | | | 6242407.95 | 2276676.38 | 1681.86 | 1673.86 |
| | | | | 6241795.46 | 2276673.27 | 1695.29 | 1687.29 |
| AREASOURCE | DOCK10 | 8.00 | r | 6240197.76 | 2273928.74 | 1769.13 | 1761.13 |
| | | | | 6240258.89 | 2273928.26 | 1767.60 | 1759.60 |
| | | | | 6240250.47 | 2273367.46 | 1739.83 | 1731.83 |
| | | | | 6240194.87 | 2273370.80 | 1740.43 | 1732.43 |
| AREASOURCE | DOCK11 | 8.00 | r | 6240516.01 | 2273938.55 | 1757.99 | 1749.99 |
| | | | | 6240568.05 | 2273935.66 | 1758.78 | 1750.78 |
| | | | | 6240570.94 | 2273371.94 | 1737.73 | 1729.73 |
| | | | | 6240518.90 | 2273374.83 | 1739.14 | 1731.14 |
| AREASOURCE | DOCK12 | 8.00 | r | 6241678.78 | 2275058.57 | 1779.31 | 1771.31 |
| | | | | 6241742.62 | 2275053.38 | 1781.29 | 1773.29 |
| | | | | 6241742.38 | 2274659.63 | 1781.54 | 1773.54 |

| Name | ID | Height | | Coordinates | | | |
|------------|--------|--------|------|-------------|------------|---------|---------|
| | | Begin | End | x | y | z | Ground |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) |
| | | | | 6241680.15 | 2274657.23 | 1778.32 | 1770.32 |
| AREASOURCE | DOCK13 | 8.00 | r | 6239150.79 | 2276591.79 | 1667.08 | 1659.08 |
| | | | | 6239187.55 | 2276588.06 | 1669.44 | 1661.44 |
| | | | | 6239183.32 | 2276184.67 | 1676.62 | 1668.62 |
| | | | | 6239147.42 | 2276182.56 | 1675.23 | 1667.23 |
| AREASOURCE | DOCK14 | 8.00 | r | 6239062.73 | 2275754.63 | 1695.62 | 1687.62 |
| | | | | 6238970.27 | 2275539.24 | 1684.14 | 1676.14 |
| | | | | 6238933.55 | 2275554.70 | 1679.55 | 1671.55 |
| | | | | 6239014.72 | 2275771.16 | 1693.02 | 1685.02 |
| AREASOURCE | DOCK15 | 8.00 | r | 6238996.59 | 2275097.39 | 1698.37 | 1690.37 |
| | | | | 6238999.59 | 2274799.33 | 1704.43 | 1696.43 |
| | | | | 6238950.88 | 2274795.72 | 1703.83 | 1695.83 |
| | | | | 6238948.28 | 2275096.99 | 1704.78 | 1696.78 |
| AREASOURCE | DOCK16 | 8.00 | r | 6239002.54 | 2274337.16 | 1713.17 | 1705.17 |
| | | | | 6238955.76 | 2274337.16 | 1712.78 | 1704.78 |
| | | | | 6238953.55 | 2274644.53 | 1709.33 | 1701.33 |
| | | | | 6239003.36 | 2274641.26 | 1710.15 | 1702.15 |
| AREASOURCE | DOCK17 | 8.00 | r | 6239681.14 | 2273945.65 | 1735.13 | 1727.13 |
| | | | | 6239742.87 | 2273945.65 | 1738.86 | 1730.86 |
| | | | | 6239742.87 | 2273528.93 | 1735.00 | 1727.00 |
| | | | | 6239681.14 | 2273528.93 | 1731.22 | 1723.22 |

Barrier(s)

| Name | Sel. | M. | ID | Absorption | | Z-Ext. (ft) | Cantilever | | Height | | Coordinates | | | |
|-----------------|------|----|----|------------|-------|----------------|---------------|---------------|---------------|-------------|-------------|------------|-----------|----------------|
| | | | | left | right | | horz. (ft) | vert. (ft) | Begin (ft) | End (ft) | x (ft) | y (ft) | z (ft) | Ground (ft) |
| | | | | | | | | | | | | | | |
| BARRIERTEMP | | | 0 | | | | | | 12.00 | r | 6241619.28 | 2276276.70 | 1715.25 | 1703.25 |
| | | | | | | | | | | | 6241560.27 | 2276275.40 | 1713.80 | 1701.80 |
| | | | | | | | | | | | 6241562.23 | 2275606.76 | 1749.52 | 1737.52 |
| | | | | | | | | | | | 6241607.61 | 2275603.27 | 1752.51 | 1740.51 |
| BARRIERTEMP | | | 0 | | | | | | 12.00 | r | 6242466.84 | 2275605.67 | 1718.81 | 1706.81 |
| | | | | | | | | | | | 6242523.17 | 2275606.76 | 1716.23 | 1704.23 |
| | | | | | | | | | | | 6242523.17 | 2276395.82 | 1715.66 | 1703.66 |
| BARRIERTEMP | | | 0 | | | | | | 12.00 | r | 6239618.82 | 2274254.19 | 1737.21 | 1725.21 |
| | | | | | | | | | | | 6239617.64 | 2274135.69 | 1739.00 | 1727.00 |
| | | | | | | | | | | | 6241390.43 | 2274139.16 | 1764.31 | 1752.31 |
| | | | | | | | | | | | 6241443.59 | 2274196.67 | 1764.32 | 1752.32 |
| | | | | | | | | | | | 6241441.53 | 2275195.83 | 1769.71 | 1757.71 |
| | | | | | | | | | | | 6241370.24 | 2275195.83 | 1773.42 | 1761.42 |
| BARRIERTEMP | | | 0 | | | | | | 12.00 | r | 6241320.76 | 2275195.83 | 1774.81 | 1762.81 |
| | | | | | | | | | | | 6241290.20 | 2275195.83 | 1775.09 | 1763.09 |
| | | | | | | | | | | | 6241290.20 | 2275247.35 | 1773.56 | 1761.56 |
| | | | | | | | | | | | 6239614.28 | 2275247.35 | 1728.81 | 1716.81 |
| | | | | | | | | | | | 6239616.39 | 2275192.88 | 1725.34 | 1713.34 |
| BARRIERTEMP | | | 0 | | | | | | 12.00 | r | 6241023.21 | 2275528.36 | 1779.23 | 1767.23 |
| | | | | | | | | | | | 6241025.98 | 2275459.22 | 1779.22 | 1767.22 |
| | | | | | | | | | | | 6239807.69 | 2275454.02 | 1721.84 | 1709.84 |
| | | | | | | | | | | | 6239807.06 | 2275519.85 | 1719.16 | 1707.16 |
| BARRIERTEMP | | | 0 | | | | | | 12.00 | r | 6239827.11 | 2276339.88 | 1701.13 | 1689.13 |
| | | | | | | | | | | | 6239827.95 | 2276405.44 | 1697.68 | 1685.67 |
| | | | | | | | | | | | 6240973.00 | 2276407.47 | 1723.12 | 1711.12 |
| | | | | | | | | | | | 6240974.89 | 2276345.91 | 1727.72 | 1715.72 |
| BARRIEREXISTING | | | 0 | | | | | | 5.00 | r | 6238882.07 | 2277628.11 | 1643.70 | 1638.70 |
| | | | | | | | | | | | 6238877.20 | 2276996.83 | 1661.81 | 1656.81 |
| | | | | | | | | | | | 6238066.37 | 2276991.15 | 1631.36 | 1626.36 |
| | | | | | | | | | | | 6238064.75 | 2277022.83 | 1634.82 | 1629.82 |
| BARRIEREXISTING | | | 0 | | | | | | 5.00 | r | 6238066.37 | 2276991.15 | 1631.36 | 1626.36 |
| | | | | | | | | | | | 6238064.75 | 2277022.83 | 1634.82 | 1629.82 |
| | | | | | | | | | | | 6238046.87 | 2277032.58 | 1635.01 | 1630.01 |
| | | | | | | | | | | | 6238045.25 | 2276933.46 | 1634.03 | 1629.03 |
| BARRIEREXISTING | | | 0 | | | | | | 5.00 | r | 6238024.12 | 2276854.66 | 1635.69 | 1630.69 |
| | | | | | | | | | | | 6238063.12 | 2276844.91 | 1632.56 | 1627.56 |
| | | | | | | | | | | | 6238059.87 | 2276151.07 | 1653.37 | 1648.37 |
| | | | | | | | | | | | 6237201.11 | 2276149.45 | 1627.50 | 1622.50 |
| | | | | | | | | | | | 6237179.17 | 2273931.45 | 1649.43 | 1644.43 |
| BARRIEREXISTING | | | 0 | | | | | | 5.00 | r | 6238855.26 | 2272183.86 | 1716.82 | 1711.82 |
| | | | | | | | | | | | 6241018.82 | 2272183.86 | 1792.84 | 1787.84 |
| | | | | | | | | | | | 6241019.64 | 2271965.31 | 1797.08 | 1792.08 |
| BARRIEREXISTING | | | 0 | | | | | | 5.00 | r | 6241511.98 | 2272187.93 | 1801.43 | 1796.43 |
| | | | | | | | | | | | 6241521.73 | 2272850.07 | 1768.60 | 1763.60 |
| | | | | | | | | | | | 6242187.13 | 2272849.26 | 1727.00 | 1722.00 |
| | | | | | | | | | | | 6242193.56 | 2273514.55 | 1769.86 | 1764.86 |
| | | | | | | | | | | | 6244189.22 | 2273519.76 | 1664.00 | 1659.00 |
| | | | | | | | | | | | 6244196.17 | 2274177.75 | 1665.80 | 1660.80 |
| | | | | | | | | | | | 6245306.41 | 2274176.01 | 1625.64 | 1620.64 |
| BARRIEREXISTING | | | 0 | | | | | | 12.00 | r | 6239006.35 | 2274325.60 | 1717.56 | 1705.56 |

| Name | Sel. | M. | ID | Absorption | | Z-Ext. | | | Cantilever | | Height | | Coordinates | | | | |
|-----------------|------|----|----|------------|-------|--------|-------|-------|------------|------|--------|------|-------------|------------|------------|---------|---------|
| | | | | left | right | | horz. | vert. | Begin | End | x | y | z | Ground | | | |
| | | | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) | | |
| BARRIEREXISTING | | | 0 | | | | | | | | 12.00 | r | | 6239007.70 | 2274651.88 | 1713.56 | 1701.56 |
| | | | | | | | | | | | | | | 6240534.88 | 2273207.16 | 1736.05 | 1724.05 |
| | | | | | | | | | | | | | | 6240240.89 | 2273202.04 | 1732.21 | 1720.21 |

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 | 45.00 | r | 6241705.75 | 2276386.53 | 1744.06 | 1699.06 | |
| | | | | | | | | 6242342.22 | 2276395.82 | 1744.06 | 1703.75 | |
| | | | | | | | | 6242343.48 | 2275601.55 | 1744.06 | 1719.32 | |
| | | | | | | | | 6242387.75 | 2275604.15 | 1744.06 | 1714.46 | |
| | | | | | | | | 6242392.96 | 2275453.11 | 1744.06 | 1721.14 | |
| | | | | | | | | 6241692.44 | 2275450.51 | 1744.06 | 1760.00 | |
| | | | | | | | | 6241697.65 | 2275596.34 | 1744.06 | 1750.16 | |
| | | | | | | | | 6241744.52 | 2275596.34 | 1744.06 | 1757.34 | |
| | | | | | | | | 6241738.08 | 2276275.40 | 1744.06 | 1705.38 | |
| | | | | | | | | 6241699.69 | 2276275.40 | 1744.06 | 1704.65 | |
| BUILDING | | | BUILDING00002 | x | 0 | 45.00 | r | 6239392.96 | 2275109.36 | 1748.32 | 1703.32 | |
| | | | | | | | | 6239619.52 | 2275111.97 | 1748.32 | 1704.97 | |
| | | | | | | | | 6239619.52 | 2275057.28 | 1748.32 | 1702.29 | |
| | | | | | | | | 6241307.02 | 2275067.69 | 1748.32 | 1762.89 | |
| | | | | | | | | 6241314.84 | 2274377.59 | 1748.32 | 1748.65 | |
| | | | | | | | | 6239619.52 | 2274380.19 | 1748.32 | 1721.51 | |
| | | | | | | | | 6239619.52 | 2274325.51 | 1748.32 | 1722.94 | |
| | | | | | | | | 6239392.96 | 2274333.32 | 1748.32 | 1722.99 | |
| BUILDING | | | BUILDING00003 | x | 0 | 45.00 | r | 6239596.26 | 2276313.58 | 1732.68 | 1687.68 | |
| | | | | | | | | 6239826.75 | 2276311.85 | 1732.68 | 1690.52 | |
| | | | | | | | | 6239826.75 | 2276245.99 | 1732.68 | 1693.63 | |
| | | | | | | | | 6240977.46 | 2276242.53 | 1732.68 | 1722.32 | |
| | | | | | | | | 6240975.72 | 2276318.78 | 1732.68 | 1717.61 | |
| | | | | | | | | 6241171.55 | 2276320.51 | 1732.68 | 1728.00 | |
| | | | | | | | | 6241165.98 | 2275632.03 | 1732.68 | 1751.38 | |
| | | | | | | | | 6241019.05 | 2275632.41 | 1732.68 | 1764.00 | |
| | | | | | | | | 6241017.31 | 2275719.17 | 1732.68 | 1762.25 | |
| | | | | | | | | 6239804.22 | 2275719.17 | 1732.68 | 1705.00 | |
| | | | | | | | | 6239805.96 | 2275635.61 | 1732.68 | 1704.95 | |
| | | | | | | | | 6239587.66 | 2275636.18 | 1732.68 | 1702.00 | |
| BUILDING | | | BUILDING00004 | x | 0 | 45.00 | r | 6239327.57 | 2277018.96 | 1696.08 | 1651.08 | |
| | | | | | | | | 6239941.82 | 2277016.94 | 1696.08 | 1669.00 | |
| | | | | | | | | 6239941.58 | 2276682.64 | 1696.08 | 1674.41 | |
| | | | | | | | | 6239836.42 | 2276678.55 | 1696.08 | 1673.55 | |
| | | | | | | | | 6239835.40 | 2276765.90 | 1696.08 | 1669.63 | |
| | | | | | | | | 6239429.55 | 2276766.88 | 1696.08 | 1669.11 | |
| | | | | | | | | 6239431.59 | 2276680.59 | 1696.08 | 1672.49 | |
| | | | | | | | | 6239333.58 | 2276680.59 | 1696.08 | 1665.74 | |
| BUILDING | | | BUILDING00005 | x | 0 | 45.00 | r | 6240101.44 | 2277018.96 | 1712.10 | 1667.10 | |
| | | | | | | | | 6240719.72 | 2277023.00 | 1712.10 | 1675.97 | |
| | | | | | | | | 6240727.56 | 2276681.62 | 1712.10 | 1698.27 | |
| | | | | | | | | 6240610.94 | 2276681.62 | 1712.10 | 1698.35 | |
| | | | | | | | | 6240608.65 | 2276768.31 | 1712.10 | 1695.65 | |
| | | | | | | | | 6240205.72 | 2276767.35 | 1712.10 | 1676.13 | |
| | | | | | | | | 6240207.55 | 2276677.51 | 1712.10 | 1680.63 | |
| | | | | | | | | 6240105.11 | 2276678.88 | 1712.10 | 1681.75 | |
| BUILDING | | | BUILDING00006 | x | 0 | 45.00 | r | 6241439.75 | 2276675.48 | 1734.99 | 1689.99 | |
| | | | | | | | | 6241333.49 | 2276675.48 | 1734.99 | 1691.97 | |
| | | | | | | | | 6241331.46 | 2276762.11 | 1734.99 | 1686.47 | |
| | | | | | | | | 6240987.43 | 2276760.30 | 1734.99 | 1690.45 | |
| | | | | | | | | 6240989.04 | 2276674.68 | 1734.99 | 1694.66 | |
| | | | | | | | | 6240878.77 | 2276678.29 | 1734.99 | 1695.76 | |
| | | | | | | | | 6240878.45 | 2276962.08 | 1734.99 | 1674.02 | |
| | | | | | | | | 6241436.78 | 2276954.69 | 1734.99 | 1674.12 | |
| BUILDING | | | BUILDING00007 | x | 0 | 45.00 | r | 6241674.58 | 2276962.08 | 1719.16 | 1674.16 | |
| | | | | | | | | 6242408.67 | 2276965.03 | 1719.16 | 1654.66 | |
| | | | | | | | | 6242404.24 | 2276764.15 | 1719.16 | 1668.15 | |
| | | | | | | | | 6241789.68 | 2276765.40 | 1719.16 | 1682.16 | |
| | | | | | | | | 6241786.04 | 2276675.76 | 1719.16 | 1687.26 | |
| | | | | | | | | 6241674.92 | 2276676.48 | 1719.16 | 1682.51 | |
| BUILDING | | | BUILDING00008 | x | 0 | 45.00 | r | 6241747.06 | 2275147.22 | 1816.17 | 1771.17 | |
| | | | | | | | | 6242013.96 | 2275147.22 | 1816.17 | 1754.37 | |
| | | | | | | | | 6242010.18 | 2274736.46 | 1816.17 | 1764.46 | |
| | | | | | | | | 6241839.81 | 2274532.02 | 1816.17 | 1777.30 | |
| | | | | | | | | 6241680.15 | 2274532.99 | 1816.17 | 1772.60 | |
| | | | | | | | | 6241680.15 | 2274650.13 | 1816.17 | 1770.22 | |
| | | | | | | | | 6241744.04 | 2274652.26 | 1816.17 | 1773.49 | |
| BUILDING | | | BUILDING00009 | x | 0 | 45.00 | r | 6240574.65 | 2273939.95 | 1796.24 | 1751.24 | |

| Name | Sel. | M. | ID | RB | Residents | Absorption | Height | Coordinates | | | |
|----------|------|----|---------------|----|-----------|------------|---------|-------------|------------|---------|---------|
| | | | | | | | | Begin | x | y | z |
| | | | | | | | (ft) | (ft) | (ft) | (ft) | (ft) |
| | | | | | | | | 6240803.01 | 2273940.99 | 1796.24 | 1748.02 |
| | | | | | | | | 6240794.67 | 2273205.84 | 1796.24 | 1734.35 |
| | | | | | | | | 6240519.66 | 2273211.83 | 1796.24 | 1724.00 |
| | | | | | | | | 6240519.66 | 2273364.65 | 1796.24 | 1730.65 |
| | | | | | | | | 6240579.55 | 2273363.22 | 1796.24 | 1728.30 |
| BUILDING | | | BUILDING00010 | x | 0 | | 45.00 r | 6240192.99 | 2273938.90 | 1805.17 | 1760.17 |
| | | | | | | | | 6240188.03 | 2273357.67 | 1805.17 | 1731.62 |
| | | | | | | | | 6240256.08 | 2273357.64 | 1805.17 | 1731.13 |
| | | | | | | | | 6240253.28 | 2273204.82 | 1805.17 | 1720.58 |
| | | | | | | | | 6239921.87 | 2273207.92 | 1805.17 | 1719.36 |
| | | | | | | | | 6239922.92 | 2273937.86 | 1805.17 | 1739.82 |
| BUILDING | | | BUILDING00011 | x | 0 | | 45.00 r | 6238911.66 | 2275920.40 | 1718.41 | 1673.41 |
| | | | | | | | | 6239092.54 | 2275846.82 | 1718.41 | 1683.82 |
| | | | | | | | | 6239061.11 | 2275757.63 | 1718.41 | 1687.52 |
| | | | | | | | | 6239014.72 | 2275771.16 | 1718.41 | 1685.02 |
| | | | | | | | | 6238933.55 | 2275554.70 | 1718.41 | 1671.55 |
| | | | | | | | | 6238970.27 | 2275539.24 | 1718.41 | 1676.14 |
| | | | | | | | | 6238936.19 | 2275454.41 | 1718.41 | 1672.20 |
| | | | | | | | | 6238752.25 | 2275518.79 | 1718.41 | 1666.25 |
| BUILDING | | | BUILDING00012 | x | 0 | | 45.00 r | 6238972.98 | 2276591.79 | 1697.47 | 1652.47 |
| | | | | | | | | 6239150.79 | 2276591.79 | 1697.47 | 1659.08 |
| | | | | | | | | 6239147.42 | 2276182.56 | 1697.47 | 1667.23 |
| | | | | | | | | 6239183.32 | 2276184.67 | 1697.47 | 1668.62 |
| | | | | | | | | 6239184.51 | 2276067.55 | 1697.47 | 1670.26 |
| | | | | | | | | 6238976.04 | 2276064.49 | 1697.47 | 1664.79 |
| BUILDING | | | BUILDING00013 | x | 0 | | 45.00 r | 6238993.46 | 2275168.17 | 1730.18 | 1685.18 |
| | | | | | | | | 6239000.99 | 2275104.20 | 1730.18 | 1689.29 |
| | | | | | | | | 6238945.87 | 2275104.20 | 1730.18 | 1696.51 |
| | | | | | | | | 6238948.08 | 2274793.32 | 1730.18 | 1695.76 |
| | | | | | | | | 6238998.79 | 2274793.32 | 1730.18 | 1696.69 |
| | | | | | | | | 6238995.40 | 2274729.46 | 1730.18 | 1698.40 |
| | | | | | | | | 6238664.91 | 2274731.39 | 1730.18 | 1690.15 |
| | | | | | | | | 6238661.05 | 2275164.31 | 1730.18 | 1700.16 |
| BUILDING | | | BUILDING00014 | x | 0 | | 45.00 r | 6238950.28 | 2274647.80 | 1746.06 | 1701.06 |
| | | | | | | | | 6238952.49 | 2274334.71 | 1746.06 | 1704.91 |
| | | | | | | | | 6239005.40 | 2274334.71 | 1746.06 | 1705.30 |
| | | | | | | | | 6238997.33 | 2274223.10 | 1746.06 | 1706.82 |
| | | | | | | | | 6238794.40 | 2274228.90 | 1746.06 | 1709.09 |
| | | | | | | | | 6238691.97 | 2274541.99 | 1746.06 | 1691.83 |
| | | | | | | | | 6238697.77 | 2274646.35 | 1746.06 | 1689.71 |
| BUILDING | | | BUILDING00015 | x | 0 | | 45.00 r | 6239415.04 | 2273953.95 | 1760.77 | 1715.77 |
| | | | | | | | | 6239675.99 | 2273959.59 | 1760.77 | 1728.33 |
| | | | | | | | | 6239675.99 | 2273430.64 | 1760.77 | 1722.07 |
| | | | | | | | | 6239477.24 | 2273432.92 | 1760.77 | 1713.05 |
| | | | | | | | | 6239477.24 | 2273849.64 | 1760.77 | 1719.90 |
| | | | | | | | | 6239415.50 | 2273849.64 | 1760.77 | 1715.53 |

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APPENDIX 10.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

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14064 - West Campus Upper Plateau

CadnaA Noise Prediction Model: 14064_04_Construction.cna

Date: 09.03.22

Analyst: S. Shami

Calculation Configuration

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

Receiver Noise Levels

| Name | M. | ID | Level Lr | | | Limit. Value | | | Land Use | | | Height | Coordinates | | | |
|-----------|----|-----|----------|-------|-------|--------------|-------|-------|----------|------|------------|--------|-------------|------------|------------|------|
| | | | Day | Night | CNEL | Day | Night | CNEL | Type | Auto | Noise Type | | X | Y | Z | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | | (ft) | (ft) | (ft) | (ft) | |
| RECEIVERS | | R1 | 47.2 | 47.2 | 53.9 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6239395.68 | 2277518.39 | 5.00 |
| RECEIVERS | | R2 | 48.0 | 48.0 | 54.7 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6240840.00 | 2277494.60 | 5.00 |
| RECEIVERS | | R3 | 46.8 | 46.8 | 53.5 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6242300.90 | 2277400.66 | 5.00 |
| RECEIVERS | | R4 | 39.7 | 39.7 | 46.4 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6244773.77 | 2274154.49 | 5.00 |
| RECEIVERS | | R5 | 42.3 | 42.3 | 49.0 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6243135.43 | 2273499.44 | 5.00 |
| RECEIVERS | | R6 | 44.7 | 44.7 | 51.3 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6241549.82 | 2272804.45 | 5.00 |
| RECEIVERS | | R7 | 43.5 | 43.5 | 50.2 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6240610.52 | 2272148.50 | 5.00 |
| RECEIVERS | | R8 | 46.0 | 46.0 | 52.7 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6238684.09 | 2273020.65 | 5.00 |
| RECEIVERS | | R9 | 47.2 | 47.2 | 53.9 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6237166.99 | 2274522.15 | 5.00 |
| RECEIVERS | | R10 | 47.8 | 47.8 | 54.4 | 55.0 | 45.0 | 0.0 | | | | 5.00 | a | 6238570.92 | 2277016.29 | 5.00 |

Area Source(s)

| Name | M. | ID | Result. PWL | | | Result. PWL'' | | | Lw / Li | | | Operating Time | | | Height | |
|--------------|----|----|-------------|---------|-------|---------------|---------|-------|---------|-------|-------|----------------|---------|-------|--------|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Special | Night | (ft) | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | (min) | (min) | (min) | | |
| CONSTRUCTION | | 0 | 115.0 | 115.0 | 115.0 | 53.3 | 53.3 | 53.3 | Lw | 115 | | | | | 8 | a |

| Name | Height | | Coordinates | | | |
|--------------|--------|------|-------------|------------|------|--------|
| | Begin | End | x | y | z | Ground |
| | (ft) | (ft) | (ft) | (ft) | (ft) | (ft) |
| CONSTRUCTION | 8.00 | a | 6238887.91 | 2276997.73 | 8.00 | 0.00 |
| | | | 6238893.11 | 2277472.99 | 8.00 | 0.00 |

| Name | Height | | Coordinates | | | |
|------|---------------|-------------|-------------|------------|-----------|----------------|
| | Begin (ft) | End (ft) | x (ft) | y (ft) | z (ft) | Ground (ft) |
| | | | 6238946.30 | 2277471.91 | 8.00 | 0.00 |
| | | | 6238946.30 | 2276698.26 | 8.00 | 0.00 |
| | | | 6239196.25 | 2276704.21 | 8.00 | 0.00 |
| | | | 6239202.20 | 2277174.36 | 8.00 | 0.00 |
| | | | 6241261.30 | 2277186.26 | 8.00 | 0.00 |
| | | | 6241267.25 | 2277096.99 | 8.00 | 0.00 |
| | | | 6242552.70 | 2277096.99 | 8.00 | 0.00 |
| | | | 6242546.75 | 2275281.89 | 8.00 | 0.00 |
| | | | 6242522.94 | 2275246.18 | 8.00 | 0.00 |
| | | | 6242683.63 | 2275216.43 | 8.00 | 0.00 |
| | | | 6242975.23 | 2275156.91 | 8.00 | 0.00 |
| | | | 6243177.57 | 2275168.82 | 8.00 | 0.00 |
| | | | 6244129.76 | 2275234.28 | 8.00 | 0.00 |
| | | | 6244165.46 | 2275293.79 | 8.00 | 0.00 |
| | | | 6244147.61 | 2276162.66 | 8.00 | 0.00 |
| | | | 6244230.93 | 2276162.66 | 8.00 | 0.00 |
| | | | 6244236.88 | 2275305.69 | 8.00 | 0.00 |
| | | | 6244260.68 | 2275234.28 | 8.00 | 0.00 |
| | | | 6244409.46 | 2275246.18 | 8.00 | 0.00 |
| | | | 6244516.58 | 2275281.89 | 8.00 | 0.00 |
| | | | 6245308.09 | 2275531.84 | 8.00 | 0.00 |
| | | | 6245319.99 | 2275442.57 | 8.00 | 0.00 |
| | | | 6244522.53 | 2275180.72 | 8.00 | 0.00 |
| | | | 6244349.95 | 2275145.01 | 8.00 | 0.00 |
| | | | 6243219.23 | 2275055.74 | 8.00 | 0.00 |
| | | | 6242880.01 | 2275067.65 | 8.00 | 0.00 |
| | | | 6242433.68 | 2275180.72 | 8.00 | 0.00 |
| | | | 6240820.91 | 2273145.42 | 8.00 | 0.00 |
| | | | 6239541.41 | 2273133.52 | 8.00 | 0.00 |
| | | | 6239184.34 | 2273764.34 | 8.00 | 0.00 |
| | | | 6238803.47 | 2273704.83 | 8.00 | 0.00 |
| | | | 6238767.76 | 2273806.00 | 8.00 | 0.00 |
| | | | 6237488.27 | 2273788.15 | 8.00 | 0.00 |
| | | | 6237506.12 | 2275847.25 | 8.00 | 0.00 |
| | | | 6238351.18 | 2275859.15 | 8.00 | 0.00 |
| | | | 6238369.04 | 2276692.31 | 8.00 | 0.00 |
| | | | 6238880.84 | 2276698.26 | 8.00 | 0.00 |